



Country report

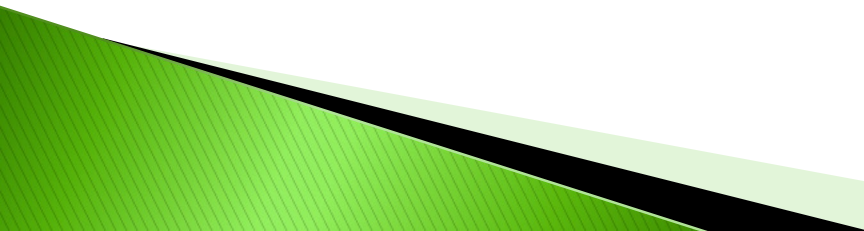
Islamic Republic of Iran

Ministry of Energy (MOE)

Contents

1. General information
2. Past energy demand and supply
3. Outlook of energy demand and supply
4. Current energy policy and measures /Major difficulties and bottlenecks currently faced in formulating energy policies
5. Energy Prices
6. Energy-related investment for domestic and overseas Other information

Iran Energy at a Glance, 2019 :

- ▶ Location : South east of Asia – Middle East region
 - ▶ Area: 1628792 km²
 - ▶ Population : 83.1 million
 - ▶ Production of 2623.7 Mboe of primary energy in the country.
 - ▶ Final consumption totaled 1578.9 Mboe with the rise of about 9.2% considering its previous year.
 - ▶ Per capita final energy consumption of Iran was 1.7 times higher than the global average and 0.8 times higher than the OECD countries.
 - ▶ Energy efficiency decreased by 10.9% compared to previous year.
 - ▶ Energy intensity (using exchange rate and power purchase parity) was 3.5, 1.5 times higher than the global average respectively.
- 

Economic indicators (GDP, population, No. of households, etc.)

Year	Population جمعیت (Million)	GDP ⁽¹⁾ تولید ناخالص داخلی ⁽¹⁾ (10 ¹² Rials) ⁽²⁾	Energy production تولید انرژی (Mtoe)	Net Energy export خالص صادرات انرژی (Mtoe)
2018	82.1	6564.7	396.2	125.2
2019	83.1	6137.3	358.7	○

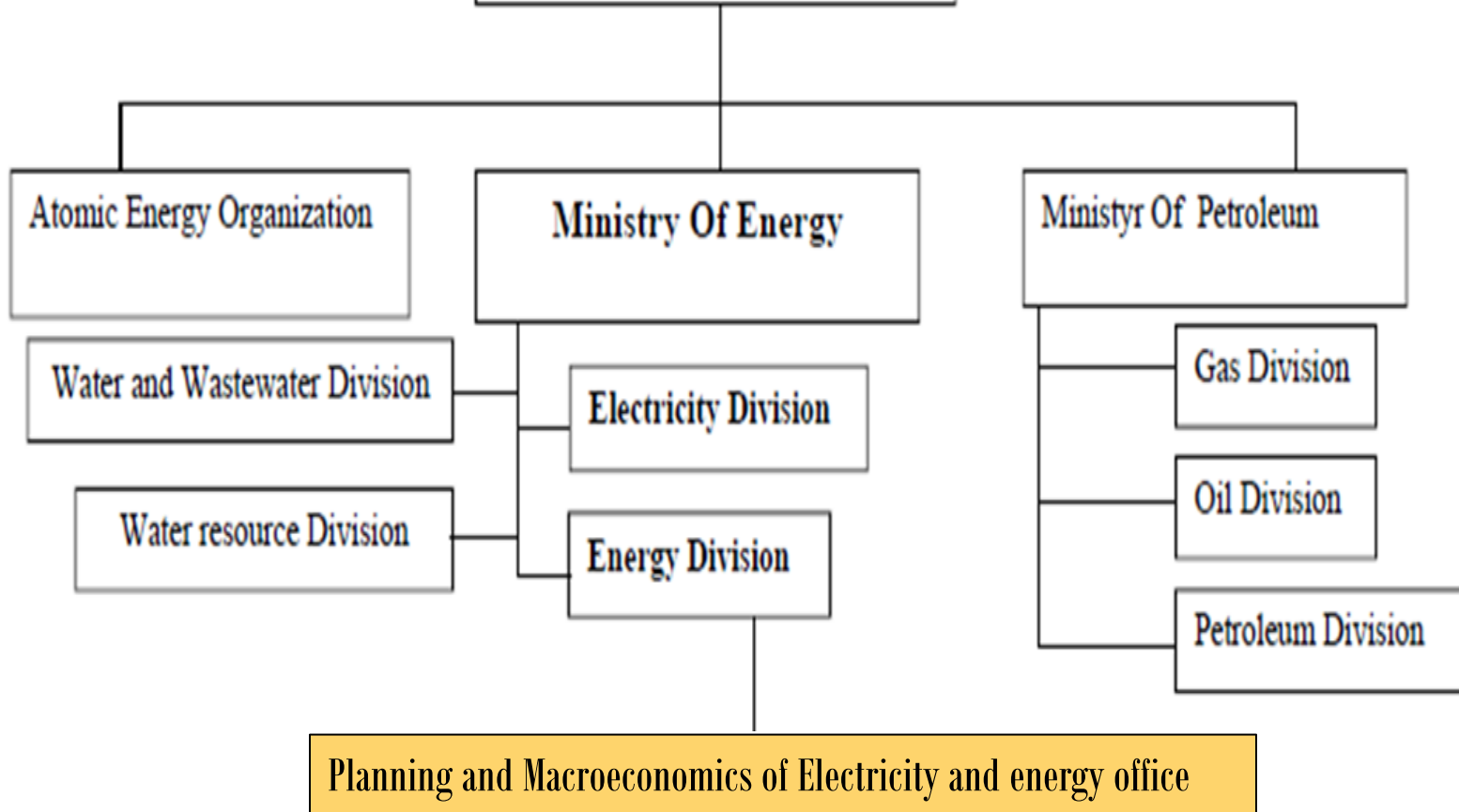
Year	Primary energy supply عرضه انرژی اولیه			Final energy consumption مصرف نهایی انرژی		
	Total کل (Mtoe)	Per Capita سرانه (Toe)	GDP Ratio نسبت به GDP (Toe /10 ⁶ Rial)	Total کل (Mtoe)	Per Capita سرانه (Toe)	GDP Ratio نسبت به GDP (Toe /10 ⁶ Rial)
2018	262.4	3.2	0.04	173.8	2.1	0.03
2019	282.9	3.4	0.05	182.4	2.2	0.03

○ confidential

1) At the constant price of 2011.

2) According to CBI in parallel market, 1US\$, 129185 Rials.

Energy sector in IRAN



Primary Energy Supply in Iran

Description / Year	1974 ۱۳۵۳	1978 ۱۳۵۷	1989 ۱۳۶۸	1995 ۱۳۷۴	2000 ۱۳۷۹	2005 ۱۳۸۴	2011 ۱۳۹۰	2017 ۱۳۹۶	2018 ۱۳۹۷	2019 ۱۳۹۸
oil	242.8	272.6	305.4	507.6	612.3	627.5	730.1	736.7	515.3	621.5
Petroleum Products	-97.5	-60.9	37.6	-34.5	-104.2	-69.4	-123.6	-235.7		
Natural Gas	26.9	24.5	100.6	245.5	392.1	617.6	962.5	1317.3	1363.7	1399.7
Coal	3.4	3.1	6.0	7.8	8.9	10.4	5.7	10.7	11.0	11.9
Coal Products	-0.1	-0.1	-1.3	-1.5	-0.2	0.7	3.2	1.1	0.7	1.0
Combustible Renewables	3.4	3.1	3.8	3.9	2.6	11.8 ⁽²⁾	5.9	8.5	8.5	8.5
Hydro Power	2.0	3.7	4.4	4.3	2.2	9.5	7.1	9.1	9.3	18.3
Renewable Energy	-	-	-	-	-	-	0.1	0.2	0.5	0.8
Nuclear Energy	-	-	-	-	◆	◆	0.6	13.3	12.9	12.0
Total	180.8	245.9	456.5	733.1⁽¹⁾	913.8⁽¹⁾	1208.2⁽¹⁾	1591.6⁽¹⁾	1861.2⁽¹⁾	1922.0⁽¹⁾	2073.6⁽¹⁾

Production, SWAP Imports & Exports of Crude Oil in Iran

تولید، واردات سوآپ و صادرات نفت خام در ایران

(Mb)

(میلیون بشکه)

Year	Production تولید	Direct Export صادرات مستقیم	SWAP Import واردات سوآپ	SWAP Export صادرات سوآپ	سال
1974	2195.3	1956.6	-	-	۱۳۵۳
1978	1833.1	1565.9	-	-	۱۳۵۷
1989	1075.1	743.3	-	-	۱۳۶۸
1995	1433.4	934.0	-	-	۱۳۷۴
2000	1420.1	831.0	4.6	5.5	۱۳۷۹
2005	1467.8	866.9	27.8	23.6	۱۳۸۴
2011	1424.8	810.5	1.3	1.3	۱۳۹۰
2017	1409.6	772.3	-	-	۱۳۹۶
2018	○	○	-	-	۱۳۹۷
2019	○	○	-	-	۱۳۹۸

Lean and Rich Gas Production, Export and Import of Natural Gas in Iran

Year	Production	تولید	Import of lean gas	Export of lean gas
	Rich Gas	Lean Gas		
2017	308389	248025	3861	13227
2018	310060	○	○	○
2019	315506	○	○	○

Coal Production, Import and Export in Iran

Year	Production of processed coal ⁽¹⁾	Import	Export
2019	1102.0	592.5	○

Share of Sectors in Final Consumption of Iran

Year	Residential and commercial	Industry	Transport	Agriculture	Others	non-energy use	TFC ⁽¹⁾
1974	33.8	23.3	22.4	8.3	0.2	12.0	100.0
1978	34.6	19.1	27.2	8.9	0.2	10.0	100.0
1989	39.9	18.0	25.1	8.4	0.2	8.3	100.0
1995	41.3	19.7	24.9	5.9	0.2	8.0	100.0
2000	39.9	19.8	26.2	4.5	0.3	9.2	100.0
2005	41.2	20.2	27.5	3.8	0.3	7.0	100.0
2011	36.1	24.1	24.3	3.9	0.2	11.4	100.0
2017	34.1	24.8	24.3	4.0	0.4	12.3	100.0
2018	34.4	24.8	24.5	4.0	0.3	12.0	100.0
2019	33.9	24.1	22.6	3.7	0.2	15.5	100.0

1) Total Final Consumption

Share of Energy Carriers in Total Final Consumption of Iran

(%)

Year	Petroleum products فرآورده‌های نفتی	Natural gas گاز طبیعی	coal زغال سنگ	Combustible renewables ⁽¹⁾ منابع تجدیدپذیر قابل احتراق ⁽¹⁾	Electricity برق	TFC ⁽²⁾ کل مصرف نهایی
1974	80.5	11.3	0.3	2.7	5.2	100.0
1978	86.0	7.1	0.2	1.6	5.0	100.0
1989	77.9	12.8	0.9	1.1	7.3	100.0
1995	65.0	26.5	0.3	0.7	7.5	100.0
2000	58.9	32.1	0.4	0.4	8.2	100.0
2005	50.9	38.4	0.6	1.3	8.9	100.0
2011	35.2	54.7	0.2	0.5	9.3	100.0
2017	32.0	56.0	0.4	0.6	11.1	100.0
2018	32.2	56.3	0.4	0.6	10.6	100.0
2019	32.5	56.4	0.3	0.5	10.2	100.0

1) Including Biogas and Solid Biomass (solid biomass include fuel woods, charcoal and animal wastes.)

Iran Gross Electricity Generation ⁽¹⁾

تولید ناویژه برق ⁽¹⁾ کشور

(GWh)

(گیگاوات ساعت)

Year	Thermal حرارتی	Hydro آبی	Nuclear اتمی	Wind بادی	Solar فورشیدی	Biogas بیوگاز سوز	Heat Recovery باریافت حرارتی	Total جمع	سال
1974	10584.0	3421.0	-	-	-	-	-	14005.0	۱۳۵۳
1978	13598.0	6249.0	-	-	-	-	-	19847.0	۱۳۵۷
1989	45190.0	7522.0	-	-	-	-	-	52712.0	۱۳۶۸
1995	77693.3	7288.3	-	3.9	-	-	-	84985.4	۱۳۷۴
2000	117682.3	3664.5	-	36.5	0.1	-	-	121383.4	۱۳۷۹
2005	161917.7	16100.2	-	70.9	0.1	-	-	178088.9	۱۳۸۴
2011	227427.2	12058.3	327.1	217.0	0.05	21.9	-	240051.6	۱۳۹۰
2017	284987.8	15395.6	7450.5	307.1	86.2	38.1	41.3	308306.5	۱۳۹۶
2018	285256.1	15765.1	7245.9	518.2	339.5	21.6	28.8	309175.3	۱۳۹۷
2019	287520.6	31087.5	6756.7	615.6	672.8	18.6	32.0	326703.8	۱۳۹۸

1) Including Electricity generation by MOE, large industries, small scale hydro power plants of the Ministry of Agriculture Jihad and other wind and solar power plants of Atomic Energy Organization of Iran.

CO2 emission (Unit: Mt CO2) by sector and energy source

Pollutant and GHG Emissions in Iran by Sectors, 2019

(10³Ton)

Sector/Emissions	CO ₂
Final Energy Consumption:	
Residential, comm. Public	161981.9
Industry	114031.2
Transport	156389.4
Sea, Land & Railways	150875.8
Railroad	1356.6
Airline	4157.0
Agriculture	13869.8
Energy Sector Uses:	
Refinery	18894.8
Power plants	195118.3
Total	660285.3

- Not available.
- ◆ Less Than 0.05

Pollutant and GHG⁽¹⁾ Emissions from Fuel Consumption in Iran, 2019

(10³Ton)

Fuel / Emissions	CO ₂
LPG	7163.4
Gasoline	77867.4
Kerosene	5859.6
Gas Oil	107758.9
Fuel Oil	22295.0
JP4	112.6
ATK	4044.3
Natural Gas	420583.7
Animal wastes	144.5
Shrubs and scrubs	1004.2
Firewood	4415.9
Charcoal	0.6
Coal	40.8
Coke oven gas	216.9
Blast furnace gas	3883.2
Refinery gas	4894.2
Total	660285.3

- Not available
- ◆ Less than 0.05
- 1) Greenhouse Gas

Evaluation for the presence of an impact of COVID-19 on energy demand and supply in 2021

- ▶ Household electricity consumption has been fluctuating due to quarantine.
- ▶ The growth of industrial electricity demand continues regardless of the corona.
- ▶ Widespread restrictions have led to a decline in serious activity in the commercial sector.
- ▶ The demand for public sector electricity has decreased due to the closure of schools.

Forecast of total energy in different sub-sectors up to 2040

(MW per year)

Sectors	2020	2025	2030	2035	2040
Residential	53336	58055	61833	65945	70360
Services	12071	13598	15562	18139	22118
Agriculture	1744	2061	2436	2879	3403
Industry	33976	41659	51166	62791	77055

Demand for energy carriers in the continuing the current trend with savings scenario

Year		2030	2035	2040
	Electricity	481.7	413.4 1	363.2
	Liquid gas	0.045	0.06	0.07
	Gasoline	51.32	44.50	38.62
	Kerosene	0.01	0.01	0.01
	Aviation Gasoline	6.5	4.6	3.5
natural gas (billion cubic meters)	Final consumption of natural gas	207.6 2	181.0	159.3
	Power plants fuel	86.7	80.51	84.24
	Petrochemical feed, refineries and hydrogenation	26.48	23.58	20.19
	Total final consumption, power plant fuel and energy sector	320.8	285.1 1	263.8
	Gasoline	56.6	55.92	52.5
	Fuel oil	11.65	10.09	8.8

Power generation of different power plants up to 2040 (tWh)– continue the current trend with savings

	2020	2025	2030	2035	2040
Gas	33.48	29.54	27.61	0.71	----- -
Distributed generation	4.44	12.75	16.64	16.88	16.72
CHP	8.86	24.53	33.53	40.99	50.16
Steam	83.66	70.1	55.81	46.27	30.94
Charcoal	-----	-----	-----	-----	-----
Simultaneous production of electricity and fresh water	0.26	0.49	0.77	1.1	1.5
Combined cycle	191.9 9	206.9	235.2 6	283.1	345.4
Total thermal power plants	322.6	344.3	369.7	389.0	444.7

Power generation of different power plants up to 2040 horizon (tWh)– continue the current trend with savings

	2020	2025	2030	2035	2040
Atomic	8.76	8.76	17.03	24.92	24.93
renewable	11.19	21.96	36.31	61.83	75
Hydroelectric	22.88	24.3	25.48	31.57	37.62
Total	42.83	55.02	78.82	118.32	137.55

Emission rate of greenhouse gases (thousand tons)

continue the current trend with savings

YEAR	CO2	CH4	N2O
2020	178217.2	1.53	0.55
2025	184094.8	1.76	0.56
2030	1899.84	1.22	0.57
2035	184846.2	1.2	0.56
2040	201167.8	1.05	0.58

Challenges and main issues

growth of electricity consumption and high intensity of energy consumption

- Power plant efficiency and electricity losses
- Large difference between mandatory sales prices and electricity costs
- Low technology and worn-out facilities and electricity transmission and distribution networks
- Lack of development of renewable power plants in accordance with upstream programs and global growth and development
- Significant reduction of new investments in the construction of power plants by the private sector

Challenges and main issues

- ▶ • Significant reduction of new investments in the construction of power plants by the private sector
- Failure to reform the sales tariff and branch of electricity in accordance with the inflation rate in previous years
- Insufficient allocation of public resources to create the required infrastructure in the transmission and distribution network
- Concerns about the supply of fuel needed for power plants

Domestic Sale Prices of Petroleum Products in Iran

(Rial / Liter)

Year		LPG گاز مایع	Fuel oil نفت کوره	(ATK) سوخت سنگین	Gasoil نفت گاز	JP4 سوخت سبک	Kerosene نفت سفید	super gasoline بنزین سوپر	Gasoline بنزین
2019	First 8 months	2300 ⁽²⁾	Power plant: 50 Other Sectors: 3000	●	Power plant: 50 Other Sectors: 3000	●	1500	12000	10000
	Quota	2300 ⁽²⁾	Power plant: 50 Other Sectors: 3000	●	Power plant: 50 Other Sectors: 3000	●	1500	35000	15000
	Free			●		●			30000

Domestic Natural Gas Sale Price in Iran

(Rial/m³)

Discription	1978 ۱۳۵۷	1989 ۱۳۶۸	1995 ۱۳۷۴	2000 ۱۳۷۹	2005 ۱۳۸۴	2011		2018		2019	
						First Seven months of 2011	The Last Five months of 2011	First Seven months of 2016	The Last Five months of 2016	First Seven months of 2018	The Last Five months of 2018
						Residential	2	5	16	55	80
Transport	-	-	-	55	60	2600	2600	●	●	●	●
Industry (major industries)	1	2	24	105	139.7	700	700	1000	1000	1000	1000
Industry (small)	-	-	-	-	-	700	700				
Oil Pump Stations & Refineries	-	-	-	20	35	700	700				
Feed stocks of petrochemical Complexes for urea fertilizer production	-	-	-	20	40	700	700	(2)	(2)	(2)	(2)
Petrochemical Complexes	-	-	-	61	90	700	700	1320	1320	2600	2600
Steel	-	-	-	●	●	700	700	1320	1320	2600	2600
Agriculture	-	-	-	-	●	1000	600	1150	690	1150	690
Power Plant	1	2	7	20	29	800	800	●	●	450	450

Domestic Natural Gas Sale Price in Iran

(Rial/m³)

Discription	1978 ۱۳۵۷	1989 ۱۳۶۸	1995 ۱۳۷۴	2000 ۱۳۷۹	2005 ۱۳۸۴	2011		2018		2019	
						First Seven months of 2011	The Last Five months of 2011	First Seven months of 2018	The Last Five months of 2018	First Seven months of 2019	The Last Five months of 2019
Public											
Commercial					200	1000	1000	1495	1495	1495	1495
Public Commercial	2	5	24	121	200	2000	1000	2990	1495	2990	1495
Bathhouse					•	700	700	1046	1046	1046	1046
Bakery	-	-	-	-	•	700	700	910	910	910	910
Special commercial purposes	-	2	4	17	35	1000	1000	•	•	•	•
Public											
Education Centers	-	-	-	74	70	600	600	926	926	926	926
Sport Centers	-	-	-	74	70	600	600	926	926	926	926
Religious purposes	-	-	-	5	35	1000	600	926	926	926	926
Rural Mosques	-	-	-	•	•	1000	600	•	•	•	•
Charities	-	-	-	5	70	600	600	•	•	•	•

Source: [1]

• Not available.

2) According To monthly notice.

Average Electricity Sale Prices in Iran

(Rial / kWh)

Year	Residential خانگی	Public عمومی	Commercial تجاری	Industry صنعتی	Agriculture کشاورزی	Total Average ⁽¹⁾ متوسط کل
1974	2.3	1.1	1.1	1.2	1.0	1.4
1978	3.7	1.5	1.5	1.9	1.8	2.3
1989	5.3	8.5	8.5	3.5	3.9	5.4
1995	20.5	53.1	74.1	53.1	7.8	38.8
2000	65.1	83.5	247.0	121.0	12.8	89.4
2005	102.7	176.8	449.6	201.4	21.6	152.0
2011	334.8	501.6	1275.3	441.9	125.7	409.5
2017	555.2	789.4	2251.5	696.5	215.1	682.7
2018	612.1	724.5	2440.3	755.0	226.5	744.0
2019	688.1	882.2	2611.1	807.9	242.4	809.0

Energy-related investment

Investment required for the development of oil and gas fields in different scenarios
(Billion dollars at a fixed price in 2014)

	Scenario	2020	2025	2030	2035	2040
Rich gas	Continuation of the current trend with savings	21.23	1.32	0.098	0.026	0.114
	High growth with energy savings	22.22	9.9	7.49	0.618	0.8
Crude oil	Continuation of the current trend with energy savings	86.657	-	-	-	26.85
	High growth with energy savings	86.657	-	-	-	26.85

Investment required for the development of gas and oil refineries in different scenarios
(Billion dollars at a fixed price in ๑๑๓๓๑)

	Scenario	2020	2025	2030	2035	2040
Natural gas	Continuation of the current trend with savings	24.81	1.31	-	-	-
	High growth with energy savings	24.84	1.31	-	-	-
oil	Continuation of the current trend with energy savings	4.14	-	7.78	-	-
	High growth with energy savings	4.14	-	8	-	-

Investment required by different types of power plants

year	2020	2025	2030	2035	2040
High growth	14.5	30.05	40.86	74.02	104.6
Continuation of the current trend	12.37	13.97	21.73	25.2	16.85

Thanks for your attention

