

# 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.

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 industry comprising 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 maximum expected 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 from 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.

#### *Selected information*

In aquatic year 1391-1392, the amount of annual discharge of the underground water resources was 64932 mln cu m which had an 0.63 percent increase in comparison to the aquatic year 1390-91. It should be noted that out of 6 main basins, the central plateau with 49.1 % had the maximum annual discharge.

In the year 1392, the inflow of the large reservoir dams amounted to 30048 mln cu m had a 22.04% decrease in comparison to the last year. In this year, 27894 mln cu m of large reservoir dams have been consumed, 66.28 percent of which belongs to the agricultural consumptions.

In the same year, over 6955 mln cu m of water is produced in the water and sewage companies of the country (urban and rural) out of which about 5149 mln cu m was sold. Sale of water had a 5.57

percent increase compared to the preceding year. This is while the production of water had a 4.70 percent increase compared to the year 1391.

In the year 1392, there were over 19360000 water extensions which had a 5.6 percent (urban and rural) increase in comparison to the preceding year. Out of this number about 14384000 extensions were for the urban areas which had a 5.7% increase compared to the previous year.

In the year 1392, the gross electricity generation of institutions affiliated to the Ministry of Energy was 129539 mln kilo watt hours, more 50.38 percent of which has been produced in the steam power plants. Furthermore, the gross electricity generation amount had a 3.12 percent increase compared to the preceding year.

In this year, 203088 mln kilowatt hours of generated electricity was consumed by a number of 30287000 subscribers. In this respect, the amount of electricity sold and the number of electricity subscribers increased 4.6 and increased by 5.3 percent respectively compared to the preceding year.

Among all electricity subscribers in the year 1392, percentage of subscribers in the house, public, agricultural and manufacturing sectors was 81.5, 4.2, 1.1 and 0.6, 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 31.7, 34.8, 16.3, 8.8 and 1.9 percent respectively.

At the end of the year 1392, a number of 55191 villages (about 4.3 mln rural households) were electrified which increased 1.2% in comparison to the previous year.

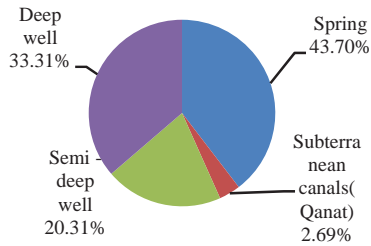
**9.1. UNDERGROUND WATER RESOURCES AND THEIR ANNUAL DISCHARGE BY  
MAIN BASINS (mln cu m)**

Aquatic year and main basins	Total discharge	Deep well		Semi-deep well		Subterranean canals (Qanat)		Spring	
		Number	Annual 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
1387-88 .....	73861	167653	35419	473246	13418	37240	6657	135760	18368
1388-89 .....	75714	176516	33977	472398	13323	39048	6458	145609	21956
1389-90 .....	70482	191261	34367	497579	12479	39531	6259	159454	17378
1390-1391 .....	64523	195766	34872	567898	12311	41109	4752	173825	12588
<b>1391-1392.....</b>	<b>64932</b>	<b>200859</b>	<b>34545</b>	<b>569708</b>	<b>12164</b>	<b>41130</b>	<b>4735</b>	<b>173611</b>	<b>13488</b>
Caspian Sea .....	7027	36455	2786	230061	1465	2569	241	76477	2535
Persian Gulf and Oman Sea .....	19725	42966	6570	104424	4006	4820	530	55179	8619
Lake Orumiyeh .....	2238	8090	1037	74575	896	1812	140	9908	165
Central Plateau .....	31903	105499	21383	147656	5368	26755	3298	27839	1855
Eastern Border.....	1414	1862	725	8700	338	3111	300	1428	50
Qareh Qum.....	2625	5987	2044	4292	91	2063	226	2780	264

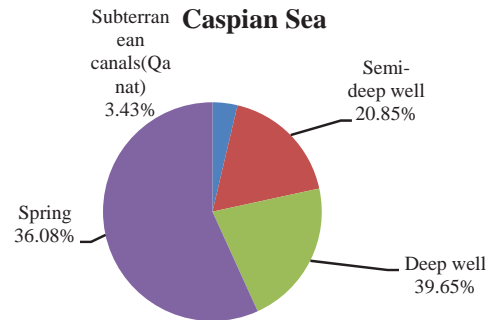
Source: Ministry of Energy.

**9.1. ANNUAL DISCHARGE FROM UNDERGROUND WATER RESOURCES BY MAIN BASINS, THE AQUATIC YEAR 1391-92**

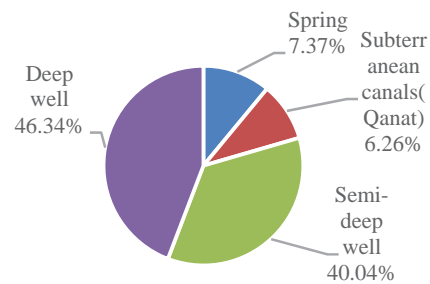
**Persian Gulf and Oman Sea**



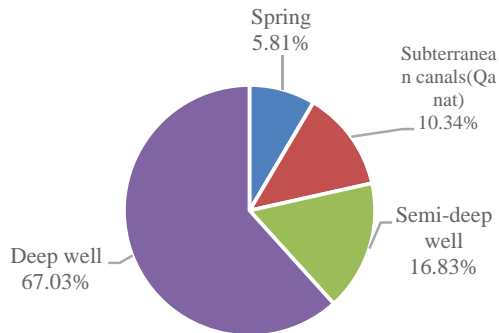
**Caspian Sea**



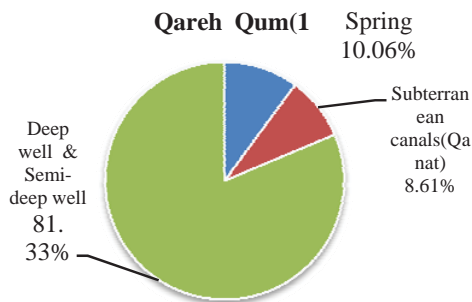
**Lake Orumiyeh**



**Central Plateau**

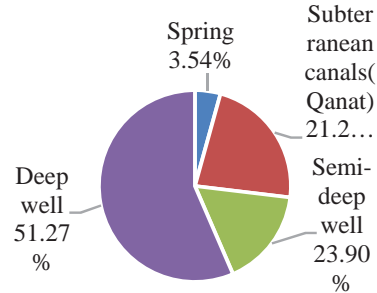


**Qareh Qum(1)**



1. Data for semi-deep well are included in deep wells.

**Eastern Border**



For data see Table 9.1.

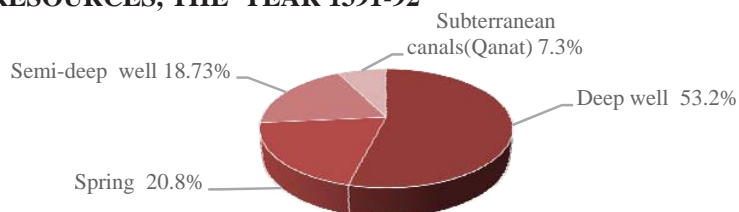


**9.2. UNDERGROUND WATER RESOURCES AND THEIR ANNUAL DISCHARGE BY REGIONAL WATER ORGANIZATIONS, AQUATIC YEAR 1391-92 (mln cu m)**

Ostan	Total discharge	Deep well		Semi-deep well		Subterranean		Spring	
		Number	Annual discharge	Number	Annual discharge	Number	Annual discharge	Number	Annual discharge
<b>Total.....</b>	<b>64932</b>	<b>200859</b>	<b>34545</b>	<b>569708</b>	<b>12164</b>	<b>41130</b>	<b>4735</b>	<b>173611</b>	<b>13489</b>
East Azarbayejan .....	1270	5751	626	34908	360	1960	186	2295	99
West Azarbayejan.....	1888	5102	1011	44780	623	486	47	863	207
Ardebil .....	393	2040	162	4814	87	221	19	3354	125
Esfahan .....	5625	15677	1925	32991	1271	4203	811	8686	1618
Alborz.....	824	6906	649	9757	53	163	13	1793	110
Ilam.....	357	1152	234	813	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 ..	4028	2669	267	1379	144	1011	107	4760	3510
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 .....	1369	3012	866	6451	267	3	1	1121	234
Zanjan .....	1158	3786	658	13307	291	725	42	5836	167
Semnan .....	1019	2913	696	1996	35	738	93	1873	194
Sistan&Baluchestan .....	1982	1446	375	17530	1189	1282	377	905	41
Fars .....	7990	31100	4063	53296	2488	1730	401	2226	1038
Qazvin.....	1786	4292	1528	5972	71	313	60	13861	127
Qom .....	903	1183	543	3756	179	753	163	1397	19
Kordestan.....	1027	2685	353	14637	172	519	24	38562	478
Kerman .....	6258	16039	4483	18517	1337	2424	329	1593	110
Kermanshah .....	1493	4099	518	11041	445	401	30	11187	501
Kohgiluyeh & Boyerahmad.....	1749	866	124	1945	99	61	12	3847	1514
Golestan.....	1061	8871	507	26942	282	344	30	3766	242
Gilan .....	769	925	120	49004	235	0	0	16153	414
Lorestan .....	1003	3253	481	3877	122	1167	31	5692	369
Mazandaran.....	1688	15841	520	121337	333	34	7	21688	827
Markazi.....	2924	7794	1908	7565	343	4254	497	3159	176
Hormozgan .....	1525	4379	734	17737	611	168	33	639	147
Hamedan.....	1909	8303	1541	7822	198	1287	74	2386	96
Yazd.....	1193	2865	871	768	103	2630	181	387	39

Source: Ministry of Energy.

**9.2. PERCENTAGE OF ANNUAL DISCHARGE FROM UNDERGROUND WATER RESOURCES, THE YEAR 1391-92**



For data see Table 9.1.

**9.3. STATISTICS ON LARGE RESERVOIR DAMS<sup>(1)</sup> BY REGIONAL WATER ORGANIZATIONS**

(mln cu m)

Description	Inflow <sup>(2)</sup>	Outflow <sup>(2)</sup>			Water consumption <sup>(3,4)</sup>				
		Total	From turbines ducts for electricity generation	Other <sup>(5)</sup>	Total	Agriculture	Drinking	Manu- facturing	Other <sup>(5)</sup>
1375.....	36901	40136	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
1388.....	35729	27475	11372	16103	17067	10310	4127	657	1973
1389.....	35617	35711	17602	18109	25829	13220	3356	774	8479
1390.....	33740	32822	17122	15700	25675	16175	2226	855	6419
1391.....	38546	34294	17014	21134	25169	15405	3020	861	5883
<b>1392.....</b>	<b>30048</b>	<b>31620</b>	<b>46742</b>	<b>×</b>	<b>27894</b>	<b>18489</b>	<b>3005</b>	<b>867</b>	<b>5164</b>
<i>East Azarbayegan</i>	<b>3904</b>	<b>3843</b>	<b>3342</b>	<b>×</b>	<b>2150</b>	<b>1538</b>	<b>44</b>	<b>5</b>	<b>564</b>
Aydoghamush .....	53	44	0	44	27	22	0	0	6
Aras <sup>(6)</sup> .....	3536	3452	3342	110	1873	1333	0	0	540
Arasbaran .....	5	0	0	0	0	0	0	0	0
Tajbar Sarab.....	1	1	0	1	1	1	0	0	0
Zonuz.....	5	5	0	5	5	3	0	0	2
Sattarkhanahar.....	41	54	0	54	49	38	8	2	1
Sahand <sup>(7)</sup> .....	105	118	0	118	34	28	4	0	2
Alavian.....	90	97	0	97	95	75	10	2	7
Ghale chai .....	39	43	0	43	42	37	0	0	5
Kord Kandi.....	7	0	0	0	0	0	0	0	0
Nahand.....	22	29	0	29	24	0	22	0	1
<b>West Azarbayegan.</b>	<b>1551</b>	<b>1845</b>	<b>161</b>	<b>×</b>	<b>1575</b>	<b>1068</b>	<b>228</b>	<b>5</b>	<b>275</b>
Aras 2.....	5	0	0	0	0	0	0	0	0
Aghchay .....	155	90	0	90	84	68	0	1	15
Barun.....	106	120	0	120	94	91	4	0	0
Bukan.....	733	939	0	939	769	459	145	3	162
Hasanlu.....	80	98	0	98	85	41	0	0	43
Deriq Salmas.....	18	14	0	14	14	14	0	0	0
Zola .....	101	127	0	127	123	107	0	0	15
Saruq .....	11	14	0	14	11	1	6	0	4
Shahrchay.....	177	199	0	199	195	106	54	0	35
Shahid Ghanbari.....	47	47	0	47	37	37	0	0	0
Qiqaj.....	4	3	0	3	3	3	0	0	0
Mahabad.....	113	195	161	34	160	140	19	0	0

**9.3. STATISTICS ON LARGE RESERVOIR DAMS<sup>(1)</sup> BY REGIONAL WATER ORGANIZATIONS (continued)**
**(mln cu m)**

Description	Inflow <sup>(2)</sup>	Outflow <sup>(2)</sup>			Water consumption <sup>(3,4)</sup>				
		Total	From turbines ducts for electricity generation	Other <sup>(5)</sup>	Total	Agriculture	Drinking	Manufacturing	Other <sup>(5)</sup>
<b>Ardebil.....</b>	<b>112</b>	<b>155</b>	<b>0</b>	<b>×</b>	<b>136</b>	<b>93</b>	<b>30</b>	<b>0</b>	<b>13</b>
Sabalan .....	30	42	0	42	38	30	0	0	8
Saqizchi .....	15	14	0	14	3	3	0	0	0
Qurichay .....	2	9	0	9	8	8	0	0	0
Gilarlu.....	1	0	0	0	0	0	0	0	0
Moghadasardebili.....	11	10	0	10	10	6	0	0	4
Yamchi .....	55	78	0	78	77	46	30	0	0
<b>Esfahan.....</b>	<b>1165</b>	<b>1298</b>	<b>763</b>	<b>×</b>	<b>1278</b>	<b>644</b>	<b>516</b>	<b>86</b>	<b>32</b>
Baghkal-e-Khansar.....	3	2	0	2	2	2	0	0	0
Hana.....	19	22	0	22	19	19	0	0	0
Khamiran.....	6	10	0	10	9	9	0	0	0
Zayandehrud.....	961	1076	763	313	1071	565	389	86	32
Qareh Aqach.....	7	5	0	5	3	3	0	0	0
Golpayegan <sup>(8)</sup> .....	168	183	0	183	174	46	127	0	0
<b>Ilam.....</b>	<b>140</b>	<b>43</b>	<b>0</b>	<b>×</b>	<b>27</b>	<b>11</b>	<b>16</b>	<b>0</b>	<b>0</b>
Ilam.....	47	23	0	23	16	0	16	0	0
Doborj.....	94	20	0	20	11	10	0	0	0
<b>Bushehr.....</b>	<b>262</b>	<b>261</b>	<b>0</b>	<b>×</b>	<b>224</b>	<b>191</b>	<b>0</b>	<b>0</b>	<b>33</b>
Reis Ali delvari.....	262	261	0	261	224	191	0	0	33
<b>Tehran.....</b>	<b>1235</b>	<b>1498</b>	<b>1020</b>	<b>×</b>	<b>1374</b>	<b>517</b>	<b>719</b>	<b>16</b>	<b>122</b>
Taleghan.....	273	390	302	88	381	243	134	0	4
Karaj.....	287	341	328	13	320	74	246	0	0
Lar .....	327	346	155	191	338	74	155	0	109
Latiyan <sup>(2)</sup> .....	196	235	235	0	201	8	184	0	9
Mamlo <sup>(2)</sup> .....	107	143	0	143	133	118	0	15	0

**9.3. STATISTICS ON LARGE RESERVOIR DAMS<sup>(1)</sup> BY REGIONAL WATER ORGANIZATIONS (continued)**

(mln cu m)

Description	Inflow <sup>(2)</sup>	Outflow <sup>(2)</sup>			Water consumption <sup>(3,4)</sup>				
		Total	From turbines ducts for electricity generation	Other <sup>(5)</sup>	Total	Agriculture	Drinking	Manu- facturing	Other <sup>(5)</sup>
<b><i>Chaharmahal&amp;Bakhtiyari</i></b>	<b>28</b>	<b>24</b>	<b>0</b>	×	<b>13</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>
Choghakhor .....	26	22	0	22	11	11	0	0	0
Naghan.....	2	2	0	2	1	1	0	0	0
<b><i>South Khorasan.....</i></b>	<b>12</b>	<b>9</b>	<b>0</b>	×	<b>8</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>1</b>
Asadyieh.....	1	1	0	1	1	0	0	0	1
Parsa .....	0	0	0	0	0	0	0	0	0
Haji Abad.....	1	2	0	2	1	1	0	0	0
Farrokhi .....	1	0	0	0	0	0	0	0	0
Darreh Bid <sup>(9)</sup> .....	1	0	0	0	0	0	0	0	0
Kerit <sup>(9)</sup> .....	2	1	0	1	1	1	0	0	0
Nahrain <sup>(9)</sup> .....	6	5	0	5	5	5	0	0	0
<b><i>North Khorasan.....</i></b>	<b>54</b>	<b>93</b>	<b>0</b>	×	<b>77</b>	<b>56</b>	<b>15</b>	<b>0</b>	<b>6</b>
Barzu.....	9	17	0	17	15	13	2	0	0
Bidvaz.....	14	33	0	33	30	21	6	0	2
Chary .....	1	2	0	2	2	2	0	0	0
ShirinDarreh .....	31	41	0	41	31	20	7	0	3
<b><i>Khorasan- e- Razavi.....</i></b>	<b>59</b>	<b>510</b>	<b>0</b>	×	<b>296</b>	<b>160</b>	<b>136</b>	<b>0</b>	<b>1</b>
Tabarak Qochan.....	9	12	0	12	12	10	2	0	0
Chali DarrehTorghabeh .....	1	0	0	0	0	0	0	0	0
Daroungar-e-Dargaz .....	3	5	0	5	5	5	0	0	0
Shahid Dehqan-e-Taybad .....	0	0	0	0	0	0	0	0	0
Dahan Ghale .....	4	2	0	2	0	0	0	0	0
Dusti <sup>(6)</sup> .....	10	440	0	440	234	106	127	0	0
Dolatabad.....	0	0	0	0	0	0	0	0	0
Zavin Kalat .....	0	1	0	1	1	1	0	0	0
Sad-e- Khaf .....	4	8	0	8	8	8	0	0	0
Sangerd.....	3	12	0	12	12	12	0	0	0
Shahid Yaghobi .....	1	2	0	2	2	2	0	0	0
Toroq .....	5	4	0	4	4	1	3	0	1
Fariman.....	7	9	0	9	9	9	0	0	0
Kardeh .....	4	7	0	7	7	3	4	0	0
Komayestan .....	7	5	0	5	1	1	0	0	0
Yam .....	2	3	0	3	2	2	0	0	0

9.3. STATISTICS ON LARGE RESERVOIR DAMS<sup>(1)</sup> BY REGIONAL WATER

## ORGANIZATIONS (continued)

(mln cu m)

Description	Inflow <sup>(2)</sup>	Outflow <sup>(2)</sup>			Water consumption <sup>(3,4)</sup>				
		Total	From turbines ducts for electricity generation	Other <sup>(5)</sup>	Total	Agriculture	Drinking	Manu-facturing	Other <sup>(5)</sup>
<b>Khuzestan</b> .....	<b>16480</b>	<b>16887</b>	<b>39804</b>	×	<b>16269</b>	<b>11126</b>	<b>791</b>	<b>711</b>	<b>3641</b>
Jareh .....	95	94	0	94	0	0	0	0	0
Dez .....	4513	4621	4525	95	4529	2743	12	78	1696
Seymareh <sup>(2)</sup> .....	956	701	0	701	0	0	0	0	0
Karun1(Shahid Abbaspour) <sup>(2, 10)</sup> .....	7784	7875	7795	80	0	0	0	0	0
Karun 3 <sup>(2,10)</sup> .....	5677	6330	6263	67	0	0	0	0	0
Karkheh <sup>(2,11)</sup> .....	1648	1739	938	800	1581	1086	189	24	282
Karun 4 <sup>(2,10,12)</sup> .....	3250	3334	3281	53	0	0	0	0	0
Gotvand-e-Olia <sup>(2,11,10)</sup> .....	9654	8899	7344	1555	8902	6359	494	585	1465
Marun .....	982	1291	1042	249	1257	939	96	24	199
Masjed-Soleyman <sup>(2,10)</sup> (Godar Lander) .....	8626	8627	8614	13	0	0	0	0	0
<b>Zanjan</b> .....	<b>46</b>	<b>42</b>	<b>0</b>	×	<b>36</b>	<b>12</b>	<b>23</b>	<b>0</b>	<b>0</b>
Talvar .....	18	6	0	6	6	5	0	0	0
Tahem .....	9	26	0	26	24	1	23	0	0
Kineh Vers.....	7	6	0	6	4	4	0	0	0
Golabar.....	12	4	0	4	3	3	0	0	0
<b>Semnan</b> .....	<b>34</b>	<b>22</b>	<b>0</b>	×	<b>388</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>4</b>
Damghan.....	17	20	0	20	17	11	4	0	2
Kalpush.....	17	2	0	2	2	0	0	0	2
<b>Sistan&amp;Baluchestan</b> .....	<b>1004</b>	<b>606</b>	<b>0</b>	×	<b>298</b>	<b>236</b>	<b>43</b>	<b>0</b>	<b>19</b>
Pishin .....	283	178	0	178	61	60	1	0	0
Chahehnimeh 4 <sup>(2)</sup> .....	133	203	0	203	0	0	0	0	0
Chahehnimeh <sup>(2)</sup> .....	459	414	0	414	207	147	41	0	19
Kheirabad.....	13	8	0	8	4	3	1	0	0
Zirdan .....	145	28	0	28	24	24	0	0	0
Sha iKelk .....	16	11	0	11	2	2	0	0	0
Mashkid-e-Olia .....	127	12	0	12	0	0	0	0	0

9.3. STATISTICS ON LARGE RESERVOIR DAMS<sup>(1)</sup> BY REGIONAL WATER

## ORGANIZATIONS (continued)

(mln cu m)

Description	Inflow <sup>(2)</sup>	Outflow <sup>(2)</sup>			Water consumption <sup>(3,4)</sup>				
		Total	From turbines ducts for electricity generation	Other <sup>(5)</sup>	Total	Agriculture	Drinking	Manufacturing	Other <sup>(5)</sup>
<b>Fars</b> .....	<b>683</b>	<b>892</b>	<b>351</b>	×	<b>789</b>	<b>635</b>	<b>75</b>	<b>13</b>	<b>66</b>
Izadkhast.....	6	5	0	5	3	3	0	0	0
Tangab.....	12	8	0	8	0	0	0	0	0
Dorudzan <sup>(2)</sup> .....	410	608	259	348	562	453	49	13	46
Rudbal.....	26	20	0	20	0	0	0	0	0
Salman Farsi.....	174	183	0	183	163	122	26	0	15
Sivand.....	5	5	0	5	5	5	0	0	0
Mollasadra <sup>(2)</sup> (Tangehbaragh)	162	178	91	87	57	52	0	0	5
<b>Qom</b> .....	<b>15</b>	<b>9</b>	<b>0</b>	×	<b>5</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>
Panzdah Khordad.....	15	9	0	9	5	4	1	0	0
<b>Kordestan</b> .....	<b>217</b>	<b>140</b>	<b>0</b>	×	<b>114</b>	<b>52</b>	<b>51</b>	<b>2</b>	<b>8</b>
Azad.....	106	2	0	2	37	37	0	0	0
Baneh.....	5	6	0	6	5	0	5	0	0
Zarivar.....	23	26	0	26	0	0	0	0	0
Sang siyah.....	1	2	0	2	1	1	0	0	0
Sural.....	4	2	0	2	2	1	0	0	0
Qeshleq.....	62	87	0	87	69	13	46	2	8
Garan.....	16	15	0	15	0	0	0	0	0
<b>Kerman</b> .....	<b>354</b>	<b>268</b>	<b>126</b>	×	<b>179</b>	<b>165</b>	<b>2</b>	<b>1</b>	<b>12</b>
Baft.....	15	8	0	8	4	4	0	1	0
Sirjan (Tanguiyeh).....	7	5	0	5	4	2	2	0	0
Jiroft.....	199	174	126	48	97	97	0	0	0
Nesa.....	132	81	0	81	74	62	0	0	12
<b>Kermanshah</b> .....	<b>161</b>	<b>220</b>	<b>0</b>	×	<b>171</b>	<b>144</b>	<b>11</b>	<b>0</b>	<b>15</b>
Azadi.....	33	17	0	17	14	3	0	0	11
Zagros.....	20	9	0	9	1	1	0	0	1
Soleymanshah <sup>(2)</sup> .....	13	38	0	38	11	10	1	0	0
Shiyan.....	0	1	0	1	1	1	0	0	0
Gavshan <sup>(2)</sup> .....	96	155	0	155	142	129	10	0	3
Gilangharb.....	1	2	0	2	1	1	0	0	0
<b>Kohgiluyeh &amp; Boyerahmad</b> .....	<b>396</b>	<b>439</b>	<b>0</b>	×	<b>371</b>	<b>114</b>	<b>104</b>	<b>6</b>	<b>146</b>
Shah Qasem.....	9	12	0	12	4	4	0	0	0
Kosar.....	387	427	0	427	367	111	104	6	146
Golestan.....	167	284	0	×	168	125	0	2	41
Alagol.....	6	46	0	46	8	1	0	1	5
Daneshmand.....	9	12	0	12	5	2	0	0	3
Golestan 2 <sup>(2)</sup> .....	31	50	0	50	15	11	0	0	4



**9.3. STATISTICS ON LARGE RESERVOIR DAMS<sup>(1)</sup> BY REGIONAL WATER ORGANIZATIONS (continued)**

(mln cu m)

Description	Inflow <sup>(2)</sup>	Outflow <sup>(2)</sup>			Water consumption <sup>(3,4)</sup>				
		Total	From turbines ducts for electricity generation	Other <sup>(5)</sup>	Total	Agriculture	Drinking	Manufacturing	Other <sup>(5)</sup>
<b>Golestan<sup>(2)</sup></b> .....	<b>151</b>	<b>151</b>	<b>0</b>	<b>151</b>	<b>65</b>	<b>47</b>	<b>0</b>	<b>0</b>	<b>18</b>
Nomel.....	4	6	0	6	6	6	0	0	0
Voshmgir <sup>(2)</sup> .....	108	140	0	140	69	59	0	1	10
<b>Gilan</b> .....	<b>1091</b>	<b>1502</b>	<b>1085</b>	<b>×</b>	<b>1446</b>	<b>1219</b>	<b>110</b>	<b>10</b>	<b>106</b>
Sefidrud.....	1091	1502	1085	417	1446	1219	110	10	106
<b>Lorestan</b> .....	<b>50</b>	<b>23</b>	<b>0</b>	<b>×</b>	<b>14</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>5</b>
Eyvashan.....	18	7	0	7	2	0	0	0	1
Tanghaleh.....	1	0	0	0	0	0	0	0	0
Khanabad.....	7	8	0	8	6	2	0	0	4
Kaznar.....	2	1	0	1	1	1	0	0	0
Maruk.....	22	6	0	6	5	5	0	0	0
<b>Mazandaran</b> .....	<b>340</b>	<b>355</b>	<b>90</b>	<b>×</b>	<b>275</b>	<b>221</b>	<b>1</b>	<b>0</b>	<b>52</b>
Alborz.....	134	135	0	135	92	65	0	0	27
Alimalat.....	1	1	0	1	0	0	0	0	0
Berenjestanak.....	12	13	0	13	4	4	0	0	0
Sonbolrud.....	5	4	0	4	4	4	0	0	0
Shahid Rajae.....	163	180	90	89	157	137	0	0	20
Shiyadeh.....	4	4	0	4	4	4	0	0	0
Salaheddinkola.....	6	4	0	4	0	0	0	0	0
Farimsahra.....	1	1	0	1	1	0	0	0	0
Meijeran.....	14	14	0	14	13	8	1	0	4
<b>Markazi</b> .....	<b>47</b>	<b>64</b>	<b>0</b>	<b>×</b>	<b>49</b>	<b>16</b>	<b>23</b>	<b>11</b>	<b>0</b>
Saveh.....	23	25	0	25	16	16	0	0	0
Kamal Saleh.....	24	39	0	39	34	0	23	11	0
<b>Hormozgan</b> .....	<b>414</b>	<b>257</b>	<b>0</b>	<b>×</b>	<b>134</b>	<b>89</b>	<b>44</b>	<b>0</b>	<b>0</b>
Esteqlal.....	85	93	0	93	58	14	43	0	0
Jegin.....	235	108	0	108	55	55	0	0	0
Shamil & Nian.....	94	55	0	55	22	20	1	0	0

### 9.3. STATISTICS ON LARGE RESERVOIR DAMS<sup>(1)</sup> BY REGIONAL WATER ORGANIZATIONS (continued)

(mln cu m)

Description	Inflow <sup>(2)</sup>	Outflow <sup>(2)</sup>			Water consumption <sup>(3,4)</sup>				
		Total	From turbines ducts for electricity generation	Other <sup>(5)</sup>	Total	Agriculture	Drinking	Manu facturing	Other <sup>(5)</sup>
<b>Hamedan .....</b>	<b>28</b>	<b>34</b>	<b>0</b>	<b>x</b>	<b>32</b>	<b>12</b>	<b>19</b>	<b>0</b>	<b>1</b>
Ekbatan <sup>(2)</sup> .....	18	23	0	23	22	3	19	0	0
Abshineh <sup>(2)</sup> .....	0	1	0	1	0	0	0	0	0
Shirinsu.....	0	1	0	1	0	0	0	0	0
Kalan-e-Malayer .....	11	12	0	12	9	9	0	0	0

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

2. Total inflow and outflow were calculated through omission of the influence of being chain of(Latiyan and Mamlo dams in Tehran), (Shahid Abbaspur, Karun3, Karun 4, Masjed-Soleyman and Gotvand-e-Olia dams 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, 73.26 mln cu m was released without use due to the lack of water need and not finishing the downward network

8. Major part of 110 mln cu m of inflow to the Golpayegan reservoir dam in the year 1392 relates to the transferring of the water from Dez branches to Qomrud.

9. Dams of Yazd Ostan have been entrusted with water resources managment of South Khorasan Ostan.

10.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.

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(27.9 bln cu m) and net outflow(31.6 bln cu m) is due to the following reasons: 1.5 bln cu m of Aras and Dusti dams for consumption of Iran's neighboring country, 0.1 bln cu m of surplus outflow of Gorganrua in Golestan Ostan, 0.5 bln cu m of direct outflow from weir, 1.8 bln cu m from evaporation of dams of the country and 0.2 bln cu m of generation of surplus hydroelectricity generation.

Source: Ministry of Energy.

#### 9. 4. CAPACITY OF RESERVOIRS, LENGTH OF THE NETWORK AND NUMBER OF WATER EXTENSIONS COVERED BY URBAN WATER AND SEWAGE COMPANIES IN URBAN AREAS

Year and urban water and sewage company	Capacity of reservoirs (cu m)	Length of the network with a diameter of 80 mm or more (km)	Extensions (number)
1375.....	6735738	66557	6445675
1380.....	8402485	77955	8060281
1385.....	10914721	119059	10115189
1388.....	12788446	143716	11670825
1389.....	12643894	127570	12314372
1390.....	13101344	133163	12886677
1391.....	13599484	136398	13614415
<b>1392.....</b>	<b>13963308</b>	<b>141410</b>	<b>14384059</b>
East Azarbajejan .....	855275	8565	942649
West Azarbajejan .....	370040	4359	550410
Ardebil .....	218955	2227	269976
Esfahan .....	909040	11165	1045718
Kashan.....	116690	1750	130335
Alborz .....	393000	2772	373343
Ilam .....	120850	1287	122596
Bushehr .....	231050	3155	215366
Tehran .....	2946860	15166	1781580
Chaharmahal&Bakhtiari .....	149260	1541	184059
South Khorasan .....	110910	1901	158386
Khorasan-e-Razavi .....	427275	4746	577486
Mashhad.....	561000	3635	792806
North Khorasan .....	101230	1186	162467
Khuzestan .....	665004	6684	601338
Ahvaz.....	78000	2496	309894
Zanjan .....	134800	1545	188355
Semnan .....	165450	2260	219937
Sistan&Baluchestan .....	263260	3858	289059
Fars .....	542840	6621	597268
Shiraz... ..	314900	2951	396085
Qazvin .....	209580	1825	260994
Qom .....	220820	2033	276465
Kordestan .....	186465	4143	285915
Kerman .....	676930	8795	539609
Kermanshah .....	290890	2953	344848
Kohgiluyeh&Boyerahmad .....	106615	1369	128739
Golestan .....	235305	2709	250989
Gilan.....	342050	4804	398260
Lorestan .....	245750	2647	314566
Mazandaran .....	400710	6639	525183
Markazi .....	256820	2943	284620
Hormozgan .....	354284	2866	200686
Hamedan .....	296773	2545	320125
Yazd .....	464627	5269	343947

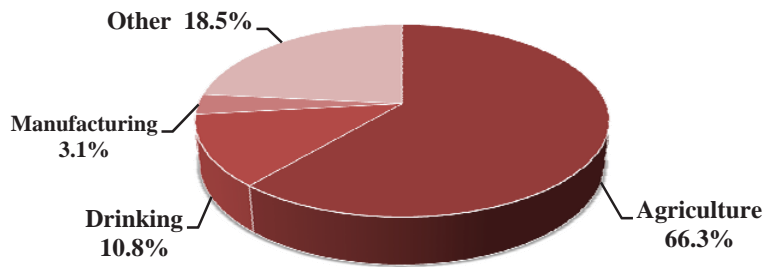
Source: Water and Sewage Engineering Company.

### 9. 5. WATER SUPPLY, PRODUCTION AND SALE CAPACITIES IN URBAN AREAS COVERED BY URBAN WATER AND SEWAGE COMPANIES

Year and urban water and sewage company	Supply (lit/second)	Production (1000 cu m)	Sale (1000 cu m)
1375.....	157801	3694153	2737860
1380.....	165328	4008252	2617518
1385.....	214154	5094428	3464452
1388.....	249020	5551910	3929525
1389.....	243943	5677772	4071058
1390.....	247392	5323362	3900727
1391.....	258750	5425077	4034954
<b>1392.....</b>	<b>265281</b>	<b>5643076</b>	<b>4236009</b>
East Azarbajejan.....	10696	232482	188847
West Azarbajejan .....	7656	177083	136759
Ardebil .....	4537	69462	52015
Esfahan .....	16775	382564	312507
Kashan.....	1543	39591	31023
Alborz .....	9882	228067	173984
Ilam.....	1192	34855	26420
Bushehr .....	2792	88039	61893
Tehran.....	61645	1360254	1013961
Chaharmahal&Bakhtiyari .....	2400	44506	34369
South Khorasan .....	1816	41262	30071
Khorasan-e-Razavi.....	7547	146609	103793
Mashhad.....	7392	218108	168821
North Khorasan .....	1300	37007	28261
Khuzestan.....	15855	340210	216340
Ahvaz.....	12269	150874	106362
Zanjan .....	3358	63923	48969
Semnan.....	2747	56027	42897
Sistan&Baluchestan .....	9947	103469	77186
Fars.....	8455	170711	123940
Shiraz .....	5835	120256	94532
Qazvin .....	3949	77930	63510
Qom.....	7226	109068	86985
Kordestan .....	3718	102476	71408
Kerman .....	7278	162562	121927
Kermanshah .....	5360	121913	90968
Kohgiluyeh&Boyerahmad .....	1329	36400	26600
Golestan .....	4408	73241	55150
Gilan .....	4871	130668	103043
Lorestan .....	3990	95780	73097
Mazandaran.....	9111	235812	165321
Markazi .....	5357	105461	82153
Hormozgan.....	3820	100428	78209
Hamedan .....	4754	96481	71460
Yazd.....	4471	89497	73227

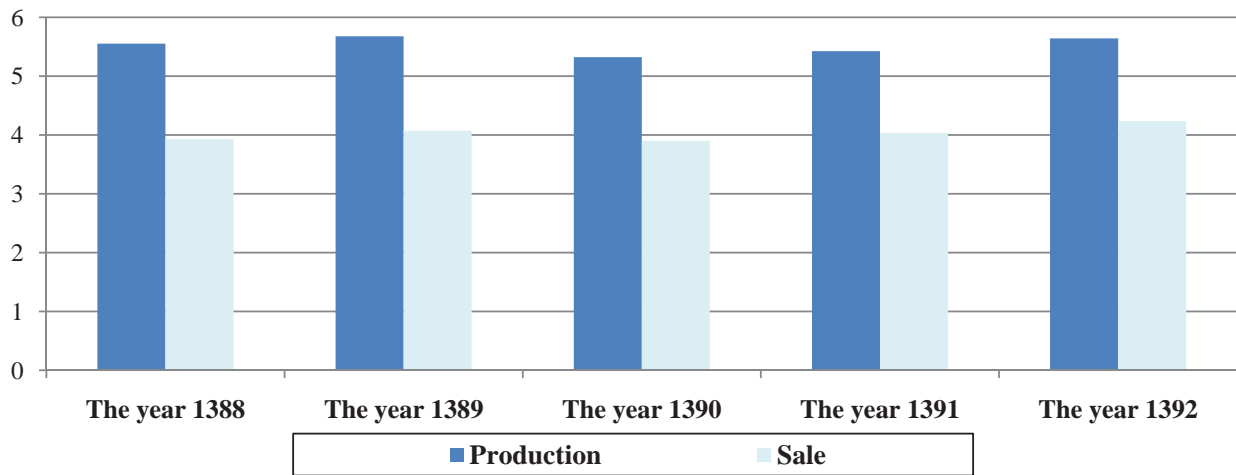
Source: Water and Sewage Engineering Company.

**9.3. WATER CONSUMPTION OF LARGE RESERVOIR DAMS  
BY TYPE OF USE, THE YEAR 1392**



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. WATER SUPPLY, PRODUCTION AND SALE CAPACITIES IN RURAL AREAS COVERED BY RURAL WATER AND SEWAGE COMPANIES**

Year and rural water and sewage company	Supply (lit/second)	Production (1000 cu m)	Sale (1000 cu m)
1385.....	51242	1019180	652929
1388.....	56918	1107761	789971
1389.....	56108	1211890	824564
1390.....	77038	1160295	794211
1391.....	77806	1217272	842466
<b>1392.....</b>	<b>78479</b>	<b>1311453</b>	<b>913055</b>
East Azarbayejan .....	4300	74381	54133
West Azarbayejan .....	2772	73758	52199
Ardebil .....	928	25280	17970
Esfahan .....	3310	57264	38560
Alborz <sup>(1)</sup> .....	000	000	000
Ilam .....	1757	15911	11359
Bushehr .....	1094	30747	19129
Tehran <sup>(1)</sup> .....	3742	70650	48240
Chaharmahal&Bakhtiari .....	1448	21900	14600
South Khorasan .....	878	21446	14390
Khorasan-e-Razavi .....	3874	109160	80100
North Khorasan .....	1623	28948	17400
Khuzestan.....	4976	72770	44443
Zanjan .....	1160	27119	18871
Semnan.....	799	18509	9284
Sistan&Baluchestan .....	3641	39070	27427
Fars.....	5196	102824	71369
Qazvin.....	934	28332	19832
Qom.....	620	12600	7190
Kordestan .....	2508	25900	18000
Kerman .....	2867	59392	43947
Kermanshah .....	3751	36254	27440
Kohgiluyeh & Boyerahmad .....	1075	14870	9920
Golestan .....	3981	48402	35195
Gilan .....	2033	47860	33880
Lorestan .....	3578	34290	24570
Mazandaran.....	4730	86400	61900
Markazi .....	4336	34700	25260
Hormozgan.....	2872	40200	30510
Hamedan .....	2867	36000	23754
Yazd .....	829	16516	12183

1. Statistics for Alborz are included with Tehran.

Source: Water and Sewage Engineering Company.



**9. 7. CAPACITY OF RESERVOIRS, LENGTH OF THE NETWORK AND NUMBER OF WATER COVERED BY RURAL WATER AND SEWAGE COMPANIES IN EXTENSIONS RURAL AREAS**

Year and rural water and sewage company	Capacity of reservoirs (cu m)	Length of the network (km)	Extensions (number)
1385.....	2914866	116474	3285903
1388.....	3244177	141406	4019362
1389.....	3453064	150148	4265423
1390.....	3292684	155248	4415119
1391.....	3361062	160414	4717323
<b>1392.....</b>	<b>3480029</b>	<b>162781</b>	<b>4975782</b>
East Azarbayejan.....	175833	7829	289310
West Azarbayejan .....	144115	5695	232483
Ardebil .....	58655	3136	111595
Esfahan .....	128375	5155	219557
Alborz <sup>(1)</sup> .....	000	000	000
Ilam .....	62398	1284	45280
Bushehr .....	59353	3256	81466
Tehran <sup>(1)</sup> .....	148044	3101	193740
Chaharmahal&Bakhtiyari .....	97529	2515	74649
South Khorasan .....	101660	2982	123417
Khorasan-e-Razavi.....	286825	11855	530983
North Khorasan .....	72765	2722	105671
Khuzestan .....	128858	11822	161817
Zanjan .....	75233	3036	90525
Semnan.....	35817	1160	54730
Sistan &Baluchestan .....	237903	7520	147998
Fars .....	289700	10818	380036
Qazvin .....	63825	2293	102390
Qom .....	23285	874	29057
Kordestan .....	100144	3082	111567
Kerman .....	123775	10321	234447
Kermanshah .....	118069	4801	119685
Kohgiluyeh & Boyerahmad .....	96344	3060	52364
Golestan .....	110190	5039	201677
Gilan.....	145626	14695	244313
Lorestan.....	42420	4102	112374
Mazandaran.....	166386	12318	377745
Markazi .....	80480	2808	139118
Hormozgan.....	114615	5858	158608
Hamedan .....	95950	6950	153060
Yazd .....	95857	2694	96120

*1. Statistics for Alborz are included with Tehran.*

*Source: Water and Sewage Engineering Company.*

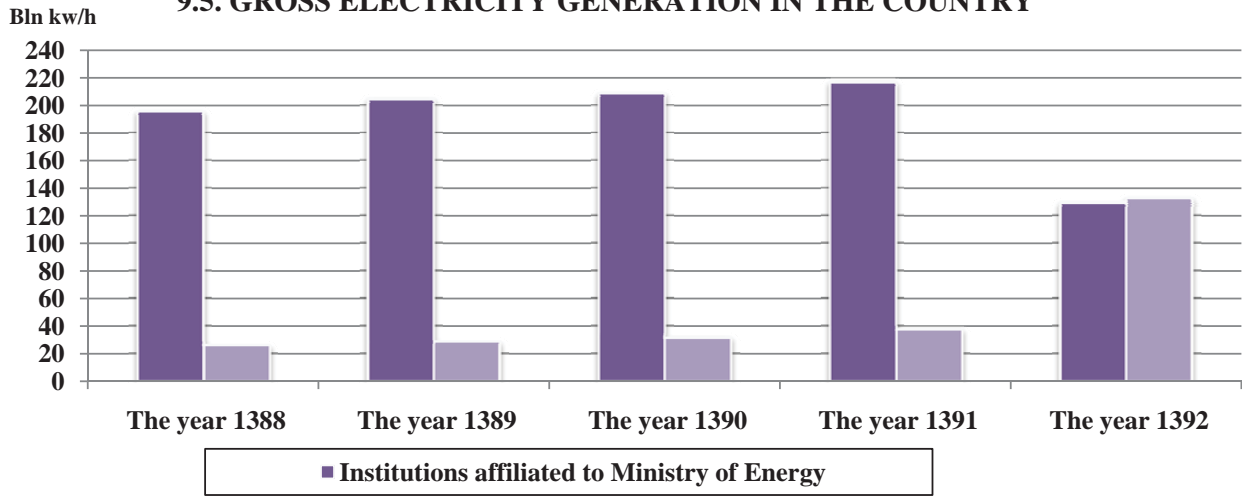
### 9. 8. NOMINAL CAPACITY AND GROSS ELECTRICITY GENERATION OF INSTALLED GENERATORS

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
1388.....	56181	47298	8883	221318	195583	25735
1389.....	61203	50319	10884	232994	204515	28478
1390.....	65212	52252	12960	240063	208413	31650
1391.....	68941	53998	14943	254265	216989	37276
<b>1392.....</b>	<b>70278</b>	<b><sup>(1)</sup>35897</b>	<b><sup>(1)</sup>34381</b>	<b>262192</b>	<b><sup>(1)</sup>129539</b>	<b><sup>(1)</sup>132653</b>

1. In the year 1392, 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 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 AFFILIATED  
TO THE MINISTRY OF ENERGY  
(1000 kW)**

Year and type of generator	Nominal capacity ( Nominal power)			Actual capacity (actual capacity)			Power generated at the point of peak consumption		
	Total	Inter-connected network	Isolated networks	Total	Inter-connected network	Isolated networks	Total	Inter-connected network	Isolated networks
1375.....	22420	19656	2764	21136	18655	2481	16106	14562	1544
1380.....	28044	27868	176	25645	25494	151	21853	21790	63
1385.....	40909	40732	177	37410	37286	124	31650	31561	89
1388.....	47298	47082	216	42254	42100	154	37580	37472	108
1389.....	50319	50102	217	45077	44922	155	34474	34361	113
1390.....	52253	52037	216	46666	46514	152	36850	36731	119
1391 <sup>(2,1)</sup> .....	53998	53781	217	48281	48128	153	36798	36676	122
<b>1392<sup>(2)</sup>.....</b>	<b>35897</b>	<b>35680</b>	<b>217</b>	<b>32984</b>	<b>32831</b>	<b>153</b>	<b>25885</b>	<b>25755</b>	<b>130</b>
Hydroelectric.....	10265	10262	3	10265	10262	3	7262	7262	0
Steam .....	11841	11841	0	11619	11619	0	9529	9529	0
Gas .....	7925	7741	184	6201	6072	129	5020	4899	121
Combined cycle.....	4275	4275	0	3463	3463	0	2986	2986	0
Diesel .....	439	409	30	284	263	21	92	83	9
Atomic and renewable .....	1152	1152	0	1152	1152	0	996	996	0
Large scale industries	5581	5581	0	4597	4597	0	76	76	0
Private sector.....	28801	28801	0	24325	24325	0	19014	19014	0

1. Excluding private sector and large scale industries.

2. In the year 1392, 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 private sector.

Source: Ministry of Energy.

**9. 10. CAPACITY OF INSTALLED GENERATORS AND GROSS ELECTRICITY  
GENERATION OF POWER PLANTS AFFILIATED TO THE MINISTRY OF ENERGY  
BY REGIONAL POWER COMPANIES, LARGE SCALE INDUSTRIES AND PRIVATE  
SECTOR, THE YEAR 1392**

Description	Nominal capacity(1000 kW)	Actual capacity (1000 kW)	Gross generation (mln kW h)
<b>Total .....</b>	<b>70278</b>	<b>61907</b>	<b>262192</b>
Kish Water and Power Company <sup>(1)</sup> .....	198	139	585
Azarbajejan Regional Power Company .....	855	788	4690
Esfahan Regional Power Company.....	961	918	4406
Bakhtar Regional Power Company .....	2360	2306	10815
Tehran Regional Power Company .....	3315	2825	14658
Khorasan Regional Power Company .....	2340	2029	9819
Khuzestan Regional Power Company.....	1903	1824	10506
Zanjan Regional Power Company .....	648	500	1788
Semnan Regional Power Company.....	336	263	789
Sistan&Baluchestan Regional Power ompany.....	911	719	2336
Gharb Regional Power Company .....	1303	1173	6569
Fars Regional Power Company.....	2474	2089	8742
Kerman Regional Power Company .....	2003	1568	9306
Gilan Regional Power Company.....	432	408	2009
Mazandaran Regional Power Company.....	2215	2137	11435
Hormozgan Regional Power Company.....	2372	2219	11600
Yazd Regional Power Company .....	1005	814	5016
Hydroelectric plants .....	10265	10265	14470
Large scale industries.....	5581	4598	6549
Private sector.....	28801	24325	126104

1. The Company is under the supervision of Kish Development Organization.

Source: Ministry of Energy.

**9. 11. ELECTRICITY GENERATION AND INTERNAL CONSUMPTION OF THE  
POWER PLANTS AFFILIATED TO THE MINISTRY OF ENERGY** (mln kWh)

Year and type of generator	Gross generation	Internal consumption of plants	Net generation
1375.....	85825	4568	81257
1380.....	124275	5942	118333
1385.....	181538	7063	174475
1388.....	195582	7559	188023
1389.....	204515	7589	196926
1390.....	208414	7984	200430
1391 <sup>(2,1)</sup> .....	216989	7848	209141
<b>1392<sup>(2)</sup>.....</b>	<b>129539</b>	<b>5385</b>	<b>124154</b>
Hydroelectric .....	14470	78	14392
Steam .....	65266	4691	60575
Combined cycle .....	21514	404	21110
Gas .....	23471	161	23310
Diesel .....	71	5	66
Atomic and renewable .....	4747	46	4701
Large scale industries .....	6549	234	6315
Private sector.....	126104	3108	122996

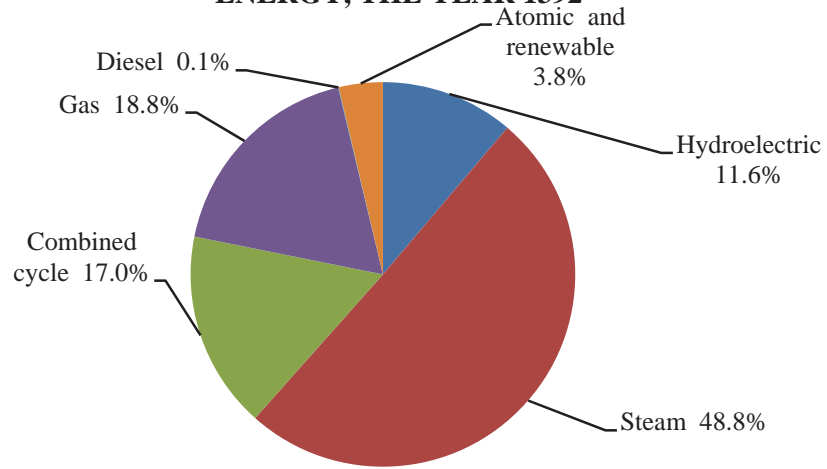
1. Excluding private sector and large scale industries.

2. In the year 1392, 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 private sector.

Source: Ministry of Energy.



**9.6. NET PRODUCTION SHARE OF ELECTRICITY OF THE POWER PLANTS AFFILIATED TO THE MINISTRY OF ENERGY, THE YEAR 1392**



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
1388 .....	43	7206717	24	5032335	8	2081634	11	92748
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
<b>1392 .....</b>	<b>48</b>	<b>14469847</b>	<b>26</b>	<b>8709761</b>	<b>10</b>	<b>5731872</b>	<b>12</b>	<b>28214</b>
East Azarbayejan Regional Water Organization .....	0	0	0	0	0	0	0	0
West Azarbayejan Regional Water Organization .....	2	88552	0	0	2	88552	0	0
Ardebil Regional Water Organization .....	2	92604	2	92604	0	0	0	0
Esfahan Regional Water Organization.....	5	372711	3	236287	2	136424	0	0
Tehran Regional Water Organization.....	7	12108129	3	6666586	4	5441543	0	0
Chaharmahal & Bakhtiari Regional Water Organization.....	3	68449	1	3096	2	65353	0	0
Khorasan-e-Razavi Regional Water Organization .....	1	40806	1	40806	0	0	0	0
Khuzestan Regional Water Organization	1	9979	1	9979	0	0	0	0
Fars Regional Water Organization.....	3	181662	1	181662	0	0	2	0
Kerman Regional Water Organization.....	7	41020	3	21299	0	0	4	19721
Kermanshah Regional Water Organization.....	1	0	0	0	0	0	1	0
Kohgiluyeh & Boyerahmad Regional Water Organization. ....	3	1239	3	1239	0	0	0	0
Gilan Regional Water Organization... ..	5	14993	3	9011	0	0	2	5982
Lorestan Regional Water Organization .....	2	0	1	0	0	0	1	0
Mazandaran Regional Water Organization.....	1	2477	0	0	0	0	1	2477
Markazi Regional Water Organization .....	3	1447226	2	1447192	0	0	1	34
Hamedan Regional Water Organization ....	2	0	2	0	0	0	0	0

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**

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
1388.....	213883	3802	9541	36501	439203	2386	36. 0
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
<b>1392.....</b>	<b>242908</b>	<b>12186</b>	<b>10816</b>	<b>36648</b>	<b>565332</b>	<b>2327</b>	<b>37. 0</b>
Power plants affiliated to the Ministry of Energy . ....	110322	3402	10816	15206	260789	2364	36. 4
Large scale industries.....	6549	25	0	1681	16026	2289	37. 6
Private sector.....	126037	8759	0	19761	288517	2447	35. 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	1388	1389	1390	1391	1392
Gross generation .....	85825	124275	181538	195583	204515	208414	216988	129540
Less: Internal consumption of plants .....	4568	5942	7064	7559	7589	7985	7849	5386
Net generation .....	81257	118333	174474	188024	196926	200429	209139	124154
Plus: Electricity purchased from large-scale industries <sup>(1)</sup> .....	2135	5721	10997	19784	23954	23637	29365	125273
Less: Distribution and transmission networks losses .....	11202	20857	35566	34129	34663	34102	36755	37407
Net sales .....	70055	97476	144862	172522	187874	188917	201280	210967
Net exports .....	384	305	264	4084	3692	5012	7132	7879
Domestic sales.....	69671	97171	144598	168438	184182	183905	194148	203088

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)**

Year and regional power company	Maximum coincidental & non-coincidental load
1375.....	15616
1380.....	23220
1385.....	33453
1388.....	37050
1389.....	38919
1390.....	41481
1391.....	42027
<b>1392 .....</b>	<b>44724</b>
Kish Water and Power Company .....	121
Azarbajejan Regional Power Company .....	2432
Esfahan Regional Power Company .....	3204
Bakhtar Regional Power Company .....	2234
Tehran Regional Power Company .....	8244
Khorasan Regional Power Company .....	2834
Khuzestan Regional Power Company .....	6446
Zanjan Regional Power Company .....	1207
Semnan Regional Power Company .....	421
Sistan&Baluchestan Regional Power Company .....	1022
Gharb Regional Power Company .....	1326
Fars Regional Power Company .....	4066
Kerman Regional Power Company .....	1627
Gilan Regional Power Company .....	1221
Mazandaran Regional Power Company .....	2701
Hormozgan Regional Power Company .....	2049
Yazd Regional Power Company .....	738
Large scale industries.....	2831

Source: Ministry of Energy.

**9. 16. LENGTH OF DIFFERENT TYPES OF 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
1388.....	17438	28478	20703	42341
1389.....	18761	29117	21111	44007
1390 <sup>(1)</sup> .....	18625	29158	22092	44956
1391.....	19745	29722	22602	45754
<b>1392.....</b>	<b>19915</b>	<b>30300</b>	<b>23064</b>	<b>46240</b>

*1. In the year 1390, statistical data for power transmission lines of the country were reviewed and there was a decrease in this regard.*

*Source: Ministry of Energy.*

**9. 17. NUMBER OF CUSTOMERS AND DOMESTIC OF ELECTRICITY SOLD BY AFFILIATED TO THE MINISTRY OF ENERGY**

Year	Customers	Domestic sales of electricity (mln kW h)
1375.....	12854735	69671
1380.....	16345450	97171
1385.....	20559946	144597
1388.....	24191259	168438
1389.....	25692719	184182
1390.....	27164768	183905
1391.....	28751529	194148
<b>1392.....</b>	<b>30287179</b>	<b>203088</b>

*Source: Ministry of Energy.*

## 9. 18. NUMBER OF DIFFERENT TYPES OF CUSTOMERS

(customer)

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
1388.....	24191259	19844427	952043	201912	161380	3031497
1389.....	25692719	21048404	1005121	258138	158538	3222518
1390.....	27164768	22224100	1082528	284781	174255	3399104
1391.....	28751529	23467188	1180911	307329	184861	3611240
<b>1392.....</b>	<b>30287179</b>	<b>24670834</b>	<b>1282618</b>	<b>329995</b>	<b>193628</b>	<b>3810104</b>
East Azarbayejan.....	1548589	1236558	57046	16320	13222	225443
West Azarbayejan.....	1057444	870824	25261	16377	4883	140099
Ardebil.....	454737	380304	15485	3246	2506	53196
Esfahan.....	2229500	1787024	71847	36817	25800	308012
Alborz.....	1097964	902540	62780	4187	5136	123321
Ilam.....	186179	156544	6739	2330	1023	19543
Bushehr.....	370129	305800	10727	3190	2038	48374
Tehran.....	5949420	4576993	435136	9632	34458	893201
Chaharmahal&Bakhtiyari.....	299583	254432	8333	5051	1994	29773
South Khorasan.....	316211	267252	12676	4179	1973	30131
Khorasan-e-Razavi.....	2394734	1987270	79979	17787	15627	294071
North Khorasan.....	299460	256564	9343	2745	1300	29508
Khuzestan.....	1353597	1129745	40719	8373	3774	170986
Zanjan.....	378062	315127	12288	6889	2931	40827
Semnan.....	327868	260630	16973	4561	4033	41671
Sistan&Baluchestan.....	657246	556798	20432	10326	2023	67667
Fars.....	1690715	1408974	48119	35914	11745	185963
Qazvin.....	500566	407026	28412	4972	3813	56343
Qom.....	462199	381584	11942	2953	5354	60366
Kordestan.....	540025	462474	12787	7868	2274	54622
Kerman.....	974388	837322	26149	12696	3791	94430
Kermanshah.....	654678	554419	19123	6576	2231	72329
Kohgiluyeh&Boyerahmad.....	208167	180585	6730	2189	987	17676
Golestan.....	606647	503046	25321	7717	2331	68232
Gilan.....	1195116	948257	53495	14367	4530	174467
Lorestan.....	534356	460804	12838	6381	2450	51883
Mazandaran.....	1608429	1307813	68699	42159	10722	179036
Markazi.....	617531	518710	21413	8479	5427	63502
Hormozgan.....	585794	480189	25772	7229	2579	70025
Hamedan.....	635745	526434	22260	10806	4302	71943
Yazd.....	552100	448792	13794	7679	8371	73464

Source: Ministry of Energy.

**9. 19. NUMBER OF VILLAGES AND RURAL HOUSEHOLDS ELECTRIFIED BY REGIONAL AND OSTANS' POWER COMPANIES**

Description	Villages	Households enjoying electricity
1375 .....	35074	3318832
1380 .....	45359	4056072
1385 .....	50985	4427849
1388 .....	52815	4241509
1389 .....	53461	4251123
1390 .....	54116	4261123
1391 .....	54561	4268473
<b>1392 .....</b>	<b>55191</b>	<b>4277893</b>
<i>Azarbajejan Regional Power Company</i>	<b>7229</b>	<b>576537</b>
East Azarbajejan .....	2760	296208
West Azarbajejan .....	2893	210176
Ardebil .....	1576	70153
<i>Esfahan Regional Power Company</i>	<b>2466</b>	<b>381843</b>
Esfahan .....	1744	296635
Chaharmahal&Bakhtiyari.....	722	85208
<b>Bakhtar Regional Power Company</b>	<b>4840</b>	<b>389381</b>
Markazi .....	1182	124254
Hamedan .....	1121	164930
Lorestan .....	2537	100197
<i>Tehran Regional Power Company</i>	<b>1010</b>	<b>192815</b>
Tehran .....	821	174581
Qom .....	189	18234
<i>Khorasan Regional Power Company</i>	<b>5541</b>	<b>544402</b>
South Khorasan .....	1416	124160
Khorasan-e-Razavi .....	3232	326797
North Khorasan .....	893	93445



**9. 19. NUMBER OF VILLAGES AND RURAL HOUSEHOLDS ELECTRIFIED BY REGIONAL AND OSTANS' POWER COMPANIES (continued)**

Description	Villages	Households enjoying electricity
<b><i>Khuzestan Regional Power Company</i></b>	<b><i>5198</i></b>	<b><i>259048</i></b>
Khuzestan .....	3627	205173
Kohgiluyeh&Boyerahmad .....	1571	53875
<b><i>Zanjan Regional Power Company</i></b>	<b><i>1769</i></b>	<b><i>164187</i></b>
Zanjan .....	921	91462
Qazvin .....	848	72725
<b><i>Semnan Regional Power Company</i></b>	<b><i>501</i></b>	<b><i>35938</i></b>
Semnan.....	501	35938
<b><i>Sistan&amp;Baluchestan Regional Power Company</i></b>	<b><i>4001</i></b>	<b><i>44032</i></b>
Sistan&Baluchestan .....	4001	44032
<b><i>Gharb Regional Power Company</i></b>	<b><i>4869</i></b>	<b><i>298789</i></b>
Kermanshah .....	2490	126923
Kordestan .....	1772	127260
Ilam .....	607	44606
<b><i>Fars Regional Power Company</i></b>	<b><i>3632</i></b>	<b><i>322233</i></b>
Fars.....	3121	282398
Bushehr .....	511	39835
<b><i>Kerman Regional Power Company</i></b>	<b><i>4678</i></b>	<b><i>233929</i></b>
Kerman.....	4678	233929
<b><i>Gilan Regional Power Company</i></b>	<b><i>3002</i></b>	<b><i>285893</i></b>
Gilan.....	3002	285893
<b><i>Mazandaran Regional Power Company</i></b>	<b><i>3886</i></b>	<b><i>368196</i></b>
Golestan .....	895	106236
Mazandaran.....	2991	261960
<b><i>Hormozgan Regional Power Company</i></b>	<b><i>1650</i></b>	<b><i>125831</i></b>
Hormozgan.....	1650	125831
<b><i>Yazd Regional Power Company</i></b>	<b><i>919</i></b>	<b><i>54839</i></b>
Yazd .....	919	54839

Source: Ministry of Energy.

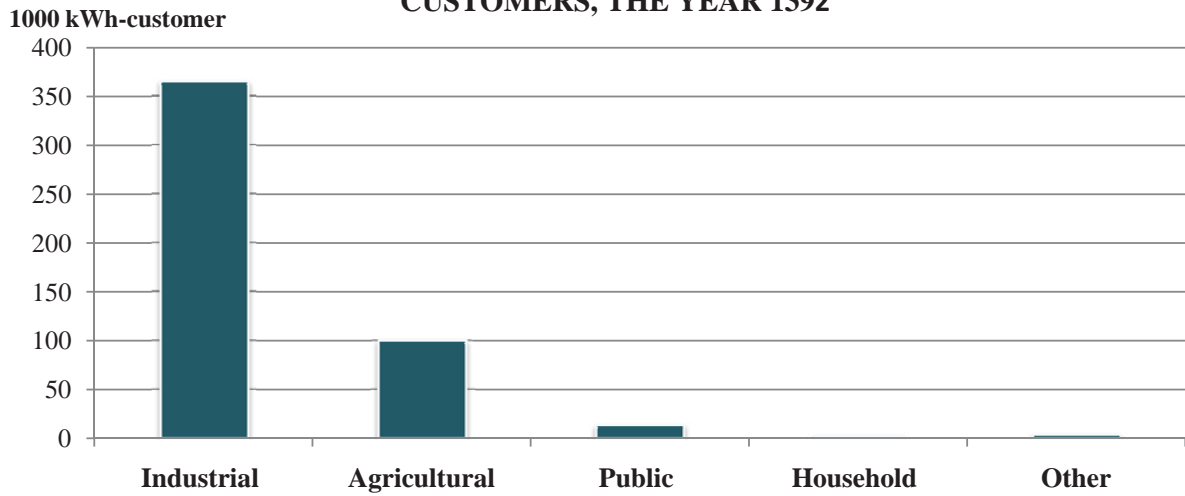
**9. 20. DOMESTIC SALES OF ELECTRICITY BY REGIONAL POWER COMPANIES BY  
TYPE OF USE AND OSTANS**

(mln KW hours)

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
1388.....	168438	55629	21825	21413	53971	3675	11014
1389.....	184182	60908	21308	24189	61483	3568	12726
1390.....	183905	56771	16808	29965	63945	3752	12664
1391.....	194148	61350	17810	31647	67107	3635	12599
<b>1392.....</b>	<b>203088</b>	<b>64379</b>	<b>17831</b>	<b>33103</b>	<b>70634</b>	<b>3765</b>	<b>13376</b>
East Azarbayejan.....	6770	1984	527	988	2633	165	474
West Azarbayejan.....	4149	1513	301	927	980	146	282
Ardebil.....	1410	541	125	224	365	47	108
Esfahan.....	20350	3588	1122	2582	11940	285	833
Alborz.....	4796	1755	489	638	1387	110	418
Ilam.....	1134	403	215	152	288	27	48
Bushehr.....	4758	2925	709	130	635	56	304
Tehran.....	28749	10306	4772	2127	6510	415	4619
Chaharmahal&Bakhtiari.....	1467	393	101	474	388	49	62
South Khorasan.....	1300	335	132	514	185	62	73
Khorasan-e-Razavi.....	14009	3669	850	4830	3516	285	860
North Khorasan.....	1380	364	86	326	521	25	58
Khuzestan.....	23569	10428	1548	1779	8639	270	905
Zanjan.....	3062	497	135	546	1729	60	96
Semnan.....	2799	443	173	660	1380	47	96
Sistan&Baluchestan.....	4220	2172	580	705	344	180	240
Fars.....	11225	3438	1022	3773	2105	244	642
Qazvin.....	4370	689	223	958	2293	58	148
Qom.....	2823	866	249	468	976	52	212
Kordestan.....	1853	833	141	461	263	45	109
Kerman.....	9055	2213	583	3410	2379	144	323
Kermanshah.....	2875	996	436	415	780	90	159
Kohgiluyeh&Boyerahmad.....	1128	496	120	126	294	35	58
Golestan.....	2531	1141	209	443	502	65	171
Gilan.....	4346	1821	418	420	1161	150	376
Lorestan.....	3010	825	270	561	1142	84	128
Mazandaran.....	6627	2690	619	775	1845	192	506
Markazi.....	7385	895	238	1175	4815	91	170
Hormozgan.....	11817	4339	952	615	5268	91	553
Hamedan.....	3764	948	270	1212	1084	96	154
Yazd.....	6357	874	216	689	4290	99	189

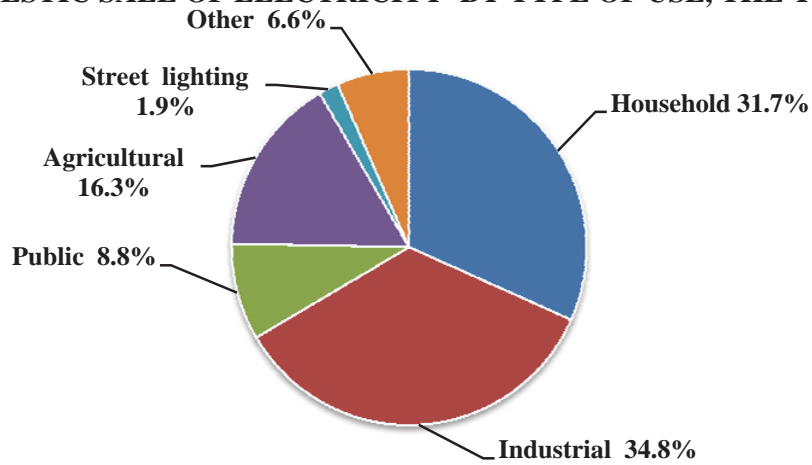
Source: Ministry of Energy.

**9.7. AVERAGE OF ELECTRICITY CONSUMPTION BY TYPE OF CUSTOMERS, THE YEAR 1392**



For data see Tables 9.18 and 9.20.

**9.8. DOMESTIC SALE OF ELECTRICITY BY TYPE OF USE, THE YEAR 1392**



For data see Table 9.20.

