THE ROLE OF NATIONAL STATISTICAL OFFICES IN DEVELOPING THE CLIMATE CHANGE STATISTICS, A CASE STUDY FROM THE STATISTICAL CENTRE OF IRAN

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This paper is a case study on the role of the national statistical offices (NSO) in developing the climate change statistics. The NSOs are the best resources for statistics on the progress made within the countries in line with the international agreed-upon development agenda. One duty of the NSOs is to provide timely, relevant, and reliable statistics to public and international agencies to report on the progress made in every country within the national or international development programs. This research looks at the statistical information on the environment and climate change issues which the Statistical Centre of Iran as the focal point for official statistics in the I.R. Iran publishes annually.

There are two chapters in the Iran Statistical Yearbook which present the statistics on the climate and environment. Chapter one (land and climate) includes statistics on 'geographical characteristics and administrative divisions,' and 'climate.' Chapter 2 (environment) presents statistics collected from various resources on water, soil, and air. The only available data on climate change in this publication is about Sustainable Development Goal indicator 13.2.2: total greenhouse gas emissions per year, which shows statistics on emission of greenhouse gases such as the vapour of H_2O, CO_2, NO_2, CH_4, O_3, HFCs, and PFCs. There are no statistics for other SDGs indicators related to climate change such as indicators 1.5.1, 1.5.2 and 1.5.4 for Goal one, indicator 2.4.1 for Goal 2, indicator 11.b.2 for Goal 11, indicators 13.1.1, 13.1.3, 13.3.1 for Goal 13. These data gaps show that climate change domain has been narrowed to the greenhouse gas emissions and statistics for other aspects of climate change aren't collected or available in a disaggregated way. The findings of this research show that various government agencies in Iran collect and publish the related statistics on the effects of climate change on the economic and ordinary lives of people but these statistics are not available in the Iran statistical Yearbook. This paper recommends that the NSOs in every country should take the responsibility of harmonizing and mobilizing the available statistical resources in their countries and make the needed arrangement among the stakeholders responsible for collecting and disaggregating data on the climate change indicators. It's suggested that every country should have a National Strategy for Development of Statistics. This strategy

can be a road map determining the duties of concerned agencies responsible for producing the statistics on the Sustainable Development Goals indicators. Moreover, this national strategy acts like a guideline for production and dissemination of official statistics needed by national and international users by full consideration of the Fundamental Principles of Official Statistics and using state-of-the-art technologies and modern methodologies, especially register-based methods.

1. Introduction

Climate change is a side effect of natural processes or external forces in the nature. The external forces include the generation of greenhouse gases mainly as a result of our production and consumption of goods. Over the period of 1951–2010, the warming of the atmosphere has been caused by human activities (IPCC, 2014). Climate change has shown its existence through significant phenomenon such as change in precipitation patterns, melting of glacial, increase in sea levels, and abundance and intensity of environmental disasters across the countries such as drought, flood and wildfire. The reason behind these changes can be attributed to increase in global temperature. The Intergovernmental Panel on Climate Change (IPCC) in 2001 reported that the world climate is changing and the global temperature is increasing (IPCC, 2001a).

The climate change is an issue of importance of which effects on human life and economic development should be a priority in every development plan. Knowing the impacts of the climate change on the social and economic lives of people requires precise, timely and up-to-date statistics which are the foundations upon them the policy-makers prepare the development strategy for the wellbeing of their people. The Statistical Commission of the United Nations in its 47th session (2016) decided to urge countries to develop and strengthen their environment statistics which are necessary for the effective monitoring of climate change. In this line, several goals, targets and indicators related for sustainable climate and environment were determined and the United Nations reports annually on the progress made in achieving these goals across countries.

In the past few years, various initiatives have been launched to try to curb climate change. Prominent among them are the 17 Sustainable Development Goals (SDGs) promoted by the United Nations since 2012. The title of one of these goals is Climate Action (Goal number 13).

The success of these initiatives is largely dependent on environmental literacy drives among populations who are often strangers to these major political agreements, and on the development of a culture of care for the climate. The environmental literacy is

to educate citizens, especially children, and raise their awareness regarding the causes and consequences of climate change on their lives.

The National Statistical Offices (NSO) in every country are the best resources for statistics on the progress made within each country in line with the international agree-upon development agenda. One duty of each NSOs is to provide timely, relevant, and reliable statistics to public and international agencies for reporting on the progress made in their country within the national or international development programs. The NSOs constitute an essential element in improving the ability of the government to make informed decisions, develop appropriate policies, manage the economy and social development reform policies, monitor improvements in the living standards of the people and report back this progress to the public using solid evidence.

This paper looks into the available data on the effects of climate change in the economy of the I.R. Iran which the Statistical Centre of Iran (SCI) publishes annually in its Statistical Yearbook. In the following sections, the research on the climate change effects on different economic aspects of the I.R. Iran is presented. Then, the statistics related to the climate change and global warming collected by the SCI as the focal point for the official statistics in Iran are assessed. The results of this research show that the statistics on climate change and its effects are not properly reflected by the SCI and these statistics have low status in the Iran Statistical Yearbook. At the end, it's proposed that due to existence of various organizations collecting the related statistics on the touch of climate change in the economy of Iran and also the limited domain of the statistics related to the impacts of climate change and global warming in the Iran statistical Yearbook, we need to have a mechanism for extending cooperation among the statistical stakeholders to harmonize the statistics flow and facilitate the access to needed statistics. This mechanism is a National Strategy for Development of Statistics (NSDS) which the SCI is benefiting to improve the quality of official statistics on Iran. This NSDS is necessary for mobilizing and harmonizing the statistics flow and methodologies for official statistics and also improving the coverage of statistics to show the impacts of global matters such as climate change on the lives and economic activities of Iranian people.

2. Research on Effects of Climate Change in the I.R. Iran

Dell et al. (2008) studied the climate change and economic growth in the past half-century. Their finding was that the climate change has been the one of the driving forces behind the decrease in the economic growth in the poor countries but this factor has had no significant impact on the economic growth in the developed countries. According to them, the climate change has resulted in fall in crop products and industrial production in the less developed countries.

Several studies with various topics have investigated the impacts of global warming issues and the effects of climate change on different aspects of the economy of Iran. These

studies covered different topics such as the economic growth at provincial level (Panahi and Darjani 2020), national sustainable management (Abbaspour and Tabibiyan, 2006), sensitive coastal ecosystems (Vafadar and Abedini, 2018), tourism in the southern coasts of Caspian Sea (Roradeh et al., 2018), the sensitivity of bioclimatic areas of Iran (Shaemi, 2008), effect of the environmental pollutants in the trade balance of the economy at provincial level (Javadi Pashaki et al., 2020) and the emission of carbon by different economic sectors (Akhbari, 2004; Manzoor and Haghighi, 2012; Ghezelbash and Esfandiari,2011; Nasrollahi and Ahmadi, 2013; Sadeghi et al., 2014; among others) and other related fields.

Abbaspour and Tabibiyan (2006) studied the challenges facing the policy-makers in the I.R. Iran for national sustainable management. According to them (2006:5 – 7) the effects of drought in the provinces is one of the environmental and economic challenges which needs urgent and responsive reactions by the authorities.

Shaemi (2008) used the statistics of a normal thirty years of synoptic station (1965–1995) to assess the sensitivity of bioclimatic areas of Iran toward the global warming. He assessed the rate of sensitivity of Iran bioclimatic regions by using Holdridge life zone model and hypothetical scenario. He found that some geographical areas in Iran such as Alborz and Zagrous Mountains have experienced the most environmental changes due to global warming. Cold temperate regions have experienced the highest change. The steppe and forest ecosystems had much sensitivity in new condition (drier and warmer conditions) but desert types had little change in warmer and drier conditions.

Ebrahimi (2010) studied the relation between climate change and water consumption in the agriculture sector in Mashhad province, Iran. He (2010:117) found that the water consumption in the agriculture sector of Iran would dramatically increase due to the global warming and climate change originated in industrialization, and greenhouse gasses emission. He proposed that the authorities should consider the solutions based on water management to tackle this problem.

Koocheki and Kamali (2010) evaluated the impacts of climate change on the growth and yield of rainfed wheat at the country level in Iran. They generated the weather forecast by using the General Circulation model based on the ICP scenarios for the target years of 2025 and 2050. They (2010:515 – 517) concluded that the potential impact of climate change on rainfed wheat yield was more tangible in eastern regions of Iran compared to the western areas. The overall country level reduction of rainfed wheat yield was estimated to be in the range of 16 to 25% and 22 to 32% for the years 2025 and 2050, respectively

Khaleghi et al. (2015) assessed the impact of climate change on the agriculture sector, production of the other sectors and national production in the Iran's economy. They (2015:117) found that for the period of 2000–2025, due to global warming the agriculture production in Iran will decrease by -5.37 percent, manufacturing sector by –

2.27 percent and services sector by -1.64 percent. Their results also showed that decreases in the national production due to this shock would be -9.5 percent. Decrease in the production of the agriculture sector will affect households in low deciles of rural areas and high deciles of urban areas more than other income groups in Iran.

Azaram et al. (2017) studied the effect of increased energy carriers' price on damages cost of pollution emission in Fasa city, Shiraz province. They found that a 50 present increase in the price of gasoil and electricity has led to decrease in wheat production and pollutant damage cost per hectare.

Vafadar and Abedini (2018) concluded that increase in temperature has severe effects on the economic activities of people who live in coastal areas of Iran. Since the main activities of these people are agriculture, fishing, and manufacturing, any change in the biodiversity of the seas and seasonal rivers of Iran happened by the increase in the air and water pollutants will increase the risk of financial uncertainty for these people.

Roradeh et al. (2018) investigated the effects of global warming on the tourism economy of the southern coasts of the Caspian Sea. They measured the Tourism Climate Index (TCI) for three provinces in the south area of Caspian Sea. The results of their study indicated that there would be an increase in the TCI of these provinces in the future and the global warming can't have negative effects on the tourism industry for these provinces.

Alibakhshi et al. (2019) investigated the effects of climate change on the agricultural market of Iran. They (2019:80) found that climate change will probably increase farmers' income in hot, cold, and temperate sub-climate areas. Their results also showed that the climate change will have negative effect on the net exports of wheat, barley and maize for 2025 and the country will remain an importer of these agricultural products. They emphasized that a price protection policy should be adopted to increase the consumer purchase power.

Malakoutikhah and Farajzadeh (2020) studied the effect of climate change on the economic growth of Iran. They used the Solow-Swan growth model to investigate economic growth under climate-changing environment. The growth models were estimated using time-series data for 1971–2016. They (2020:233) found that the increase in temperature will negatively affect economic growth in Iran. According to them (2020:233) one-degree increase in average temperature is expected to reduce Iranian GDP by 5–6. 6 percent.

Javadi Pashaki et al. (2020) calculated the pollution resulted from 33 economic activities in Sistan & Baluchestan province, Iran in the form of input-output table and the ecological footprint of pollutants in the trade balance of this province with the outside world. They found that 372,617 tons of virtual gases have been exported to the outside world and 514,669 tons of virtual gases have been imported to this province.

Panahi and Darjani (2020:79) concluded that the increase in temperature has led to fall in the economic growth experienced in the provinces of Iran.

Faryadi and Alavi (2021) conducted research on proposing an appropriate participatory policy for mitigation of the global warming effects in the Tehran Province, the capital of Iran. They used the LARS-WG software to model the climate data for the future of this city. According to their modeling, the average temperature in this city will probably increase for the period of 2046–2065 and this city will experience decline in precipitation. In this regard, they proposed that people should be involved in the process of policy making for adopting necessary provisions for curtailing the emission of greenhouse gases. According to them people play a key role in realization and achieving of low carbon policies.

3. Iran Statistical Yearbook and Statistics on Climate Change

In the beginning of the twenty-first century, the world leaders emphasized the environmental protection as part of the Millennium Development Goals (MDGs) and one of the three principles of sustainable development (environmental sustainability, economic sustainability, and social sustainability) due to its increasing importance and impacts on other socio-economic activities. In this regard, the SCI considered a separate chapter on 'Environment Statistics' in the Iran Statistical Yearbook since 2013.

There are two chapters in this publication which present the statistics on the climate and environment. Chapter one (land and climate) includes statistics on 'geographical characteristics and administrative divisions,' and 'climate.' Chapter 2 (environment) presents statistics collected from various resources on water, soil, and air.

The only available data on climate change in this publication is about SDGs indicator 13.2.2: Total greenhouse gas emissions per year, which shows statistics on emission of greenhouse gases such as the vapour of H_2O, CO_2, NO_2, CH_4, O_3, HFCs, and PFCs which are available in the tables 2.9 to 2.15. The Ministry of Energy is the source of this statistic. The table 2.9 in the Iran Statistical Yearbook presents statistics on emission of pollutant and greenhouse gases resulted from burning of fuels in agriculture sector by type (table 1).

Table 1.

Statistics presented in the table 2.9 of the Iran Statistical Yearbook (2018-2019)

Year	NO$_X$	SO$_2$	SO$_3$	CO	SPM	CO$_2$	CH$_4$	N$_2$O
1385[9]	66602	68185	415	18968	29072	11114290	000	000
1390	61058	62829	382	14168	26673	12376837	643	4148
1393	53635	55140	338	12150	23443	12409905	586	3647
1394	50629	51951	317	11259	22141	12521393	566	3447
1395	50305	51610	315	11397	21997	13157453	577	3425
1396	46248	47619	292	10214	20211	12967919	544	3148
1397	*50239*	*51771*	*318*	*11038*	*21953*	*14526008*	*598*	*3420*
Motor spirit	2	//	0	50	//	340	//	//
Burning oil	10	47	0	15	0	50585	2	//
Gas oil	50162	51416	314	10973	21946	8833744	495	3410
Fuel oil	66	308	5	//	7	21183	1	//
Natural gas	0	0	0	0	0	5620156	100	10

The table 2.10 in the Iran Statistical Yearbook includes statistics on emission of pollutants and greenhouse gases resulted from burning of fuels in manufacturing sector by type (table 2).

Table 2.

Statistics presented in the table 2.10 of the Iran Statistical Yearbook (2018-2019)

Year	NO$_X$	SO$_2$	SO$_3$	CO	SPM	CO$_2$	CH$_4$	N$_2$O
1385	131299	138668	1995	16473	15157	61522460	000	000
1390	171045	187546	2769	24900	17340	97431899	2102	277
1393	183806	172457	2527	22371	18675	107210113	2258	291
1394	165955	107698	1545	17011	16767	100018058	2030	249
1395	172371	98739	1401	18426	17442	104764985	2109	256
1396	179655	94109	1322	23410	18185	109900745	2203	266
1397	*185569*	*92365*	*1286*	*21952*	*18871*	*114048412*	*2284*	*275*
Motor sprit	574	64	0	14890	55	101215	4	1
Burning oil	65	311	0	101	0	337761	14	3
Gas oil	14375	45137	575	575	4312	8100802	328	66
Fuel oil	9913	46525	711	4	991	3200905	124	25
Liquefied gas	0	//	0	2	0	3857	0	//
Natural gas	160642	328	0	6381	13512	101463357	1809	181
Coke gas	000	000	000	000	000	105027	2	0
Blast furnace gas	000	000	000	000	000	735488	3	0

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[9] It is the Iranian Year which usually begins on the day of 21 March of Gregorian calendar. To find the corresponding year of Gregorian calendar, add 621 or 622 (depending on the time of the year) to a solar Hijri year. For example, the corresponding year of the year 1397 in Gregorian calendar is (21 March 2018-20 March 2019).

The table 2.11 in the Iran Statistical Yearbook includes statistics on emission of pollutants and greenhouse gases resulted from burning of fuels in the transportation sector by type (table 3).

Table 3.

Statistics presented in the table 2.11 of the Iran Statistical Yearbook (2018-2019)

Year	NO_X	SO_2	SO_3	CO	SPM	CO_2	CH_4	N_2O
transportation sector								
1385	853845	350932	3725	9512573	273446	111500973	0	0
1390	877376	415104	4629	7794380	311352	127119584	42746	5841
1393	938677	409938	4431	9034641	324425	137610013	48718	6385
1394	881766	370024	3943	9202907	293876	132880460	49806	6086
1395	907030	405813	4461	9736569	295212	139062250	51996	6288
1396	956277	392839	4154	10428797	311749	144516638	54442	6687
1397	*1018770*	*410578*	*4311*	*11512870*	*325961*	*153892123*	*57858*	*6685*
Motor sprit	437536	48615	0	11343525	42133	77105523	36717	3560
Gas oil	535717	333335	3968	142858	261906	55906731	2942	2942
Liquefied gas	000	000	000	000	000	11164	16	1
Natural gas	000	000	000	000	000	16424670	18152	59
Fuel oil	146	683	10	0	15	47016	000	000
Jet fuel (JP_4)	561	62	0	14538	0	99372	1	3
Jet oil fuel (ATK)	44811	27882	332	11950	21907	4297647	30	120
Road and marine transportation								
1385	813084	326264	3433	9466815	254052	107402790	0	0
1390	830800	386634	4291	7756310	288974	122496090	42667	5367
1393	886059	377672	4048	8996824	299064	132396374	48625	5827
1394	827777	336794	3548	9170258	267761	127553954	49713	5529
1395	845564	367971	4011	9699925	265472	132997296	51888	5640
1396	890889	352460	3674	10395935	280074	138083562	54328	6000
1397	*973389*	*382632*	*3979*	*11486125*	*304053*	*149495104*	*57828*	*6562*
Motor sprit	437526	48614	0	11343267	42132	77105523	36717	3560
Gas oil	535717	333335	3968	142858	261906	55906731	2942	2942
Liquefied gas	000	000	000	000	000	11164	16	1
Natural gas	000	000	000	000	000	16424670	18152	59
Fuel oil	146	683	10	0	15	47016	000	000
Railway transportation	8200	5102	61	2192	4009	804228	0	0
1385	9234	5746	68	2462	4515	963676	54	372
139	11043	6871	82	2945	5399	1152433	65	445
1393	10908	6787	81	2909	5333	1138345	64	439

1394	12788	7957	95	3410	6252	1334546	75	515
1395	13580	8450	101	3621	6639	1417234	79	547
1396	*000*	*000*	*000*	*000*	*000*	*000*	*000*	*000*
1397	000	000	000	000	000	000	000	000
Air transportation								
138	32561	19565	231	43565	15385	3293955	0	0
1390	`	22724	269	35607	17863	3659817	26	102
1393	41575	25395	301	34872	19962	4061206	28	114
1394	43081	26442	314	29739	20783	4188161	29	117
1395	48677	29885	355	33234	23488	4730408	33	132
1396	51808	31929	379	29241	25035	5015843	35	140
1397	*45381*	*27946*	*332*	*26746*	*21908*	*4397019*	*31*	*123*
Jet fuel (JP$_4$)	561	62	0	14538	0	99372	1	3
Jet oil fuel (ATK)	44811	27882	332	11950	21907	4297647	30	120
Motor spirit	10	1	0	258	1	000	000	000

Table 2.12 in the Iran Statistical Yearbook includes statistics on emission of pollutants and greenhouse gases resulted from burning of fuels in transportation, households, trade, and public sectors (table 4).

Table 4.
Statistics presented in the table 2.12 of the Iran Statistical Yearbook (2018-2019)

Year	NO$_X$	SO$_2$	SO$_3$	CO	SPM	CO$_2$	CH$_4$	N$_2$O
1385	121164	87244	956	71176	12576	125869250	000	000
1390	115886	52953	583	47103	11286	136859996	3837	492
1393	115289	37170	392	48079	11194	137220803	4166	523
1394	116817	30116	296	47026	11371	127922931	4170	518
1395	125916	29764	291	51406	12296	148849653	4338	534
1396	118776	26641	261	48869	11606	140532545	4159	510
1397	*129115*	*24948*	*250*	*52839*	*12635*	*150632787*	*4312*	*521*
Motor spirit	825	92	0	21377	79	145309	6	1
Burning oil	1108	5316	0	1728	0	5768195	241	48
Gas oil	5123	16086	205	205	1025	2886969	117	23
Fuel oil	627	2945	45	0	63	202584	8	2
Liquefied gas	1343	29	0	13437	0	6168672	98	10
Natural gas	120089	480	0	16092	11469	129854667	2315	231
Animal waste	000	000	000	000	000	144538	43	6
Bush and thorn	000	000	000	000	000	1004201	301	40
Firewood	000	000	000	000	000	4415875	1183	158
Charcoal	000	000	000	000	000	976	0	//
Coal	000	000	000	000	000	40801	0	2

Table 2.13 in the Iran Statistical Yearbook includes statistics on emission of pollutants and greenhouse gases resulted from burning of fuels in refinery sector by type (table 5).

Table 5.
Statistics presented in the table 2.13 of the Iran Statistical Yearbook (2018-2019)

Year	NO$_X$	SO$_2$	SO$_3$	CO	SPM	CO$_2$	CH$_4$	N$_2$O
1385	000	000	000	000	000	000	000	000
1390	000	000	000	000	000	12227299	263	34
1393	000	000	000	000	000	15574965	322	40
1394	000	000	000	000	000	15049435	302	36
1395	000	000	000	000	000	15297163	322	40
1396	000	000	000	000	000	15965245	313	35
1397	*000*	*000*	*000*	*000*	*000*	*17267316*	*325*	*35*
Gas oil	000	000	000	000	000	226178	9	2
Fuel oil	000	000	000	000	000	313521	12	2
Natural gas	000	000	000	000	000	12147759	217	22
Refinery gas	000	000	000	000	000	4029165	79	8
Liquefied gas	000	000	000	000	000	550692	9	1

Table 2.14 in the Iran Statistical Yearbook includes statistics on emission of pollutants and greenhouse gases resulted from burning of fuels in power plants affiliated to the Ministry of Energy, private sector, and large industries by type sector by type (table 6).

Table 6.
Statistics presented in the table 2.14 of the Iran Statistical Yearbook (2018-2019)

Year	NO$_X$	SO$_2$	SO$_3$	CO	SPM	CO$_2$	CH$_4$	N$_2$O
1385	172332	192733	2943	222	20728	110207121	0	0
1396	634884	709408	5130	148500	30724	165184877	4087	666
1393	651610	627934	4586	177660	31105	177744913	4243	654
1394	627724	437381	4158	162624	30330	174010543	4201	630
1395	641280	295919	2481	160434	25154	171686989	3622	485
1396	651833	239623	2044	156100	25159	182746913	3701	471
1397	*672622*	*239911*	*2259*	*151021*	*25563*	*184880721*	*3722*	*483*
Ministry of Energy								
Gas oil	18836	10432	308	620	1278	3908941	146	29
Natural gas	211840	0	0	79144	6144	55754272	987	99
Fuel oil	25403	152285	711	48832	2974	11550076	372	74
Private sector								
Gas oil	98358	43266	1124	1464	4666	14090575	534	107
Natural gas	299879	0	2	18872	9646	91226157	1549	155
Fuel oil	5044	33906	114	20	477	1912013	60	12
large industries								
Gas oil	9	21	0	2	2	3786	0	//

Natural gas	13252	0	0	2066	376	3706044	60	6
Coke gas [2]	000	000	000	000	000	86992	2	0
Blast furnace gas[2].	000	000	000	000	000	2641866	10	1

Table 2.15 presents statistics on emission of pollutant and greenhouse gases resulted from burning of fuels in power plants affiliated to the ministry of energy, private sector, and large industries by type of power plant and pollutant sector by type (table 7).

Table 7.

Statistics presented in the table 2.15 of the Iran Statistical Yearbook (2018-2019)

Description	NO_X	SO_2	SO_3	CO	SPM	CO_2	CH_4	N_2O
Total	*672622*	*239911*	*2259*	*151021*	*25563*	*184880721*	*3722*	*483*
Ministry of Energy								
Thermal plant	146671	152803	719	124395	6260	40728935	898	127
Gas power plant	44892	5289	165	1730	2269	17258946	333	41
Combined cycle	64394	4257	129	2472	1845	13159150	272	33
Diesel power plant	122	369	6	0	23	66258	3	1
Private sector								
Thermal plant	48432	34242	122	12233	2035	16485907	309	37
Gas power plant	64407	17351	376	2721	4706	35281155	684	86
Combined cycle	290442	25579	742	5401	8047	55461682	1151	150
Large industries	13261	21	0	2069	378	6438688	73	7

Studying other chapters of Iran Statistical Yearbook showed that there are no statistics for the SDGS indicators related to climate change such as indicators 1.5.1 (number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population), 1.5.2 (Direct economic loss attributed to disasters in relation to global gross domestic product (GDP) and 1.5.4 (proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies) for Goal one (end poverty in all its forms everywhere), indicator 2.4.1 (proportion of agricultural area under productive and sustainable agriculture) for Goal 2 (end hunger, achieve food security and improved nutrition and promote sustainable agriculture), indicator 11.b.2 (proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies) for Goal 11 (makes cities and human settlements inclusive, safe, resilient and sustainable), indicators 13.1.1 (number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population), indicator 13.1.3 (proportion of local governments that adopt and implement local disaster risk reduction

strategies in line with national disaster risk reduction strategies), 13.3.1 [Extent to which (i) global citizenship education and [ii] education for sustainable development are mainstreamed in [a] national education policies; (b) curricula; (c) teacher education; and [d] student assessment] for Goal 13 (take urgent action to combat climate change and its impacts). This situation and data gaps result in two assumptions. One assumption is that the climate change has been narrowed to the greenhouse gas emissions. The second assumption is that maybe the statistics for other aspects of climate change are not available in a disaggregated way in Iran Statistical Yearbook or they are available in other places.

In chapter one on climate, meteorological data of capitals of provinces are presented in tables 1.7, 1.8, 1.9, 1.12, 1.13, and 1.15 and the source for this statistic is I. R I. Meteorological Organization. In table 1.7 statistics on maximum daily precipitation, mean of relative humidity, number of frosty days, dusty days, bright sunshine and maximum wind speed (table 8, annex one) are shown. These data are useful to track the changes in the temperature of Iran and finding whether or not the temperature of this country is subject to global warming or not. In table 1.8 of the Iran Statistical Yearbook, the statistics on highest maximum temperature, lowest minimum temperature and average monthly temperature are available (table 9, annex one). In table 1.9 of the Iran Statistical Yearbook, the statistics on the total precipitation in capitals of provinces are presented (table 10, annex one). These statistics are useful to find the changes in the amount of precipitation in this country. In table 1.12 of the Iran Statistical Yearbook, the statistics on total annual precipitation in capitals of provinces in different years are presented (table 11, annex one). In table 1.13 of the Iran Statistical Yearbook the average annual height of precipitation in provinces in different years is compared (table 12, annex one). These data are important to study and track the drought in the provinces. In table 1.15 of the Iran Statistical Yearbook, the statistics on volumes of precipitation in the main basins for different aquatic years are shown (table 13, annex one).

The statistics available in the chapter one is useful for tracking the changes in precipitation patterns in Iran but no information about the water change in Caspian Sea and increase in sea level (if available) in the Persian Gulf or Oman Sea, which is connected to the Indian Ocean, can be found in this chapter.

In other chapters of the Iran Statistical Yearbook many statistics are available which researchers can use to assess the impact of climate change in different areas. In chapter 2 on environment, statistics on area of forests, ranges, desert (table 2.2), cases and areas under conflagration in forests and ranges (table 2.3), combating desertification (table 2.5) are also available (table 14, table 15, table 16 respectively). The source for these statistics is the Forests, Range and Watershed Management Organization.

Table 8.

Statistics presented in the table 2.2 of the Iran Statistical Yearbook (2018-2019)

Province	Forests	Ranges				Desert phenomena [1]
		Total	Good (dense)	Fair (semi-dense)	Poor (low dense)	
Total country	*14319063*	*84814991*	*7181250*	*21419151*	*56214590*	*32576492*
East Azarbayejan	143467	2473441	703729	1359707	410005	112370
West Azarbayejan	100958	2472508	553792	1063376	855340	181103
Ardebil	51665	903896	427906	457642	18349	1337
Esfahan	411847	6328655	280070	403988	5644597	2985827
Alborz	2420	438169	187209	125480	125480	12657
Ilam	634461	1112357	27835	479788	604735	33923
Bushehr	204306	1262995	8777	409208	845010	331682
Tehran	23895	848298	220289	349042	278967	143529
Chaharmahal & bakhtiyari	335654	908152	182315	390823	335013	118893
South Khorasan	712033	6288092	6184	632226	5649682	1129364
Khorasan-e-Razavi	667341	6558356	304530	2147046	4106780	593620
North Khorasan	424740	1555206	112615	627244	815348	43279
Khuzestan	938326	2477691	571073	1353096	553522	521341
Zanjan	61113	1137060	240442	425301	471317	79931
Semnan	340168	3731083	210807	585093	2935183	5112294
Sistan & Baluchestan	370786	10648499	217096	908129	9523274	4804956
Fars	2218925	7319987	57706	1735276	5527005	669725
Qazvin	26871	853485	252550	430122	170813	29151
Qom	4149	723019	2498	34830	685691	176383
Kordestan	372307	1294397	437855	494212	362330	3354
Kerman	591823	8186300	81323	2214046	5890931	7860548
Kermanshah	528507	1188438	164352	476166	547920	25916
Kohgiluyeh & Boyerahmad	795786	478812	63966	144418	270428	40427
Golestan	415221	862825	381317	401887	79621	26
Gilan	545576	244986	98843	131684	14459	1779
Lorestan	1226367	883505	146857	672209	64439	11741
Mazandaran	1006518	584711	357671	205068	21973	1086
Markazi	1548	1772951	465804	1140366	166781	73143
Hormozgan	1053745	4093342	712	210907	3881724	1515013
Hamedan	1441	665767	323505	283977	58285	26372
Yazd	107096	6518007	91623	1126795	5299589	5935725

Table 9.

Statistics presented in the table 2.3 of the Iran Statistical Yearbook (2018-2019)

Year	Conflagration (case)			Area under conflagration (ha)		
	Total	Forests	Ranges	Total	Forests	Ranges
1380	801	369	432	7744.0	3184.0	4560
1385	1237	611	626	11132.0	2752.0	8380
1390	1324	447	877	36972.0	23656.0	13316
1393	2016	1134	882	18828.0	6789.0	12039
1394	2088	887	1201	18480.0	4716.0	13764
1395	2298	905	1393	21512.0	8712.0	12800
1396	1780	1179	601	9595.0	5869.0	3726
1397	*1312*	*814*	*498*	*4745.8*	*2648.8*	*2097*

Table 16.

Statistics presented in the table 2.5 of the Iran Statistical Yearbook (2018-2019)

Year and province	Plant nursery (ha)	Plastic bag seedling (1000)	Plantation (ha)	Seeding (ha)
1380	25.0	4290.0	34556	59610
1385	32.0	7349.0	31056	27724
1390	13.0	2569.0	8212	4748
1393	1.0	1163.0	13807	878
1394	17.0	1467.0	32134	2148
1395	7.2	535.6	11443	764
1396	124.0	40577.0	48880	642
1397	*13.6*	*531.5*	*14434*	*700*
East Azarbayejan	0.0	0.0	0	0
West Azarbayejan	0.0	20.0	0	0
Esfahan	0.0	0.0	78	0
Alborz	0.0	0.0	0	0
Ilam	0.0	0.0	40	0
Bushehr	0.0	57.0	0	0
Tehran	0.0	0.0	184	0
South Khorasan	0.5	43.0	621	0
Khorasan-e-Razavi	3.0	120.0	1080	0
North Khorasan	0.0	0.0	0	0
Khuzestan	0.0	0.0	11720	0
Semnan	0.5	40.0	0	700
Sistan & Baluchestan	9.6	43.5	0	0
Fars	0.0	0.0	0	0
Qazvin	0.0	0.0	0	0
Qom	0.0	0.0	0	0
Kerman	0.0	115.0	70	0
Golestan	0.0	0.0	308	0
Markazi	0.0	93.0	283	0

Hormozgan	0.0	0.0	0	0	
Hamadan	0.0	0.0	50	0	
Yazd	0.0	0.0	0	0	

Year and province	Seed gathering (ton)	Mulching (ha)	Windbreak (not living) (km)	Windbreak (ha)	Preservation (ha)	Preparation of projects for combating desertification (1000ha)
1380	489.0	1650	468	0	703937	289
1385	230.0	4452	42	1087	816831	254
1390	72.0	0	23	518	408404	8000
1393	92.0	0	1	1493	247073	23
1394	77.0	605	17	336	210602	0
1395	28.0	7	318	808	693816	25
1396	37.0	21416	290	1476	785346	78
1397	*38.1*	*10622*	*0*	*465*	*457218*	*0*
East Azarbayejan	0.0	0	0	0	0	0
West Azarbayejan	0.0	0	0	90	0	0
Esfahan	0.0	0	0	135	53571	0
Alborz	0.0	425	0	0	1500	0
Ilam	0.0	0	0	0	0	0
Bushehr.	0.0	0	0	0	0	0
Tehran	0.0	0	0	0	47200	0
South Khorasan	11.0	0	0	0	0	0
Khorasan-e-Razavi	13.0	0	0	0	100	0
North Khorasan	0.0	0	0	0	0	0
Khuzestan	0.0	8020	0	0	112000	0
Semnan	14.0	550	0	48	100000	0
Sistan & Baluchestan	//	0	0	0	0	0
Fars	0.0	0	0	0	0	0
Qazvin	0.0	0	0	0	10500	0
Qom	0.0	1157	0	0	6787	0
Kerman	0.0	0	0	192	0	0
Golestan	0.0	0	0	0	0	0
Markazi	0.0	470	0	0	125000	0
Hormozgan	0.0	0	0	0	0	0
Hamadan	0.0	0	0	0	0	0
Yazd	0.0	0	0	0	560	0

In chapter three, the statistics on registered death for urban and rural areas, age groups are presented in tables 3.26 and 3.27 but these data are not disaggregated (table 17 and table 18 respectively). The source for these statistics is National Organization for Civil

Registration. The statistics for reason of death due to natural disaster or other reasons are not available, too.

Table 18.

Statistics presented in the table 3.27 of the Iran Statistical Yearbook (2018-2019)

Year and province	Total			Urban areas	Rural areas
	Both sexes	Male	Female		
1380	421525	223669	197856	243435	178090
1385	408566	229489	179077	257436	151130
1390	383504	214707	168750	278141	98343
1393	446333	222221	223739	302184	144149
1394	374827	210117	164590	280765	94062
1395	369751	207884	161774	274870	94788
1396	376731	210691	165987	278448	98230
1397	*377245*	*211518*	*165675*	*279525*	*97668*
East Azarbayejan	22530	12352	10178	16042	6488
West Azarbayejan	15081	8302	6779	9555	5526
Ardebil	6877	3780	3097	4637	2240
Esfahan	23970	13333	10602	21068	2867
Alborz	10678	6065	4613	10255	423
Ilam	2515	1445	1070	1626	889
Bushehr	4162	2356	1806	2920	1242
Tehran	57882	32959	24923	57633	249
Chaharmahal & Bakhtiyari	4100	2423	1677	2526	1574
South Khorasan	3827	2073	1754	2059	1768
Khorasan-e-Razavi	30277	16476	13795	21503	8768
North Khorasan	4642	2561	2081	2455	2187
Khuzestan	20131	11305	8825	16902	3228
Zanjan	5275	2940	2335	3289	1986
Semnan	3387	1872	1514	2585	801
Sistan & Baluchestan	13528	7568	5959	7178	6349
Fars	21610	12326	9284	15738	5872
Qazvin	5999	3350	2649	3982	2017
Qom	5935	3323	2612	5594	341
Kordestan	7325	4184	3141	4652	2673
Kerman	13340	7493	5847	9813	3527
Kermanshah	10976	6518	4458	8129	2847
Kohgiluyeh & Boyerahmad	2773	1634	1139	1621	1152
Golestan	8989	4978	4004	4760	4222
Gilan	16575	9050	7525	9384	7191
Lorestan	8938	5133	3805	6098	2840
Mazandaran	16587	8966	7621	9169	7418
Markazi	7764	4376	3387	4671	3092
Hormozgan	6505	3875	2630	3394	3111
Hamedan	10330	5879	4451	6173	4157
Yazd	4737	2623	2114	4114	623

Age group	Total			Urban areas			Rural areas		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Total	*357687*	*203195*	*154492*	*267384*	*152461*	*114923*	*90303*	*50734*	*39569*
Under 1 year	7530	4060	3470	5612	3029	2583	1918	1031	887
1 – 4 years	3385	1825	1560	2367	1265	1102	1018	560	458
5 – 9 years	2431	1324	1107	1523	847	676	908	477	431
10 – 14 years	2132	1227	905	1426	798	628	706	429	277
15 – 19 years	4408	3128	1280	3126	2232	894	1282	896	386
20 – 24 years	5517	4093	1424	3969	2966	1003	1548	1127	421
25 – 29 years	6954	5040	1914	5218	3827	1391	1736	1213	523
30 – 34 years	8553	5764	2789	6390	4415	1975	2163	1349	814
35 – 39 years	9063	6149	2914	6912	4777	2135	2151	1372	779
40 – 44 years	9111	6090	3021	6959	4710	2249	2152	1380	772
45 – 49 years	11445	7691	3754	8981	6067	2914	2464	1624	840
50 – 54 years	14278	9340	4938	11422	7543	3879	2856	1797	1059
55 – 59 years	20220	13054	7166	15960	10370	5590	4260	2684	1576
60 – 64 years	25694	16006	9688	20135	12649	7486	5559	3357	2202
65 – 69 years	28838	16382	12456	22355	12970	9385	6483	3412	3071
70 – 74 years	31458	16870	14588	23973	13034	10939	7485	3836	3649
75 and over	163272	83306	79966	118398	59494	58904	44874	23812	21062
Not specified	3398	1846	1552	2658	1468	1190	740	378	362

In chapter 7 on oil and gas, the statistics on consumption of oil products are presented (table 7.4) but the statistics on consumption of fuels in different economicsectors are not available (table 19). The source for these statistics is the Ministry of Oil. Amount of emission of pollutants and greenhouse gases resulted from burning of fuels in economic sectors (agriculture, manufacturing, and transportation sectors) at provincial levels are not available. These statistics can be used to calculate the amount of greenhouse gases emitted.

Table 19.

Statistics presented in the table 7.4 of the Iran Statistical Yearbook (2018-2019)

Product	Year							
	1380	**1385**	**1390**	**1393**	**1394**	**1395**	**1396**	**1397**
Motor spirit	16723	26887	20884	25135	26856	25762	34317	000
Jet fuel G.P.4	157	99	000	000	000	000	000	000
Jet fuel A. T. K	943	1155	000	000	000	000	000	000
Kerosene	8954	7199	7257	7899	7322	7559	6218	000
Gas oil	25215	31471	29427	30683	31794	28131	29102	000
Fuel oil	15245	15644	19909	21920	18939	19747	9593	000
Lubricants	390	000	000	000	000	000	000	000
Bitumen	2100	4202 (2)	000	000	000	000	000	000
Liquefied gas	4163	3922	2739	1880	1447	1839	2079	000
Crude lubricants	351	1668	000	000	000	000	000	000
Benzinc solvents	12	42	000	000	000	000	000	000
Naphtha	2	42	000	000	000	000	000	000

The statistics on the other aspects of climate change impacts such as carbon emission per unit of output, carbon footprint-adjusted loans, environmental taxes and government expenditure on environmental protection alongside the statistics on emission of pollutants and gas emission per household and also the clean and green energy is not available in the Iran statistical yearbook.

A closer look at the current situation in the Iran Statistical Yearbook implies that there are other factors which we need to consider. If the statistics are not available in a publication, it does not necessarily mean that the statistics are ignored or not collected.

The NSO in each country is responsible for collection, compilation, analysis and publication of a wide range of statistical information about a wide range of activities. This fact doesn't prevent other government departments or institutions from collecting their own statistical data for their internal purposes. For example, the Demographic and Migration Statistics bureau of Iran National Organization for Civil Registration and Vital Statistics (CRVSID), which is responsible for registering the vital statistics (birth, death, marriage and divorce), collects and publishes the Iran vital statistics for different years.

In this publication, statistics on death, cause of death and age groups at provincial levels are available (figure 1). This information is needed for calculation of indicators 1.5.1

(number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population) and indicators 13.1.1 (number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population).

Figure 1.

Statistics on death [Cause of Death, Sex] based on ICD 10 available at Iran Vital statistics, Yearly summary published by Demographic and Migration Statistics of Iran National Organization for Civil Registration and Vital Statistics*

8-Death Statistics in I.R. Iran [Cause of Death*, Sex]

Province & year (Male & Female)	Total	A00-B99	C00-D48	D50-D89	E00-E88	F00-F99	G00-G98	I00-I99	J00-J98	K00-K99	L00-L98	M00-M99	N00-N98	O00-O99	Q00-Q99	P00-P96	R00-R99	V01-X59	Indeterminate	other
2015	375,134	13,724	36,930	2,525	5,609	1,355	5,802	139,048	28,798	8,431	123	810	6,610	175	6,494	4,501	43,265	27,451	39,894	3,589
Azarbaijan(E)	21,628	435	2,454	392	393	107	477	6,805	1,764	453	20	18	394	10	228	91	3,513	1281	2,569	224
Azarbaijan(W)	14,713	189	2,046	47	167	96	239	4,947	696	189	1	13	215	12	146	119	1518	942	2934	217
Ardabil	6,818	157	967	29	145	45	51	2,196	357	108	0	4	113	4	255	124	1447	400	355	61
Esfahan	22,309	555	2,457	87	335	40	446	9,694	1,721	379	3	86	555	7	502	145	2,143	1641	1,370	143
Alborz	8,751	440	655	83	101	13	139	3,844	1,283	177	0	5	131	1	68	107	323	532	592	257
Ilam	2,762	108	212	20	25	17	4	1052	102	28	1	5	29	2	143	28	388	311	192	97
Bushehr	4,163	72	262	45	62	11	47	1,411	368	81	1	7	68	3	75	57	628	380	557	28
Tehran	54,693	4,296	6,070	124	846	58	663	24,137	5,315	2,223	0	32	1200	1	403	109	2,749	2,870	3,503	94
ChaharMahal &Bakhtiyari	7,655	188	406	73	66	19	36	1,504	398	330	21	75	69	3	348	168	891	538	2,471	51
Khorasan(S)	3,797	97	261	11	19	10	64	1,386	343	66	0	7	65	7	92	57	781	303	221	27
KhorasanRazavi	28,854	741	3,792	324	601	154	575	10,029	3,512	605	3	47	631	4	601	781	2373	2044	1689	348
Khorasan(N)	4,703	99	427	22	54	10	36	1,329	353	106	0	2	57	0	76	81	712	394	913	32
Khuzestan	19,571	834	1,230	222	563	86	641	9,021	1,191	329	14	116	325	6	324	144	1461	1542	1323	199
Zanjan	6,714	251	595	121	50	29	77	1,741	392	116	0	10	72	4	107	106	681	382	1,944	36
Semnan	3,257	44	326	26	37	2	63	1,471	295	59	0	6	93	1	49	22	303	211	219	30
Sistan&Baluchestan	15,717	774	564	172	103	96	262	3,165	759	446	4	53	140	31	415	142	1663	1627	5089	212
Fars	21,710	346	2,071	132	261	111	498	8,921	1,283	516	18	54	409	19	831	434	2007	2109	1434	256
Qazvin	6,481	302	477	27	52	16	107	2,298	497	133	0	9	54	3	107	136	765	464	1,015	19
Qom	5,541	502	424	13	15	6	7	2,373	730	115	0	4	99	1	46	72	138	404	551	41
Kurdistan	8,443	81	737	24	57	27	73	2,356	322	87	1	10	122	2	119	171	1877	597	1696	84
Kerman	13,012	497	959	122	75	55	123	4,620	1,629	267	19	100	127	2	105	104	1607	1378	1100	123
Kermanshah	11,406	283	1,212	56	120	20	80	4,743	676	177	0	16	207	5	150	258	940	991	1,298	174
Kohgiluyeh & BoyerAhmad	2,699	25	301	9	19	10	51	928	136	49	0	19	46	8	45	52	372	292	284	53
Golestan	9,772	487	1,012	38	220	59	106	2,983	494	197	0	11	140	8	167	141	1788	654	1216	91
Gilan	16,171	382	1,741	48	365	31	224	6,194	930	217	3	37	288	1	195	44	3557	966	828	120
Lorestan	8,594	224	818	41	52	29	146	3,651	675	196	5	12	153	3	185	48	886	779	544	167
Mazandaran	15,923	403	1,991	51	394	66	195	6,295	624	236	1	23	241	6	131	103	2799	1139	1152	73
Markazi	8,043	133	745	47	94	14	133	2,971	668	179	1	5	163	5	52	83	911	523	1251	65
Hormozgan	6,537	224	387	61	53	22	51	1920	296	136	4	13	81	3	87	382	1551	709	487	90
Hamedan	10,134	250	834	43	141	87	93	3205	597	190	2	6	195	12	371	131	2311	734	780	152
Yazd	4,563	305	517	15	124	9	95	1878	392	63	1	5	128	1	71	61	242	314	317	25

The Ministry of Energy of Iran publishes the Iran Energy Balance Sheet annually. In this publication statistics on different aspects of extraction and use of energy in Iran are available. The statistics on renewable energy is found in this publication (figure 2).

Figure 2.

Data available in Iran Energy Balance Sheet on clean and renewable energy, 2018-2019. (in Persian)

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1.8.1 Development of nuclear plants	**60**

The Department of Environment of Iran which is responsible for preserving the natural heritage and environment of this country has a office for statistics which collects and publishes the statistics for its activities. In its annual report on the status of environment of Iran, this office reports on different aspects of environment such as gas emissions, pollutants, forest coverage, water, other related issues. Valuable statistics are presented in this publication which can be used to predict and assess the environmental economic activities in different areas of Iran. In this publication, there are recommendations for mitigating the effects of pollutants. In this publication there is a section for climate change statistics which just include the emissions of gas pollutants.

There is no tax titled 'carbon tax' in Iran but according to the law of value-added tax, the Iranian National Tax Administration must charge one percent of sale price of products of the companies which do not comply with the standards and regulations of the Department of Environment. These statistics are available in the Iranian National Tax Administration but not in the Iran Statistical Yearbook.

For researchers who investigated the change of temperature on the economy of Iran, the data on temperature and its change trend during the past years are accessible from the Iran Meteorological Organization. This information is available in the Iran Statistical Yearbook (for the most recent year) and the researchers for obtaining the disaggregated data should refer to the Iran Meteorological Organization publications.

According to the international cooperation, Iran presented three National Communications to the United Nations Framework Convention on Climate Change (UNFCCC) in 2003, 2011, and 2017. The third report includes updated statistics on national greenhouse gas (GHG) emission inventory, national GHG mitigation policies, vulnerability and adaptation, national strategies, a Global Climate Observation System (GCOS), research and education and economic assessments. Several Ministries namely as The Ministries of Energy, Oil, 'Industry, Mine and Trade', Roads and Urban Development, Agriculture (Jihad-e-Agriculture), Interior, Health and Medical Education, Guidance and Islamic Culture, Education, 'Science, Research, and Technology', Justice,

Economic Affairs and Finance and other organizations such as Vice Presidency for Science and Technology, Meteorological Organization, the Forest, Range and Watershed Management Organization, University of Tehran, Presidency Office, Iranian National Institute for Oceanography and Atmospheric Science, I.R.I Broadcasting Organization, Plan & Budget Organization, Iranian National Standards Organization and Pertinent GOs, cooperated with the Department of Environment of Iran to prepare this report. Iran's National Climate Change Office (NCCO) among other responsibilities, including raising public awareness and national coordination of the Subcommittee for Sustainable Development, has built national capacity to systematically address climate change thorough measures such as providing Iran's Low-carbon Economy Document, Intended National Determined Contribution (INDC) and the National Strategic Plan on Climate Change all of which necessitated a considerable amount of duly recognized effort in providing these inputs.

In line with IPCC guidelines, a number of professional work groups were considered to carry out the necessary research, collect the requisite data and prepare the report. In addition, the National Action Plan was elaborated in more detail compared to the previous versions presented, as per Iran's First and Second National Communications.

In the Third National Communication to UNFCCC different chapters related to the statistics on national greenhouse gas emissions inventories from energy and agriculture sectors, industrial processes and product use (IPPU), managed soils, land use change and forestry and waste sector are available. The statistics for greenhouse gases emissions from energy and agriculture sectors are available in the Iran Statistical Yearbook but the statistics for industrial processes and product use, land use change and forestry and waste sector are not available. The following tables and figures show the findings of this report on gasses emissions inventories from industrial processes and product use (IPPU), managed soils, land use change and forestry and waste sector.

Figure 3.

Contribution of Different Sources to CO2 Emissions from IPPU in 2010 presented in the Third Iran Communication to UNFCCC
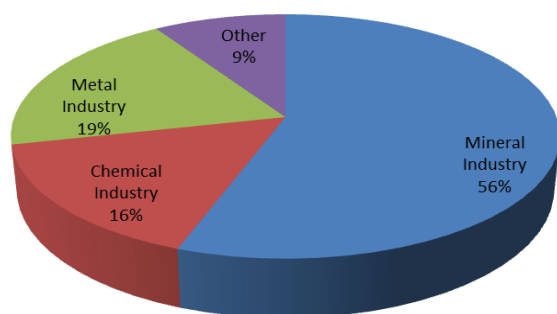
Table 20.

Summary of CO2 Emission from Different Sources in 2010 presented in the Third Iran Communication to UNFCCC

Emission Sources	CO₂ Emission (Gg)
Mineral Industry	34,432.8
Chemical Industry	9,885.4
Metal Industry	12,090.6
Other (Non-Energy Products from Fuels and Solvent Use)	5,448.4
Total	**61,857.2**

Table 21.

CH4 Emissions from Chemical and Metal Industries Sources in 2010 presented in the Third Iran Communication to UNFCCC

Emission Sources	CH4 Emission (Gg)	Share (%)
Chemical Industry	**28.48**	**85.7**
Carbide Production	0.00	
Methanol	7.13	
Ethylene	21.13	
Ethylene Dichloride	0.01	
Ethylene Oxide	0.20	
Carbon Black	0.01	
Metal Industry	**4.77**	**14.3**
Iron and Steel Production	4.7	
Ferroalloys Production	0.07	
Total	**33.25**	**100**

Table 22.

Total GHG Emissions (Gg) for Industrial Processes in 2010 presented in the Third Iran Communication to UNFCCC

IPPU Subsectors \ GHGs	CO₂	CH₄	N₂O	HFC₍₁₃ₐ₎	SF₆	PFCs CF₄	PFCs C₂F₆
Mineral Production	34,432.1	-	-	-	-	-	-
Chemical Production	9,885.4	28.47	1.88	-	-	-	-
Metal Production	12,090.6	4.77	-	-	-	0.60	0.04
Other	5,448.4	-	-	0.34	0.006	-	-
Total	61,857.3	33.24	1.88	0.34	0.006	0.60	0.04
GWP	1	21	310	1,300	22,200	5,700	11,900
Total CO₂ Equivalent	61,857.3	698.0	582.8	442	133.2	3,420	476

Table 23.

N2O Emission from Agriculture Sector in 2010 presented in the Third Iran Communication to UNFCCC

Source of emissions		N_2O-N (Kg/Yr)	N_2O (Kg/Yr)
Direct N_2O emission from Soil	Synthetic fertiliser	8,165,798	12,831,968
	Animal manure	853,354	1,340,985
	Urine and dung deposited on range, pasture and paddock	18,445,066	41,526,939
	Crop residue	4,358,084	6,848,418
Total direct emission from Soil		31,822,302	62,548,310
Indirect N_2O emission from Soil	Synthetic fertiliser	-	-
	Animal manure	-	-
	Urine and dung deposited on range, pasture and paddock	1,946,223	3,058,350
	Soil leaching	4,088,722	6,425,135
	Atmospheric deposition	1,946,223	3,058,350
Total indirect N_2O emission from Soil		7,981,168	12,541,835
N_2O emissions from manure management (kg)			13,200,325
N_2O emissions from burning agricultural residues (kg)			540,005
Total N_2O emission (Gg)			76.3

Table 24.

CO2 Emissions/Uptake in Forest Land Remaining Forest in 2010 (Gg) presented in the Third Iran Communication to UNFCCC

Emission Sources	CO_2 Uptake	CO_2 Emission	Net Emission (Gg)
Annual biomass gain due to growth	-21,553.3	-	-21,553.3
Annual carbon loss due to wood removals	-	8,094.4	8,094.4
Annual carbon loss due to fuelwood removal	-	7,480.2	7,480.2
Annual carbon loss due to disturbance	-	2,019.7	2,019.7
Total	-21,553.3	17,594.3	-3,953.0

Table 25.

CO2 Emissions/Uptake in Land Conversation in 2010 presented in the Third Iran Communication to UNFCCC

Emission Sources	CO$_2$ Uptake	CO$_2$ Emission	Net Emission (Gg)
Annual increase in carbon stocks in biomass due to growth	-46,090.1	-	-46,090.1
Annual loss or decrease in biomass due to commercial filings	-	63,642.6	63,642.6
Annual biomass loss due to fuelwood removal	-	7,848.1	7,848.1
Annual carbon loss due to disturbance	-	28.1	28.1
Total	-46,090.1	71,518.8	25,428.7

Table 26.

GHG Emissions (Gg) from On-Site Burning in 2010 presented in the Third Iran Communication to UNFCCC

GHGs	Emission
CO2	58.9
CH$_4$	0.8
N$_2$O	0.1
NO$_X$	1.4
CO	23.8

Table 27.

GHG Emissions (Gg) from Different Waste Sub-sectors in 2010 presented in the Third Iran Communication to UNFCCC

Sub-sectors	CO$_2$	CH$_4$	N$_2$O
Solid Waste	29.00	27.20	0.002
SWDS	-	23.00	0.00
Biological Treatment	-	0.024	0.002
Open Burning	29.00	4.18	0.00
Liquid Waste Sector	0.00	1281.00	1.30
Domestic Wastewater	-	110.00	1.30
Industrial Wastewater	-	1171.00	0.00
Total	29.00	1308.2	1.302
GWP	1	21	310
Total CO$_2$ equivalent	29.00	27472.2	403.62

Moreover, in the Third Iran Communication to UNFCCC there is specific chapter on the direct and indirect economic impacts of climate change on the economy of Iran. According to this report, it is predicted that the occurrence of climate change intensifies shortage of water resources and high frequency of droughts occurrence by increasing temperature and changing patterns of rainfall (table 28 and table 29).

Table 28.

The Summary of Economic Impact of Climate Change on Agriculture Sector in 2016–2035 Period presented in the Third Iran Communication to UNFCCC

Agricultural products	Normal (baseline)	Optimistic Scenario		Median Scenario		Pessimistic Scenario		Very pessimistic	
		Amount	% change	Amount	% change	Amount	% change	Amount	% change
Activity level (1000 ha)									
Wheat	7661	8661	13.04	7679.6	0.2	7045.4	-8	_____	_____
Paddy rice	501	473.5	-5.5	515.7	2.9	495.6	-1.1	_____	_____
Potato	148.3	141.4	-4.6	147.4	-0.6	148.4	0.1	_____	_____
Oil seeds	32	371.2	6.0	220.7	-4.9	154.7	-33.3	_____	_____
Sugar beet	167.7	188.5	12.4	156.5	-6.6	101.6	-39.4	_____	_____
Livestock (1000 heads)	125870	133989	6.5	122707	-2.5	116484	-7.5		
Production amount (1000 tons)									
Wheat	18008.3	20781.6	15.4	17244.7	-4.2	14726.3	-18.	_____	_____
Paddy rice	2452.6	2359.4	-3.8	2399	-2.1	2249.8	-8.3	_____	_____
Potato	3903.6	297.7	-2.5	3741.7	-4.1	3668.8	-6	_____	_____
Oil seeds	452.7	756	67	443.9	-1.9	330	-27.1	_____	_____
Sugar beet	6687.8	7844.8	17.3	6094.5	-8.9	3738	-44.1	_____	_____
Red meat	1005.9	1071.3	6.5	989	-1.7	894.7	-11.1	_____	_____
Chicken	2101	2172.4	3.4	2059	-2	1964.9	-6.5	_____	_____
Production amount (1000 tons)									
Wheat	15847.3	17416.2	9.9	15562.8	-1.8	15439.4	-2.5	_____	_____
Paddy rice	2884.3	2794.9	-3.1	2850.1	-1.2	2752.5	-4.8	_____	_____
Potato	3020.3	3183.4	5.4	2994.2	-0.9	2935.9	-2.9	_____	_____
Plant Oil	1322.3	1371.2	3.7	1319.9	-0.2	1288	-2.55	_____	_____
Sugar	1185.7	1294.8	9.2	1180.3	-0.5	1175.6	-0.4	_____	_____
Red meat	1094.6	1129.6	3.2	1074.1	-1.9	1029.6	-7	_____	_____
Chicken	1806.3	1815.3	0.5	1770	-2	1690	-7.2	_____	_____
Foreign trade volume (1000 tons)									
Total of import	10132.5	9281.3	-8.4	10608	4.7	13099.4	29.3	14381.2	41.9

Total of export	742.9	750.2	2.2	742.9	0.0	634.3	-14.6	634.3	-14.6
Total of net export	-9389.6	-8522.1	9.2	-9865.1	5.1	-12465.1	32.8	-13746.9	46.4
Economic surpluses (billion rials)									
Total economic surplus	549658.4	584286.9	6.3	538068.9	-2.1	532119.3	-3.2	527967.3	-3.9
Consumers surplus	431280.8	436456.2	7.6	420436.4	-2.5	409752.9	-5.0	399647	-7.3
Producers surplus	316611.4	340673.9	1.2	312975.8	-1.15	319843.1	1.02	325263.6	2.7
Welfare loss/total income of crops and livestock sector	-	10.9		3.7		5.54		6.85	

Table 29.

Total Economic Impacts of Climate Change in Iran in the Period of 2016–2035 Period presented in the Third Iran Communication to UNFCCC

Climate scenarios	Direct economic impacts		Indirect economic impacts		Total (direct + indirect) economic impacts
	Consumers	**Producers**	**Demand driven**	**Supply driven**	
Pessimistic	-31483.5	-8548.5	-6815.0	-6140.5	-52997.5
Median	-10782.0	-3482.7	-2776.6	-2506.2	-19747.5
Optimistic	32777.3	3799.3	3039.4	2735.5	42351.5

There is also a section for direct and direct impact of climate change specially changes in regional temperature and sea level on the energy sector such as oil, gas, petrochemical industries in Iran.

Looking at these statistics published on climate change and the responsibilities of government agencies reveal that statistics on climate change effects on different aspects may be available but not published in the Iran Statistical Yearbook. If it is true, there is a need to expand cooperation among these stakeholders to publish these statistics in a proper way and easy to access for users and researchers. By considering this fact that each organization produces the statistics of its activities, it seems that there is a necessity for a mechanism to harmonize their statistics activities in line with producing timely and

accurate data on different aspects of economic and social activities. This mechanism is realized through a strategy for statistics. In the next section, this mechanism for harmonizing the statistics activities of the concerned agencies in Iran is described.

National Strategy for Development of Statistics in the I.R. Iran

The planners and decision makers in the I.R. Iran took a new look at the national statistical system in 2004 while organizing the Fourth National Development Plan. This new look led to direct inclusion of statistical system into the text of law for country development plans. Because of this approach, the Article 56 of the Fourth National Development Plan, specialized for statistical system, was approved and the First National Strategy for Development of Statistics (2005–2009) was prepared in line with the implementation of this Article. After the approval of the National Statistical System by the High Council of Statistics and implementation of the executive decrees for this system, many useful activities were done for organizing the National Statistical System and the important role of the high-quality statistics in the preparation and analysis of the National Development Programme was highlighted. The help received from all the stakeholders of the National Statistical System especially the SCI helped to continue this movement and establish the unique status of the National Statistical System in the country Development Programme. In this system, the SCI was duty-bound to calculate many of macro socio-economic indices including the statistical indices required for monitoring the Fifth National Development Plan. Moreover, the legislature body appointed the SCI as the statistical focal point for production and dissemination of official statistics in the National Statistical System.

The Second National Strategy for Development of Statistics (2011–2015) was prepared after the announcement of the 20-Year National Vision of the I.R. of Iran and in line with the implementation of the paragraph B of the Article 54 of the Fifth National Development Plan. The aim of this strategy was to pave the way for improving the status of the National Statistical System at the national and international levels. It was expected that the full and comprehensive implementation of this strategy would lead to remove the obstacles and provide the country planners and decision makers with the needed high-quality statistics for preparation and assessment of development programs. Although some achievements were accomplished but many of the objectives of the First and Second National Strategy for Development of Statistics weren't fulfilled due to facing structural and organizational difficulties and lack of cooperation among the concerned stakeholders.

The SCI and government agencies prepared the Third National Strategy for Development of Statistics (NSDS) (2017–2021) with the approach of institutionalizing the transformation in the National Statistical System and the High Council of Statistics

approved it. This NSDS was prepared in line with Article 10 of the Permanent Decree of National Development Plans in Iran.

At the first step, the functions of the National Statistical System during the years of conducting The Second National Strategy for Development of Statistics (2011–2015) and its strong and weak points, and challenges were analyzed and assessed. Then, the expert workgroups in collaboration with government agencies determined the vision and mission of statistical system and the macro goals and strategies of the NSDS (2017–2021) were determined. To realize these strategies, the NSDS was prepared and presented in collaboration with government agencies in the fields of revision of the laws, regulations and organizational structure of the statistical system; production of statistics and establishing of a register-based system, national accounts and macro indices; information technologies; research and education of statistics; monitoring and managing the statistics quality; promotion of public trust in statistics, and developing national and international statistics. According to the NSDS, the Iranian National Statistical System is a system in which all the government agencies are its member, the SCI is the statistical focal point and the High Council of Statistics is responsible for directing this system. This system is responsible for production, dissemination and promotion of official statistics by full consideration of the Fundamental Principles of Official Statistics and national rules and laws.

In this system the Official Statistics is the statistic which the government agencies produce and disseminate and decision-making at national level is done based on it. The list of Iran official statistics should include the title of this type of statistics.

The Statistical Focal Point in the Iranian National Statistical System is a government institution which is professional and unbiased and is responsible for production, dissemination and documentation of the national official statistics. This focal point is obliged to integrate, organize and build capacity in the Iranian National Statistical System. Only those national official statistics shall be authorized to be published enjoying the approval of this focal point.

The Vision of the National Statistical System (NSS) of Iran is to establish an integrated system which is accountable, trusted by the public and professionals, the provider of high quality official statistics. The Mission of the NSS is production and dissemination of official statistics needed by national and international users by full consideration of the Fundamental Principles of Official Statistics and using state-of-the-art technologies and modern methodologies, especially register-based methods.

1. The macro goal of NSS is to create an integrated statistical system capable of producing official statistics of high quality to increase the accountability and public trust. The strategy which is used to achieve these goals are a) revising and modification of laws and rules related to the NSS in order to integrate, organize and remove any parallel activities in the production and dissemination of official statistics, b) playing the role of statistical focal point, promoting the application of official statistics within the principles of the Higher Council of Statistics, being

accountable for providing statistics and information needs, enhancing users' trust, reducing respondent burden and distributing statistics production in order to prevent duplicated statistics production.

2. Revising the organizational chart, and terms of references of the components of National Statistical System, strengthening and developing the capacities of human resources involved in statistical activities in government agencies, attending the international events in order to improve their efficiencies and effectiveness, and maximum use of the capacities of the Higher Council of Statistics and Statistical Sectoral committees for modernizing the National Statistical System.

3. Approving laws and rules ensuring one-way-traffic administrative microdata flow needed by Iran Statistical Registers System to the Statistical Centre of Iran

4. Implementing the Quality Management System and observing the statistical standards in meeting the statistical requirements

5. Systematizing the dissemination and information supply of official statistics at the national and international levels based on the approvals of the Higher Council of Statistics through using of state-of-the-art technologies, organizing, preparing and observing Publication Calendar of national official statistics.

According to Article 4 of the NSDS, the SCI is obliged to submit a draft bill of new Act of statistics to the High Council of Statistics after it is reviewed in the specialized Commission and also prepare guidelines, regulations, standards and executive procedure compatible with the Act of National Statistical System in collaboration with other government agencies and submit them to the High Council of Statistics.

The government agencies are obliged to prepare their administrative and organizational structures compatible with goals of NSDS in collaboration with the SCI and propose it to the State Administrative and Recruitment Organization after the approval of NSDS by the High Council of Statistics. The government agencies are obliged to put the empowerment of their statistics and information units, recruitment, maintenance and strengthening of the statisticians in priority. The SCI is obliged to prepare the plan for 'organizing and developing the use of private sector capacities in carrying out statistical activities' in cooperation with the Statistical Research and Training Centre (SRTC) and government agencies.

According to Article 5 of NSDS, in order to establish Comprehensive System of Iran Statistical Registers (IRANSTARS) and to meet the needs of the national statistical database, the government agencies are obliged to submit their micro-data to the SCI and have other necessary cooperation with the SCI to launch and connect the four basic registers including: Population, Activity, Business and Properties and Real Estates in accordance with the requirements of the SCI.

According to Article 6 of NSDS, for the purpose of comparability and additivity of statistical information and integration, production, development and improvement of the quality of official statistics, the SCI is duty-bound to prepare the 'List of Iran official

statistics' and 'Quality of Iran Official Statistics Regulation' and communicate them to government agencies. In cooperation with government agencies, the SCI is duty-bound to provide the statistical indices required for producing and monitoring the development programs and macro policies of the country, and disseminate these indices in the form of needs assessment and statistical indices profile.

For quality concerns, according to Article 9, in order to implement the quality management system and to observe statistical standards, supervise and monitor and continuously evaluate the National Statistical System in line with implementation of the NSDS, the SCI is obliged to prepare the general framework for the quality management of official statistics in the National Statistical System (National Quality Assurance Framework).

The Statistical Centre of Iran is duty-bound to provide the necessary standards for preparation and dissemination of the government agencies statistical yearbook, and communicate them to the government agencies. According to this NSDS, all the agencies should send their statistics to the organization which is the focal point of official statistics to be assessed and obtain the approval for publishing.

By considering the significant role of the NSDS and NSS to establish an integrated statistical system in Iran, the SCI and every NSO can use this benefit to harmonize statistics the government agencies produce to remove the parallel working. They also can prepare the needed methodologies for government agencies to produce the statistics on the SDGs indicators in a timely and accurate manner.

Having the NSDS, the SCI and government agencies has cooperated to prepare the list of official statistics of the I.R. Iran which many of its indicators are based on the SDGs indicators. The profile of these indicators has been prepared and according to the NSDS the responsible agency for collecting the statistics and the methodology needed for calculation of every indicator has been determined. Step by step the list of indicators which will include the indicators related to the economic aspects of climate change will be prepared. By considering the cooperation among government agencies based on the NSDS, the available statistics in each government agency will be reviewed and the parallel working will be removed. By considering the fact that statistics on climate change and its effects may be available and produced by some agencies, the NSDS will facilitate and pave the way for publishing the timely and high-quality data on the effect of climate change and global warming in the economy of Iran.

Having timely statistics on important matters such as the economic effects of climate change on the economic lives of people requires accessing to a statistical system which is efficient and productive. This efficiency and productivity are obtained by having an established mechanism which facilitates the processes of collecting and publishing of data among different bodies.

4. Conclusion

Statistics help us to obtain a clear idea on the real situation and pave the way for informed policies. Adopting policies to counteract the effects of the climate change needs timely and accurate statistics on all the activities which are responsible for carbon emission in the atmosphere. According to Gates (2021) the greenhouse gas which is the main source of global warming is mainly emitted by our actions for making things (cement, steel, plastic), plugging in (electricity), growing things (plants and animal), getting around (planes, trucks, and cargo ships) and keeping warm and cool. These activities are integral parts of our daily economic lives. Understanding the relationship between economy and climate change is an important component of adapting to and mitigating climate change impacts.

The SDGs contain several goals and targets related to sustainable development and environment which contribute to the promotion and sustainability of our daily life. There are various indicators which show the progress and improvement in achieving sustainable environment and climate. Studying the environment and climate statistics which the SCI collects and publishes show that climate change isn't fully covered in figures and there are no statistics on many SDG indicators showing the impacts of climate change on the economic activities in the I.R. Iran. In other words, the climate change has a narrow domain and is limited to gas pollutants in this important statistical publication used by Iranian policy-makers. This lack of comprehensive statistics on environment will have severe effects for the future activities aimed at reducing the effects of climate change on economic activities in this country. In this regard, the national strategy for harmonizing the statistical system in the country will paves the way for integrating the statistical activities and information of the government agencies in order to avoid the parallel working and providing the timely information on official statistics. Since some statistics on the climate change indicators such as death mortality, gas pollutants, fuel consumption by different economic sectors are collected and published by different organizations, the SCI and each NSO benefiting from the provisions of the established NSDS can enrich their statistics and broaden their domain to fully cover the touch of every important factor such as climate change and global warming on different aspects of lives of people in their country. The established NSDS in Iran facilitates the collecting and publishing of statistics on various issues such as SDGs indicators by providing the guidelines for statistical stakeholders and harmonizing their statistical activities to remove the parallel working and provide access to the high-quality statistics.

Annex One

This annex includes the meteorological data of capitals of provinces in Iran which are presented in the tables 1.7, 1.8, 1.9, 1.12, 1.13, and 1.15 of the Iran Statistical Yearbook (2018-2019).

Table 8.

Statistics presented in the table 1.7 of the Iran Statistical Yearbook (2018-2019)

Capital of Province	Air temperature (℃)					Annual precipitation (mm)
	Average max	Average min	Mean	Absolut min	Absolut max	
Arak	21 .6	8 .9	15 .2	-8 .0	39 .8	526 .7
Ardebil	17 .0	5 .7	11 .3	-12 .4	36 .8	303 .4
Orumiyeh	19 .8	6 .2	13 .0	-9 .0	39 .6	515 .2
Esfahan	24 .5	11 .0	17 .7	-5 .4	40 .0	154 .2
Ahvaz	34 .0	20 .5	27 .2	2 .9	52 .4	332 .5
Ilam	23 .7	10 .8	17 .2	-5 .4	41 .2	1028 .6
Bojnurd	21 .3	8 .2	14 .8	-6 .4	41 .2	301 .5
Bandar Abbas	33 .0	21 .9	27 .4	6 .7	44 .8	117 .7
Bushehr	30 .3	22 .6	26 .4	8 .3	45 .6	357 .7
Birjand	24 .9	9 .1	17 .0	-8 .8	39 .5	196 .8
Tabriz	20 .1	9 .2	14 .6	-8 .6	41 .0	364 .3
Tehran	23 .7	14 .1	18 .9	-2 .8	41 .4	272 .2
Khorramabad	25 .5	10 .3	17 .9	-4 .1	45 .3	889 .4
Rasht	22 .0	13 .9	17 .9	1 .0	36 .4	1083 .5
Zahedan	27 .6	11 .4	19 .5	-6 .2	42 .0	52 .2
Zanjan	20 .2	5 .9	13 .1	-10 .9	40 .0	307 .4
Sari	23 .7	14 .5	19 .1	-0 .4	38 .0	887 .9
Semnan	24 .4	13 .9	19 .1	-2 .4	43 .0	178 .1
Sanandaj	23 .3	7 .7	15 .5	-7 .6	42 .8	551 .0
Shahr-e-Kord	21 .2	3 .2	12 .3	-20 .3	36 .8	336 .1
Shiraz	26 .9	10 .8	18 .8	-5 .0	40 .6	243 .9
Qazvin	22 .7	8 .5	15 .6	-6 .8	41 .7	331 .6
Qom	27 .1	11 .8	19 .4	-4 .9	45 .5	205 .3
Karaj	22 .5	10 .6	16 .6	-5 .5	41 .0	353 .0
Kerman	26 .1	8 .4	17 .3	-9 .7	40 .6	100 .7
Kermanshah	23 .8	8 .4	16 .1	-9 .6	43 .5	692 .6
Gorgan	24 .8	12 .8	18 .8	-3 .1	43 .5	647 .6
Mashhad	23 .1	10 .3	16 .7	-5 .0	44 .2	238 .1
Hamedan	20 .6	5 .3	13 .0	-15 .4	39 .5	519 .5
Yasuj	20 .4	6 .4	12 .9	-6 .0	38 .0	1054 .7
Yazd	27 .8	14 .5	21 .2	-3 .2	43 .0	70 .7

Capital of *Province*	Max. daily precipitation (mm)	Mean of relative humidity (%)		Number of frosty days	Number of dusty days	Bright sunshine (hours)	Max. wind speed (Mps)
		Max.	Min.				
Arak	35 .0	66	30	70	69	2761 .2	22
Ardebil	20 .0	88	54	90	9	2491 .7	23
Orumiyeh	41 .0	79	39	89	4	2898 .4	16
Esfahan	29 .0	55	22	50	20	3316 .9	27
Ahvaz	59 .0	62	28	0	62	3053 .3	24
Ilam	105 .0	64	32	45	80	2943 .3	23
Bojnurd	32 .0	77	36	76	38	2912 .5	18
Bandar Abbas	43 .0	82	45	0	47	3217 .6	13
Bushehr	59 .0	77	54	0	22	000	000
Birjand	20 .6	49	16	60	35	3425 .9	16
Tabriz	25 .3	69	36	73	18	2822 .3	18
Tehran	25 .0	51	24	14	7	3011 .3	22
Khorramabad	38 .0	69	29	42	52	2878 .9	20
Rasht	66 .0	96	61	0	1	1803 .6	16
Zahedan	24 .0	40	17	44	115	3343 .1	20
Zanjan	19 .0	78	35	95	24	2802 .8	19
Sari	112 .0	93	57	2	0	1869 .0	25
Semnan	45 .7	51	26	21	8	3009 .0	16
Sanandaj	44 .0	72	28	67	50	2886 .0	60
Shahr-e-Kord	22 .4	66	23	114	38	3125 .1	48
Shiraz	27 .1	59	19	49	50	3301 .6	13
Qazvin	23 .7	77	35	62	6	2794 .8	21
Qom	18 .3	62	27	37	64	3055 .0	30
Karaj	25 .0	70	31	30	5	2983 .1	20
Kerman	18 .0	41	11	73	29	3388 .4	24
Kermanshah	46 .1	66	26	56	45	2658 .3	15
Gorgan	147 .0	92	55	20	1	2316 .2	30
Mashhad	26 .0	65	31	40	23	2935 .1	16
Hamedan	28 .0	73	32	98	14	2943 .0	24
Yasuj	84 .0	64	22	68	52	3042.6	15
Yazd	22 .0	40	15	10	65	3409 .1	22

Capital of province	Month								
	Farvardin[10]			Ordibehesht			Khordad		
	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp
Arak	27 .8	1 .0	14 .2	25 .8	4 .8	15 .0	35 .0	10 .0	22 .4
Ardebil	26 .6	-7 .9	9 .4	25 .2	0 .0	12 .3	30 .2	5 .7	16 .8
Orumiyeh	24 .2	-2 .0	12 .1	25 .2	1 .4	13 .8	30 .6	8 .4	19 .7
Esfahan	30 .0	4 .6	17 .1	29 .6	8 .8	18 .8	38 .6	11 .8	26 .6
Ahvaz	40 .5	13 .7	25 .7	42 .7	16 .3	29 .5	49 .2	24 .0	37 .6
Ilam	28 .2	2 .7	15 .4	29 .8	6 .1	16 .7	35 .4	13 .9	24 .6
Bojnurd	30 .8	0 .4	13 .1	32 .4	4 .0	16 .7	36 .6	8 .8	22 .8
Bandar Abbas	38 .0	15 .1	26 .8	39 .8	20 .1	30 .4	44 .8	22 .3	33 .3
Bushehr	34 .1	17 .5	25 .0	39 .0	21 .5	28 .5	42 .3	23 .8	33 .4
Birjand	32 .8	2 .5	17 .2	34 .2	6 .4	20 .1	39 .4	11 .1	26 .4
Tabriz	24 .2	0 .2	12 .9	26 .8	3 .0	15 .1	31 .2	10 .6	21 .4
Tehran	30 .3	3 .2	17 .6	29 .4	7 .6	19 .5	37 .2	16 .8	26 .8
Khorramabad	30 .3	3 .3	15 .3	30 .0	5 .6	17 .2	37 .0	11 .8	24 .6
Rasht	29 .4	1 .6	13 .3	29 .2	7 .2	19 .1	31 .6	14 .4	23 .0
Zahedan	34 .5	3 .6	20 .5	36 .0	7 .1	24 .0	41 .6	11 .5	28 .0
Zanjan	27 .2	-4 .4	11 .8	25 .8	1 .0	13 .3	31 .9	7 .8	19 .3
Sari	34 .6	4 .2	15 .4	35 .0	10 .2	20 .4	34 .4	16 .4	24 .2
Semnan	30 .6	2 .8	18 .3	31 .2	9 .0	20 .5	38 .6	19 .6	28 .4
Sanandaj	27 .8	1 .1	14 .0	29 .0	3 .6	15 .2	35 .4	9 .6	21 .8
Shahr-e-Kord	25 .7	-5 .5	10 .5	25 .5	1 .8	13 .4	34 .0	3 .3	19 .1
Shiraz	30 .8	4 .4	17 .3	32 .4	8 .0	20 .2	40 .2	14 .0	27 .4
Qazvin	30 .0	-2 .4	13 .9	28 .0	3 .8	15 .9	34 .9	9 .0	22 .5
Qom	34 .2	3 .3	19 .0	34 .8	7 .4	21 .0	41 .0	14 .4	27 .9
Karaj	29 .8	-0 .3	14 .9	29 .0	5 .7	17 .0	35 .3	11 .0	23 .6
Kerman	32 .9	0 .0	16 .9	33 .6	6 .1	19 .7	39 .1	9 .8	26 .8
Kermanshah	28 .2	1 .2	14 .2	28 .0	3 .3	15 .2	34 .8	10 .3	22 .1
Gorgan	31 .9	1 .8	14 .6	37 .0	8 .5	20 .1	38 .5	13 .8	25 .6
Mashhad	32 .9	1 .0	14 .5	36 .1	8 .4	19 .4	40 .1	13 .7	25 .4
Hamedan	26 .2	-1 .5	11 .7	25 .0	2 .8	12 .7	31 .8	7 .4	18 .7
Yasuj	27 .4	3 .2	13 .6	27 .0	4 .8	15 .2	36 .2	9 .2	23 .0
Yazd	34 .9	6 .6	20 .3	33 .9	12 .6	22 .3	41 .5	18 .9	30 .8

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[10] **Iranian months and their equivalent in Gregorian calendar:**

Farvardin (21 March-20April) , Mehr (23 September-22 October), Ordibehesht (21 April-21 May), Aban (23 October-21 November), Khordad (22 May-21 June), Azar (22 November-21 December), Tir (22 June-22 July),Dey (22 December-20 January), Mordad (23 July-22 August), Bahman (21 January-19 February), Shahrivar (23 August-22 September), Esfand (20 February-20 March)

Table 9.

Statistics presented in the table 1.8 of the Iran Statistical Yearbook (2018-2019)

Capital of province	Month								
	Tir			Mordad			Shahrivar		
	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp
Arak	39 .8	16 .0	28 .6	39 .0	17 .6	29 .4	36 .8	12 .2	25 .0
Ardebil	36 .8	8 .0	21 .5	33 .2	8 .2	20 .2	33 .4	6 .5	17 .5
Orumiyeh	39 .6	11 .6	25 .4	38 .6	12 .5	25 .1	34 .0	6 .4	21 .3
Esfahan	39 .6	17 .8	29 .7	40 .0	18 .6	29 .7	37 .8	15 .6	27 .1
Ahvaz	52 .4	26 .9	39 .4	50 .2	27 .9	39 .0	48 .2	25 .0	37 .3
Ilam	41 .2	16 .7	29 .5	41 .1	18 .1	29 .6	39 .5	16 .2	27 .6
Bojnurd	41 .2	13 .6	27 .7	38 .8	13 .6	26 .5	37 .0	7 .0	22 .1
Bandar Abbas	44 .7	27 .3	34 .4	43 .1	28 .6	34 .9	39 .7	25 .4	32 .4
Bushehr	45 .6	26 .8	33 .8	39 .7	28 .6	34 .1	41 .3	28 .1	33 .8
Birjand	38 .4	16 .0	28 .4	39 .5	14 .3	27 .3	37 .8	7 .9	22 .7
Tabriz	40 .8	17 .2	29 .3	41 .0	16 .6	28 .7	36 .2	14 .0	24 .6
Tehran	41 .0	23 .4	32 .6	41 .4	19 .8	32 .2	37 .6	19 .2	28 .4
Khorramabad	44 .5	15 .2	30 .7	45 .3	16 .4	31 .3	42 .7	12 .0	27 .9
Rasht	36 .4	19 .2	28 .4	35 .0	20 .0	27 .3	32 .6	17 .6	25 .3
Zahedan	41 .7	17 .1	29 .7	42 .0	17 .0	29 .0	37 .2	10 .5	23 .5
Zanjan	40 .0	10 .8	26 .3	39 .0	9 .8	26 .3	35 .9	6 .2	21 .8
Sari	38 .0	18 .4	29 .5	38 .0	21 .6	29 .0	35 .2	17 .2	26 .6
Semnan	41 .6	23 .6	33 .8	43 .0	22 .6	33 .1	39 .0	17 .0	28 .6
Sanandaj	42 .6	11 .8	28 .3	42 .8	14 .2	29 .5	39 .8	10 .4	24 .9
Shahr-e-Kord	36 .8	6 .5	23 .4	36 .2	9 .5	23 .6	35 .6	4 .4	21 .0
Shiraz	40 .6	16 .0	29 .7	40 .6	18 .0	30 .1	40 .2	14 .4	28 .0
Qazvin	40 .9	13 .7	29 .3	41 .7	13 .7	28 .7	36 .6	12 .3	24 .5
Qom	45 .5	17 .6	32 .9	45 .0	18 .8	33 .2	41 .6	14 .1	28 .3
Karaj	41 .0	16 .1	30 .3	40 .8	14 .8	29 .5	37 .0	13 .9	25 .4
Kerman	40 .6	13 .2	27 .2	39 .4	13 .4	26 .9	37 .0	9 .9	23 .5
Kermanshah	42 .8	11 .9	28 .7	43 .5	14 .8	29 .2	40 .6	10 .2	25 .6
Gorgan	43 .5	19 .9	31 .0	39 .5	20 .1	30 .2	37 .3	14 .5	26 .8
Mashhad	40 .9	18 .3	30 .2	44 .2	17 .4	28 .5	39 .2	9 .0	23 .4
Hamedan	38 .8	10 .6	25 .6	39 .5	12 .5	26 .9	37 .1	7 .1	22 .1
Yasuj	38 .0	14 .4	26 .5	37 .0	16 .8	000	36 .8	13 .6	24 .8
Yazd	43 .0	21 .7	32 .8	42 .9	22 .0	32 .6	41 .1	18 .2	30 .1

Capital of province	Month								
	Mehr			Aban			Azar		
	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp
Arak	31 .6	6 .8	18 .0	23 .8	-0 .4	9 .6	16 .2	-2 .8	6 .4
Ardebil	30 .0	-1 .8	14 .1	23 .9	-2 .8	7 .9	15 .6	-4 .5	5 .8
Orumiyeh	29 .4	4 .8	16 .1	22 .0	-1 .4	8 .6	14 .4	-4 .4	4 .8
Esfahan	33 .4	8 .8	20 .3	27 .0	0 .8	12 .4	18 .0	-2 .6	8 .5
Ahva	45 .8	19 .0	31 .8	34 .0	12 .1	21 .9	26 .5	7 .1	17 .2
Ilam	33 .6	10 .4	22 .4	24 .6	3 .4	13 .0	19 .6	0 .0	9 .0
Bojnurd	29 .8	0 .2	15 .4	30 .0	-3 .0	10 .1	19 .6	-4 .8	6 .7
Bandar Abbas	40 .2	19 .8	30 .6	34 .6	16 .2	26 .1	32 .8	9 .8	21 .2
Bushehr	38 .6	24 .5	31 .4	33 .2	16 .7	24 .1	28 .5	12 .7	19 .8
Birjand	32 .7	-0 .7	16 .8	29 .1	-1 .9	13 .2	22 .0	-3 .6	8 .9
Tabriz	29 .8	5 .4	18 .3	23 .0	0 .8	10 .1	13 .4	-2 .3	5 .4
Tehran	32 .6	12 .2	21 .4	26 .2	5 .8	13 .0	17 .4	3 .4	10 .2
Khorramabad	36 .8	10 .1	22 .3	27 .2	3 .0	13 .9	19 .0	-1 .3	8 .9
Rasht	31 .0	12 .2	20 .5	36 .0	6 .6	15 .5	27 .6	4 .8	12 .5
Zahedan	31 .8	5 .1	19 .3	30 .0	-1 .8	15 .2	23 .6	-3 .8	11 .0
Zanjan	30 .4	2 .3	16 .1	23 .2	-3 .4	8 .0	16 .3	-3 .7	5 .4
Sari	31 .6	11 .2	21 .4	37 .4	8 .0	16 .4	27 .2	5 .6	12 .9
Semnan	32 .4	10 .0	21 .0	27 .2	5 .0	13 .5	17 .4	2 .0	9 .7
Sanandaj	33 .4	6 .6	18 .6	25 .2	-0 .1	11 .3	16 .2	-2 .8	6 .5
Shahr-e-Kord	29 .4	-0 .1	14 .5	23 .0	-4 .4	8 .3	16 .9	-9 .8	4 .8
Shiraz	35 .0	9 .8	21 .7	28 .2	2 .8	13 .9	20 .4	-2 .4	9 .6
Qazvin	32 .7	5 .7	18 .3	25 .2	-0 .2	10 .4	16 .5	-0 .7	7 .5
Qom	35 .9	10 .0	21 .8	31 .2	4 .4	14 .1	20 .4	-0 .7	10 .2
Karaj	31 .4	7 .4	19 .0	26 .3	0 .0	10 .9	17 .5	0 .6	8 .6
Kerman	33 .5	4 .8	18 .1	27 .9	-0 .2	13 .0	23 .9	-6 .4	8 .7
Kermanshah	33 .7	8 .1	20 .3	25 .5	1 .3	12 .3	17 .1	-2 .2	7 .7
Gorgan	33 .4	7 .3	20 .9	39 .6	4 .7	15 .4	26 .1	1 .4	11 .4
Mashhad	30 .0	2 .6	16 .6	30 .8	-1 .3	10 .7	22 .2	-0 .6	8 .7
Hamedan	30 .0	3 .1	15 .9	22 .3	-1 .4	8 .7	14 .8	-5 .0	4 .7
Yasuj	31 .0	6 .2	18 .9	25 .0	-0 .4	10 .9	19 .4	-2 .8	7 .3
Yazd	36 .5	10 .8	23 .0	30 .2	4 .4	15 .2	23 .8	1 .8	12 .3

Capital of province	Month								
	Dey			Bahman			Esfand		
	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp	Highest Max. Temp.	Lowest Min. Temp.	Mean Temp
Arak	16.8	-8.0	3.1	15.2	-6.4	4.5	19.2	-4.2	5.2
Ardebil	12.0	-11.1	2.3	15.0	-12.4	2.8	16.8	-6.3	4.2
Orumiyeh	11.2	-9.0	0.4	11.6	-7.5	2.4	15.2	-5.6	4.6
Esfahan	17.4	-5.4	5.8	19.0	-5.0	6.9	20.0	-3.0	8.4
Ahva	23.3	2.9	14.3	25.0	4.3	15.3	27.0	7.1	17.1
Ilam	15.8	-5.4	5.4	16.7	-3.3	6.2	18.1	-2.3	6.5
Bojnurd	18.2	-5.4	4.7	16.8	-5.6	3.8	22.0	-6.4	6.3
Bandar Abbas	28.7	6.8	19.4	27.2	6.7	18.8	28.2	10.7	19.6
Bushehr	25.2	8.3	17.4	26.5	8.3	17.5	26.0	11.0	17.8
Birjand	22.8	-7.7	7.0	20.1	-8.8	6.2	22.3	-6.4	8.4
Tabriz	10.0	-8.4	1.0	12.6	-8.6	2.4	15.6	-4.2	4.7
Tehran	14.8	-2.8	6.2	15.4	-1.6	7.3	19.2	-0.5	9.6
Khorramabad	18.7	-4.1	6.5	17.1	-3.9	6.7	18.8	-2.2	7.6
Rasht	24.8	1.0	9.7	21.6	1.0	8.9	26.6	2.2	10.8
Zahedan	25.6	-5.6	11.6	22.8	-6.2	9.8	23.1	-2.2	10.9
Zanjan	12.5	-10.7	1.1	13.9	-10.9	2.1	17.1	-7.5	3.7
Sari	25.8	0.0	10.2	24.3	0.4	10.2	29.8	-0.4	11.9
Semnan	13.8	-2.4	5.5	16.0	-1.8	7.1	21.8	-2.0	9.4
Sanandaj	15.6	-7.6	3.5	15.6	-7.4	4.3	17.2	-4.8	6.0
Shahr-e-Kord	14.6	-12.1	2.8	15.2	-12.3	2.3	15.8	-20.3	1.5
Shiraz	19.0	-5.0	8.3	21.0	-4.0	8.4	20.8	-3.2	9.5
Qazvin	12.8	-6.8	3.7	15.9	-6.2	5.0	19.3	-3.6	6.7
Qom	16.2	-4.9	5.7	17.4	-3.6	7.8	22.9	-3.5	9.9
Karaj	14.8	-5.5	4.7	15.9	-5.2	5.6	18.2	-4.4	7.4
Kerman	22.2	-9.7	8.5	20.0	-9.5	7.3	24.3	-4.6	9.1
Kermanshah	16.1	-9.6	4.8	15.8	-6.8	5.4	18.3	-5.0	6.5
Gorgan	23.5	-3.1	8.5	23.7	-1.6	8.9	27.6	-2.6	10.9
Mashhad	21.6	-3.6	7.0	17.3	-4.9	6.0	23.8	-5.0	8.7
Hamedan	14.8	-15.4	1.5	12.8	-12.3	2.1	17.0	-9.4	3.2
Yasuj	15.6	-6.0	5.6	17.0	-5.8	5.1	16.6	-6.0	5.6
Yazd	25.6	-3.2	10.4	24.7	-2.9	10.5	26.0	2.2	12.4

Table 10.

Statistics presented in the table 1.9 of the Iran Statistical Yearbook (2018-2019)

Capital of province	Month					
	Farvardin	Ordibehesht	Khordad	Tir	Mordad	Shahrivar
Arak	19 .6	138 .5	55 .6	0 .0	0 .0	0 .3
Ardebil	10 .8	59 .1	28 .8	4 .3	0 .9	7 .6
Orumiyeh	77 .9	105 .2	22 .6	0 .0	0 .0	2 .6
Esfahan	5 .4	35 .0	7 .9	0 .0	0 .0	0 .0
Ahvaz	31 .8	12 .1	0 .0	0 .0	0 .0	0 .0
Ilam	99 .1	114 .4	0 .1	0 .0	0 .0	0 .0
Bojnurd	24 .8	63 .5	10 .4	0 .1	2 .1	0 .2
Bandar Abbas	2 .3	0 .0	0 .0	0 .0	0 .0	0 .0
Bushehr	0 .3	15 .1	0 .0	0 .0	0 .0	0 .0
Birjand	28 .3	15 .9	0 .0	0 .0	0 .0	0 .0
Tabriz	43 .1	54 .2	35 .9	0 .0	0 .1	9 .8
Tehran	37 .0	32 .9	8 .3	0 .0	0 .0	0 .1
Khorramabad	104 .6	140 .9	12 .9	0 .0	0 .0	2 .4
Rasht	6 .4	36 .9	42 .8	32 .6	46 .6	18 .1
Zahedan	3 .6	0 .1	0 .0	0 .0	0 .0	0 .0
Zanjan	14 .4	61 .0	25 .7	0 .0	0 .7	2 .2
Sari	39 .4	18 .6	11 .7	5 .8	73 .9	12 .8
Semnan	14 .9	27 .0	4 .8	0 .0	0 .1	1 .3
Sanandaj	69 .2	108 .8	5 .2	0 .0	0 .0	0 .1
Shahr-e-Kord	28 .6	48 .6	9 .3	0 .0	0 .0	0 .0
Shiraz	22 .2	38 .2	0 .5	0 .0	0 .0	0 .0
Qazvin	10 .2	58 .7	21 .6	0 .0	0 .0	0 .4
Qom	8 .4	33 .9	15 .2	0 .0	0 .0	0 .0
Karaj	33 .4	37 .6	40 .0	0 .0	0 .0	0 .0
Kerman	26 .7	10 .2	0 .8	0 .0	0 .0	0 .0
Kermanshah	63 .5	168 .0	6 .1	0 .0	0 .0	0 .2
Gorgan	25 .0	17 .8	4 .7	15 .8	22 .0	9 .0
Mashhad	37 .7	41 .8	18 .1	0 .0	0 .0	0 .1
Hamedan	43 .9	129 .3	29 .2	0 .0	0 .0	0 .0
Yasuj	66 .2	128 .6	0 .0	0 .0	0 .0	1 .5
Yazd	10 .9	13 .8	0 .2	0 .0	0 .0	0 .0

Capital of province	Month					
	Mehr	**Aban**	**Azar**	**Dey**	**Bahman**	**Esfand**
Arak	5 .5	70 .6	77 .8	75 .5	29 .6	53 .3
Ardebil	8 .9	36 .5	33 .3	28 .5	58 .5	25 .7
Orumiyeh	3 .4	46 .1	102 .2	20 .8	70 .2	63 .9
Esfahan	4 .4	11 .5	30 .0	48 .1	7 .0	4 .8
Ahvaz	13 .9	97 .2	103 .3	29 .8	32 .1	12 .1
Ilam	47 .3	222 .6	165 .2	91 .6	185 .7	102 .6
Bojnurd	15 .9	3 .9	37 .1	32 .9	60 .6	49 .8
Bandar Abbas	0 .5	3 .8	15 .0	0 .1	40 .6	55 .3
Bushehr	30 .0	158 .6	89 .3	23 .0	41 .0	0 .3
Birjand	1 .6	23 .7	5 .2	12 .6	68 .5	40 .8
Tabriz	7 .5	8 .4	86 .6	22 .8	61 .7	33 .9
Tehra	8 .4	49 .9	49 .8	32 .2	29 .6	23 .6
Khorramabad	7 .9	140 .1	146 .8	129 .6	114 .9	89 .1
Rasht	201 .2	145 .9	106 .9	97 .8	218 .9	129 .7
Zahedan	0 .3	0 .1	0 .0	0 .1	6 .0	42 .1
Zanjan	9 .1	26 .3	66 .2	27 .1	47 .3	27 .1
Sari	186 .9	58 .1	45 .1	167 .8	97 .0	170 .4
Semnan	19 .6	10 .6	17 .0	60 .6	11 .3	10 .7
Sanandaj	15 .8	49 .9	111 .8	56 .4	90 .0	43 .4
Shahr-e-Kord	6 .0	54 .4	37 .2	93 .5	20 .0	38 .4
Shiraz	0 .8	42 .9	40 .6	26 .1	55 .1	17 .4
Qazvin	6 .6	39 .6	81 .7	57 .0	27 .9	27 .9
Qom	12 .0	26 .6	21 .7	32 .2	23 .6	31 .5
Kara	17 .8	51 .0	59 .8	45 .7	28 .0	39 .5
Kerman	1 .5	20 .3	0 .6	8 .2	18 .6	13 .8
Kermanshah	30 .1	118 .8	104 .8	34 .9	95 .1	70 .8
Gorgan	54 .5	46 .7	37 .4	125 .5	115 .1	173 .7
Mashhad	6 .9	34 .8	19 .1	13 .4	39 .2	26 .6
Hamedan	17 .7	72 .9	91 .4	50 .3	38 .3	46 .3
Yasuj	0 .4	247 .6	157 .0	180 .5	191 .1	81 .7
Yazd	0 .3	2 .4	0 .2	0 .2	40 .1	2 .3

Table 11.

Statistics presented in the table 1.12 of the Iran Statistical Yearbook (2018-2019)

Capital of province	Year							
	1380	**1385**	**1390**	**1393**	**1394**	**1395**	**1396**	**1397**
Arak	260	283	199	264	285	374	168	526
Ardebil	234	237	259	279	297	230	232	303
Orumiyeh	228	372	334	347	277	286	244	515
Esfahan	94	220	150	96	96	71	90	154
Ahvaz	235	184	89	137	270	113	90	332
Ilam	598	555	361	383	842	449	559	1029
Bojnurd	176	241	209	250	227	276	121	301
Bandar Abbas	85	277	58	190	152	149	83	118
Bushehr	488	224	124	99	273	80	233	358
Birjand	145	135	95	111	144	97	67	197
Tabriz	210	129	272	300	287	263	315	364
Tehran	192	227	316	134	209	194	160	272
Khorramabad	440	510	286	370	536	563	332	889
Rasht	1262	1476	1637	1318	1388	1479	864	1084
Zahedan	14	55	47	68	104	55	30	52
Zanjan	232	308	366	299	283	230	216	307
Sari	591	684	919	641	725	824	540	888
Semnan	73	177	176	110	108	128	67	178
Sanandaj	310	449	373	265	444	317	337	551
Shahr-e-Kord	334	413	240	297	310	317	150	336
Shiraz	317	305	274	225	272	284	172	244
Qazvin	232	325	424	221	314	297	292	332
Qom	125	111	123	74	112	139	94	205
Karaj	351	302	351	191	221	211	170	353
Kerman	119	134	108	123	110	98	35	101
Kermanshah	357	430	415	224	513	457	342	692
Gorgan	468	522	724	364	478	491	424	647
Mashhad	153	223	254	287	183	287	186	238
Hamedan	225	283	313	172	216	344	208	519
Yasuj	1126	777	661	624	611	533	356	1055
Yazd	60	44	22	43	38	24	24	70

Table 12.

Statistics presented in the table 1.13 of the Iran Statistical Yearbook (2018-2019)

Province	Year								Long term
	1380	1385	1390	1393	1394	1395	1396	1397	
Total country	*195 .98*	*147 .68*	*205 .92*	*220 .2*	*221 .3*	*233 .2*	*232 .3*	*323 .5*	*317 .3*
East Azarbayejan	206 .66	204 .80	295 .60	337 .7	326 .4	279 .0	315 .1	262 .7	256 .8
West Azarbayejan	278 .78	289 .83	407 .57	361 .2	391 .8	319 .2	244 .3	434 .4	379 .8
Ardebil	291 .21	195 .15	378 .85	341 .0	378 .3	338 .2	231 .8	248 .8	301 .4
Esfahan	136 .10	127 .90	144 .56	175 .4	121 .8	128 .9	90 .1	224 .4	167 .8
Alborz	000	000	000	202 .2	388 .9	403 .9	170 .2	191 .3	249 .1
Ilam	432 .08	245 .55	262 .11	357 .5	562 .2	430 .5	559 .0	614 .9	431 .4
Bushehr	457 .87	174 .04	124 .28	124 .3	264 .7	268 .6	233 .0	256 .9	245 .6
Tehran	235 .47	185 .01	380 .99	230 .7	263 .7	307 .0	160 .1	358 .2	304 .7
Chaharmahal & Bakhtiyari	670 .53	432 .25	488 .99	448 .8	500 .0	549 .5	150 .2	386 .6	517 .8
South Khorasan	000	36 .53	99 .10	109 .5	85 .6	94 .4	67 .2	129 .5	113 .4
Khorasan-e-Razavi	114 .95	86 .85	198 .34	236 .1	137 .1	212 .9	185 .9	176 .1	189 .1
North Khorasan	000[2]	185 .51	300 .66	245 .9	257 .3	282 .6	121 .4	207 .4	229 .5
Khuzestan	360 .70	195 .36	179 .27	187 .1	347 .2	244 .6	89 .9	428 .5	285 .3
Zanjan	237 .74	211 .37	383 .55	252 .7	295 .7	280 .4	216 .2	145 .1	286 .1
Semnan	110 .04	105 .22	156 .36	134 .0	111 .3	131 .8	67 .1	186 .2	124 .8
Sistan & Baluchestan	31 .95	48 .78	74 .10	78 .5	71 .0	92 .8	30 .1	58 .3	91 .2
Fars	305 .62	205 .79	226 .74	223 .6	246 .3	374 .2	171 .9	211 .3	267 .1
Qazvin	330 .04	266 .95	422 .24	250 .7	282 .0	283 .2	292 .4	299 .2	289 .2
Qom	107 .95	99 .01	141 .74	80 .5	117 .4	173 .7	93 .6	155 .8	133 .8
Kordestan	399 .62	309 .74	472 .39	392 .1	473 .9	392 .5	336 .8	484 .4	458 .1
Kerman	93 .08	58 .79	79 .30	145 .2	122 .8	135 .1	34 .8	38 .7	128 .9
Kermanshah	370 .12	285 .22	432 .58	331 .8	575 .4	472 .8	341 .8	510 .0	397 .0
Kohgiluyeh & Boyerahmad	712 .05	286 .45	426 .15	417 .2	471 .3	386 .1	356 .2	621 .8	523 .3
Golestan	382 .98	302 .73	567 .95	408 .5	547 .5	557 .6	424 .4	470 .0	435 .0
Gilan	1057 .41	897 .20	1231 .13	1104 .1	977 .2	1011 .6	863 .7	623 .8	1060 .1
Lorestan	405 .97	336 .20	331 .13	412 .2	601 .3	591 .8	331 .5	620 .5	425 .9
Mazandaran	774 .84	570 .26	909 .19	700 .4	722 .4	774 .5	539 .9	712 .2	775 .9
Markazi	193 .89	190 .95	238 .27	232 .5	257 .1	314 .6	167 .7	378 .1	246 .0
Hormozgan	105 .33	93 .91	73 .51	87 .8	184 .2	192 .0	83 .1	111 .5	143 .2
Hamedan	271 .51	248 .53	350 .89	272 .4	354 .9	395 .4	207 .5	416 .4	316 .1
Yazd	76 .19	46 .52	60 .31	87 .8	68 .7	59 .1	23 .7	64 .6	63 .9

Table 13.

Statistics presented in the table 1.15 of the Iran Statistical Yearbook (2018-2019)

Aquatic year	Total country	Caspian Sea	Persian Gulf & Oman Sea	Lake Orumiyeh	Central Plateau	Eastern Border	Qareh Qum
The 49-year average (from the years 1347–1348 through 1395–1396)	405.975	74.973	155.589	17.695	136.521	11.383	9.848
1379-80	299 .550	60 .756	110 .450	12 .031	105 .931	3 .923	6 .459
1384-85	351 .635	66 .164	147 .105	17 .102	109 .583	4 .731	6 .950
1389-90	328 .184	66 .913	120 .200	15 .405	110 .723	8 .331	6 .613
1392-93	357 .175	63 .969	141 .775	14 .635	118 .303	10 .484	8 .009
1393-94	328 .846	80 .725	101 .152	19 .560	108 .311	9 .499	9 .598
1394-9	397 .210	90 .540	153 .160	20 .920	111 .210	10 .070	11 .170
1395-96	378 .390	60 .290	156 .600	14 .360	132 .730	6 .440	7 .970
1396-97	*277.640*	*69.870*	*89.950*	*21.200*	*86.150*	*4.170*	*6.300*

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