Kurdistan Region Government
Ministry of Planning
Kurdistan Region Statistics Office

Electric generators in the private sector
Kurdistan Region
2021

Industry Statistics department

January 2024

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Introduction

Electricity covers almost all aspects of life. It has an important role in our daily life and in different production sectors.

Clause 1, Article 2 of the law of ministry of electricity states: electricity supply is necessary to meet the needs of the society and the national economy. Despite a large budget that is spent to meet the needs for electricity, Iraq has been suffering from lack of electricity for more than three decades. For this reason, citizens seek another source to get electricity.

Private generators are very important to provide electricity, especially in summer, but they have not been far from economic problems. Lack of public electricity, made Iraq and Kurdistan Region to rely on private electricity generators and this made people pay additional financial cost which in addition to other poor government services put a heavy financial burden on low-income people in most parts of Iraq.

As part of the plan of the Iraqi Central Statistics Organization and Kurdistan Region Statistics Office, for the first time, the survey of private electric generators was conducted in the second quarter of the year 2022 in Kurdistan Region and all Iraq's governorates. This report contains several sections including survey methodology, fieldwork, summery and recommendations.

Definitions and abbreviations

Ampere: Amper is defined as the unit of electric current in the International System of Units (SI). One ampere is equal to 1 coulomb, moving past a point in a second. It is referenced to French mathematician and physicist Andre-Marie Ampere.

Voltage: Voltage is referred to as electric potential difference between two points. In the International System of Units (SI), the measurement unit for voltage is volt, represented by the symbol "V". Volt is same as Joules per coulomb. Volt is named referenced to Italian scientist Alessandro Volta, who had many achievements in the field of electricity.

Watt: In the International System of Units (SI), watt is used to measure the energy transfer over a unit of time. A Watt is the unit of electrical power equal to one ampere under the pressure of one volt. Watt is equal to one joule per second.

The bigger unit is kilowatt (thousand Watts) that measure the amount of electricity used in an appliance. The more kilowatts an appliance uses, the more electricity it needs to operate. Therefore, electrical devices are classified according to the amount of electricity they use for operating.

Open Data Kit (ODK) program: It is an application used in data collection through electronic devices (tablets, mobile phones, laptops). In this survey, tablet was used to collect data.

Generator: In 1831, the scientist Michael Faraday invented the electric generator, which is used to convert mechanical energy into electrical energy and works on the basis of electromagnetic induction when a conductor passes through a magnetic field, resulting in creating a voltage or electric pressure between two points, then this electricity is distributed and provided to customers by electricity lines.

Electric energy: Energy is generally defined as the ability to do wok. There are many types of energy, the most important one is electrical energy. Comparing to other forms of energy, electrical energy can be easily changed to other forms of energy, however there is problem to store it in large amount. Electricity is used in various fields, for example, to operate electrical appliances, heating and cooling, transportation, and industry for many other works at home and other fields. Electricity is considered to be an important part of the various energy sources used in the world. It is worth mentioning that electricity is a secondary source of energy in the sense that it cannot be directly extracted from the ground like, coal. It is taken from other sources of energy such as coal, natural gas, nuclear reactions, wind energy, solar energy and other sources.

Actual energy: Actual energy, also known as system energy, it represents the highest output of a system or activity or factory that is expected to actually maintain its production under normal conditions.

Designed energy: It refers to the maximum output that a particular system, process or activity can achieve under ideal conditions that do not allow for the allocation or adjustment of times required for preventive maintenance. This energy is sometimes called peak energy.

Electric power : Electric power is the rate of electric energy transfer by an electric circuit per unit of time

Employee: It refers to all people who actually work in the establishment, with or without pay, whether they are the owners of the establishment, their household members, or other people.

Salary and wages : It is the amount paid to workers by the employers in exchange for regular working hours.

Expenses : Expense is the total workers compensation and other expenses including fuel, administrative services, oil, petroleum and maintenance services.

Income: It includes income from the activities of the establishment, as well as daily income achieving for its work.

Fixed assets: Fixed assets are those assets which establishment possess and buy during the year in order to meet its needs and not for the purpose of selling, such as generators (motor + generator head), tank for fuel and water, equipment and furniture.

Section One: Methodology

Section one: methodology

This survey has been done in accordance with Generic Statistical Business Process Model (GSBPM), which contains the following phases:

Specify needs	Design	Build	Data collection	Data process	Analyses	Dissemination	Archive	Evaluate

Specify Needs

Specify needs phase is the starting point of the electricity generator survey to achieve the following:

- Distribution of the sites of generators by governorates,
- Number of employees,
- Amount of income,
- Value of supplies (needs) and fuel,
- Value of fixed assets,
- Number of running hours of the generators during the peak and off-peak time,
- The amount and value of fuel consumed during peak and off-peak time,
- Environmental impacts.

Design

At this stage, the statistical community and the framework of the survey's sample are determined and the survey questionnaire is developed, as well as the methods and tools of data collection and the sample size according to the designated site. The most important outcomes of this phase are:

Statistical community (Target)

In electricity generators' survey, the statistical community includes all the private generators that operate in the Kurdistan Region used to provide electricity to households, shops and businesses places for a specified amount of money. The survey includes data for 2021 and was conducted in all governorates of Iraq and Kurdistan Region.

Field work

Obtaining data, it was relied on a field survey of electric generators by using the ODK program on tablet through a personal interview directly done by field teams in all governorates. The teams were already trained and prepared to carry out the field work under supervision of central supervisors from KRSO and CSO.

Survey questionnaire design

The survey questionnaire was prepared and designed by the Directorate of Industrial Statistics in Central Statistical Organization after discussing with KRSO and statistics directorates of governorates in Kurdistan Region and Iraq. The questionnaire was also pre-tested in the field in order to identify new statistical indicators.

Questionnaire sections:

- Identification data of the establishment (generator site).
- Electrical power,
- Supplies and fuel,
- Water and environment,
- Fixed assets.

After approval of the survey questionnaire, the questionnaire was converted into an electronic format in order to be dealt with through the advanced data collection system (ODK) using tablets for the following purposes:

- following up the field Enumerators' work area,
- Finding the sample (generator sites) using the map on the tablet,
- Obtaining complete data with high quality by using data auditing rules,
- Having connection between supervisor groups and Enumerators by sending and receiving notes between themselves.

Statistical framework for generators survey

A comprehensive process has been done to update the framework of all generator sites for the private sector, which provide electricity in all governorates of Iraq. The statistical directorates in governorates and administrations visited the relevant parties where the generators' site, and owners' mobile numbers are recorded in order to conduct generator survey in a sample form.

Sample design

• Designing and developing appropriate plans for selecting sample units for data collection purposes,
• Selecting sampling units,
• Preparing appropriate methods for selecting sample units.
• Identifying the necessary descriptive data to implement the statistical framework and selecting the sample. Table (1) shows the number and percentage rate of governorates that are categorized by the number of the generator sites in governorates.

Due to the lack of data related to the generators in the private sector, it was relied on the category of the number of generators sites in each governorate to achieve a suitable representation for the number of generators. The weighting process of the generators survey for each governorate was done according to the total number of generators sites in each governorate. 3% is determined as non-response rate.

Table 1: Distribution of the sample by the categories of the number of operating generators and the number of governorates in each category in Kurdistan region

Series	Category	Number of governorates within the category	Percentage rate
1	and less 800	1	%18
2	801-1200	1	%17
3	1201-1400	1	%16

For the fieldwork purposes, the sample size is rounded to the nearest even integer. Table (2) shows the distribution of the sample according to the percentage for each governorate.

Table 2: Distribution of the sample by the categories of the number of operating generators and the number of governorates in each category in Kurdistan region

Governorate	Community size	Percentage of sample	Total sample size
Erbil	1,342	16%	214
Sulaymaniyah	1,156	17%	196
Duhok	610	18%	110
Total	**3,108		520

*Calculated by dividing the sample by the community.
**After updating the generator sites, some sites were merged because they belong to the same owner.
*** 35of generator sites in the districts of Shekhan and Makhmur in Nineveh governorate which are governed by Kurdistan Region administration have been covered in this survey.

Organization stage

This is the last phase of preparation before the process of fieldwork and data collection, where the necessary procedures are prepared.

Training and Data collection

A two-day training course was held between 25-26 /6/ 2022, in which the Enumerators and supervisors of the governorates of Iraq and Kurdistan region participated. The questionnaire was explained and discussed during the course, and participants were trained on how to fill out the questionnaire according to the prepared program for data entry which was installed on participants' electronic devices in June.

After selecting the survey sample and identifying the field Enumerators, a training course was held, where the enumerators and supervisors of the governorates of Iraq and Kurdistan region participated in which the questionnaire was explained and discussed, and participants were trained on how to fill out the questionnaire according to the prepared program for data entry which was installed on participants' electronic devices in June.

Data organizing and data treatment stage

The purpose behind Data organization and treatment is to:

1- Separating and organizing in different rows, groups or categories,
2. Summarizing detailed data and presenting it based on key points or main data,
3- Grouping or managing those data that follow each other,
4- Treating missing or incomplete data,
5- Treating and auditing irrational data,
6. Organizing, analysis and presenting data.

Beneficiaries of data

1- Ministry of Planning,
2- Ministry of Electricity,
3- Ministry of Oil,
4- Ministry of Health and Environment.
5- All governorates,
6- Higher education students and scientific researchers.

Table 3: Main indicators of private generators operating in Kurdistan Region

Sequence	Indicator	Value
1	Totalsiteof generators	3,108
2	Total number of generators	7,354
3	Total number of employee	7,746
4	Number of employees under 18 years of age	166
5	Annual wages (1000 IDs)	36,469,056
6	Monthly average wage for each employee	392
7	Percentage of generators owned by women	0.5
8	Number of users (beneficiaries)	1,311,598
9	Number of ampares	5,290,169
10	Income during peak time(1000 IDs)	273,772,706
11	Income during off- peak time (1000 IDs)	452,535,338
12	Total Income (1000 IDs)	726‹308‹043
13	Consumed fuel during peak time(Liter)	311,250,569
14	Consumed fuel during off- peak time (Liter)	443,571,942
15	Total value of fuel durin peak and off-peak time(1000 IDs)	428,865,922
16	Amount of oil or grease consumed during peak and off-peak time (liter)	6,764,743
17	Total value of consumed oil(1000 IDs)	26,050,079
18	Value of maintenance (1000 IDs)	12,336,987

Section two: The practical aspects of the survey

Section two: The practical aspects of the survey

Generator sites: It is the place where one or more generator is located in order to provide electricity to citizens. The place or land may belong to the owner of generator or someone else.

Given that the survey was conducted using a sampling method, it should be noted that the numbers in the tables are rounded.

Environment of generators' site (Urban or rural)

The registration of work environment of generators' site is determined by relevant authorities. One of the benefits of registering generators is the supply of monthly fuel, however in Kurdistan Region, generators owners are not entitled to any subsidies unlike other governorates in Iraq. Generators are also considered registered if they are registered with the municipal council in the governorate.

Relying on the survey framework, the total number of generator sites in Kurdistan Region is 3,108, of which 90% of the sites are in urban areas and 10% in rural areas. At the governorate level, Erbil governorate has the highest number of generator sites with 1,342 sites, of which 1,239 are in urban areas (92%) and 103 are in rural areas (8%). The highest percentage of private generators in rural areas is located in Duhok governorate with 31% as shown in Table 4.

Table 4: Numbers and percentages of generator sites by governorate and environment in Kurdistan Region

Governorate	Environment				Total sites	
	Urban area		Rural area			
	Number	%	Number	%	Number	%
Duhok	422	69%	188	31%	610	100%
Sulaymaniyah	1128	98%	28	2%	1156	100%
Erbil	1239	92%	103	8%	1342	100%
Kurdistan Region	2789	90%	319	10%	3108	100%

Generator: It is an economic unit of work consisting of (engine + generating head) with a legal entity fixed in a site in which a specific economic activity is carried out and owned by a person or a group of people.

Number of generator sites

According to the results, the number of registered generator sites in Kurdistan Region is (3,028) sites. At the government level, Erbil governorate has the highest number of registered generator sites (1,338) followed by Sulaymaniyah with 1150 sites and Duhok governorate with only 540 sites. Table 5 shows the registration status and number of generator sites at the level of Kurdistan Region and governorates.

Table 5: Number of generator sites by registration status at the level of Kurdistan Region and governorates

Governorate	Registration status*		Number of sites	Number of generators
	Registered	Unregistered		
Duhok	540	70	610	1,819
Sulaymaniyah	1,150	6	1,156	1,759
Erbil	1,338	4	1,342	3,776
Kurdistan Region	3,028	80	3,108	7,354

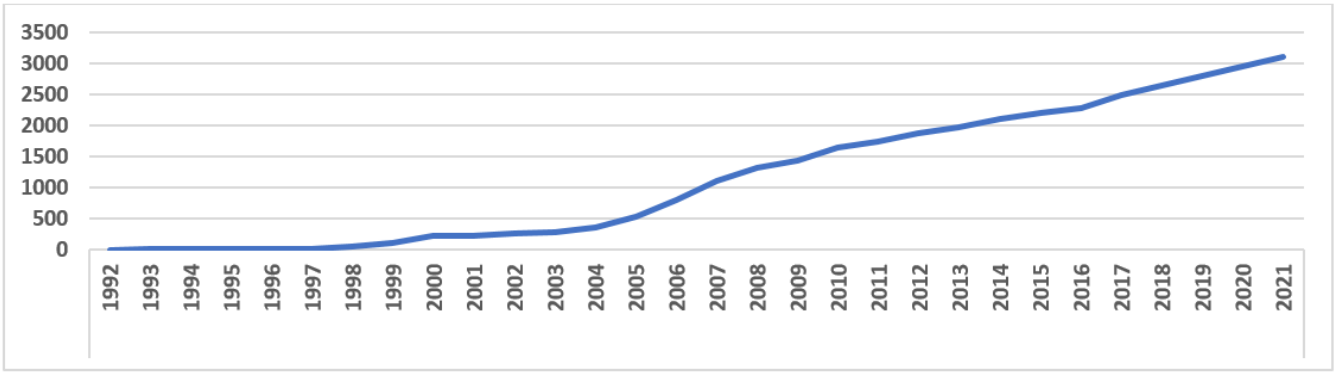
*** Registration has been carried out for generator sites not for each generator**

Using electric generators in Kurdistan region

The results of the survey indicate that electric generators were not used during the years 1999-2000 due to the following reasons: 1) stability in public electricity supply 2) low population 3) difficulty in importing generators and raw materials.

During the 1990s, at the level of Kurdistan Region, 107 electric generators' sites were registered, while during the years 2001-2021, these sites were significantly increased in most governorates due to the new situation and changes occurred during these years in term of population growth, in addition to insufficient supply of public electricity.

Figure 1: Number of generators sites in Kurdistan Region in 1992-2021



Generators by country of manufacture

Country of manufacture is the country where the generator is manufactured. The survey of generators and electricity shows, most generators that imported to Kurdistan Region are manufactured in Sweden amount to 4,821 (66%) generators followed by Germany with 997 generators (14%) and Britain with 712 generators (10%). Japanese registered the least number with only 7 generators (0.1%), table 6.

Table6 : Number of generators in private sector imported to Kurdistan Region by country of manufacture at the level of governorate

Governorate	Country of manufacture									
	Sweden	Germany	Britain	USA	Russia	Italy	Korea	China	France	Japan
Duhok	608	654	122	143	0	6	0	38	6	0
Sulaymaniyah	1,114	73	371	139	0	18	7	7	11	0
Erbil	3,099	270	219	28	12	27	0	27	25	7
Kurdistan Region	4,821	997	712	310	12	51	7	72	42	7

Electrical Control Panel

It is an external or internal electronic box that contains circuits breaker or electrical switch. Each circuit is connected to a user in one side and to a generator on the other side. This box also reduces the burden on the generator owner when there are overcurrent/overload in the electricity supply without damaging the electrical amps supplied to consumers (households, shops and commercial places). Following figure shows an image of a control panel.

According to the survey, in Kurdistan Region, the number of generator sites with external control panels is 597 sites, and those with internal control Panel is 2,002. At the level of governorate, in Erbil governorate, there are 169 (28%) sites with external control panel and 1056 (53%) with internal control panel. In Sulaymaniyah governorate, the number of generator sites with external control panel is 390 (65%) and those with internal control panel is 406 (20%). Duhok governorate registered 39 (7%) sites with internal control panel and 540 (27%) wit external control panel (Table 7).

Table 7 : Control Pannel for private generators in Kurdistan Region by governorates and place of installing (internal or external)

Governorate	Control panel						Total sites
	External		Internal		External and internal		
	Number	%	Number	%	Number	%	
Duhok	39	7%	540	27%	31	6%	610
Sulaymaniyah	390	65%	406	20%	360	71%	1,156
Erbil	169	28%	1,056	53%	117	23%	1,342
Kurdistan Region	598	100%	2,002	100%	508	100%	3,108

Employees

Workers in any economic sector are considered as an important and almost essential basis in the progress of that sector. Like other sectors, electricity sector and electricity production activities involve workers and contribute in reducing unemployment in Kurdistan Region and Iraq. Whoever, this contribution is not noticeable in private generator area.

Generators require the human resource in the following areas:

1. Operating
2. Maintenance and repairing,
3. Fuel
4. Installation and wiring

Number of workers

According to the survey of private sector generators, in 2021, in Kurdistan Region, the total number of workers involving in the field of generators such as operation, repair and maintenance, electricity supply, guards and managers is 7746 workers. At the level of governorates, in Erbil governorate, the total number of workers working in this area is 3,908 workers, of which 3,776 are Iraqi and 132 are non-Iraqi. In Sulaymaniyah governorate, 2,040 workers are involving in generators area, of which 2,026 are Iraqi and 14 are non-Iraqi. In Duhok governorate, the number of workers is 1,798, of which Iraqis are 1,722 and non-Iraqis are 76 (Table 8).

Table 8: Number of workers in private generators area (Iraqi, non-Iraqi) in Kurdistan Region by governorates

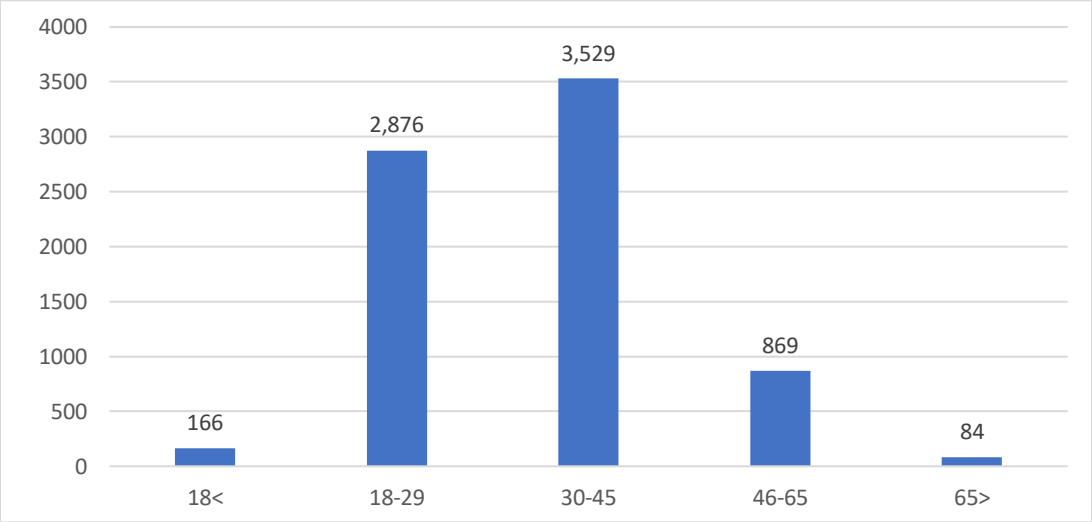
Governorate	Number of workers		Total
	Iraqi	Non-Iraqi	
Duhok	1722	76	1798
Sulaymaniyah	2026	14	2040
Erbil	3776	132	3908
Kurdistan Region	7524	222	7746

By age group, 166 workers who are working in private generators area are under age of 18. This group are those who dropped out their education or working after their school hours. Also, the workers older than age 65 years are 84 as shown in Table 9.

Table 9: Number of workers in private generators area by age group and governorate in 2021

Governorate	Age group					Total
	18<	29-18	45-30	65-46	65>	
Duhok	39	712	774	161	36	1722
Sulaymaniyah	55	823	861	275	12	2026
Erbil	72	1341	1894	433	36	3776
Kurdistan Region	166	2876	3529	869	84	7524

Figure 2: Number of workers working in private generators area by age group in Kurdistan Region in 2021



Wage

Wage is a relative concept that varies depending on the employee's and employer's point of view. On the employee's point of view, it is the amount he or she receives at regular intervals, and for employer, wage is the amount which he or she paid. In different economic sectors, the wages paid to workers improve the individuals' standard of living and play an important role to move the economic wheels in general.

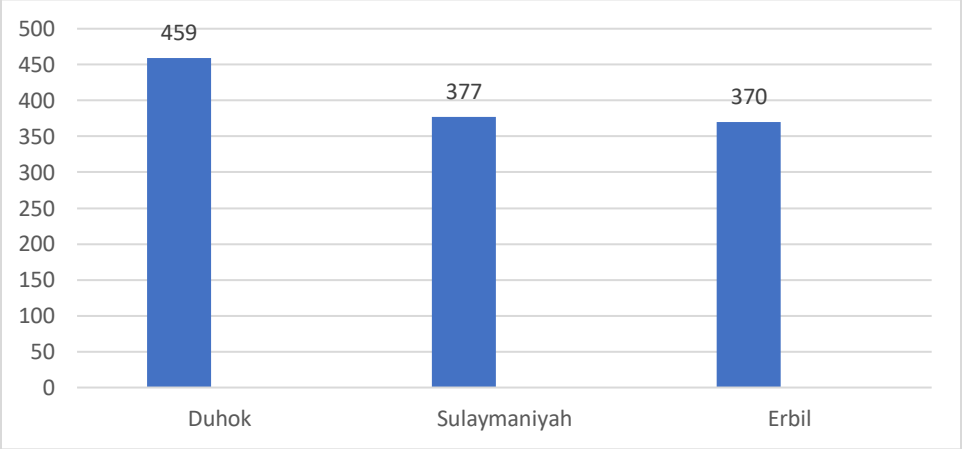
According to the private sector generators survey in 2021, in Kurdistan Region, the annual wages paid to workers (Iraqi and non-Iraqi) is about 36.496 billion IDs, of which nearly 34.943 billion IDs accounting for 95.8% is paid to Iraqi workers and about 1.525 billion IDs accounting to 4.2% is paid to non-Iraqi workers. Also, In Kurdistan Region, the average monthly wage per worker (Iraqi and non-

Iraqi) is 392 thousand IDs. At the level of governorates, in Duhok governorate, the average monthly wage per employee (Iraqi and non-Iraqi) is 459 thousand IDs which is the highest compared to 377 thousand IDs for each employee in Sulaymaniyah and 370 thousand IDs in Erbil governorate (Table 10).

Table 10: Value of annual wages and average monthly wage per worker in private sector generators by governorate in 2021, value in 1000 IDs

Governorate	Iraqi		Non-Iraqi		Total workers	Total annual wages	average monthly wage per employee
	Number	Value of annual wages	Number	Value of annual wages			
Duhok	1722	9,330,942	76	567380	1798	9,898,322	459
Sulaymaniyah	2026	9,113,726	14	102420	2040	9,216,146	377
Erbil	3776	16,498,777	132	855810	3908	17,354,588	370
Kurdistan Region	7524	34,943,445	222	1,525,610	7746	36,469,056	392

Figure 3: Average monthly wage per worker (Iraqi and non-Iraqi) in private sector generators by governorate in 2021, value in 1000 IDs



The survey results show that some generator owners work directly in their generator site in exchange for wage. According to the results, 1,826 of generator owners work directly on their generator site, of which 177 work in exchange for wages.

At the level of governorates, in Erbil governorate, the number of generator owners who are working on their generators sites is 1,077 followed by Sulaymaniyah with 582 owners and Duhok governorate with 167 owners (Table 11)

Table 11: Number of generator owners working in generator site (paid and not paid) in Kurdistan Region by governorate in 2021, value in 1000 IDs

Governorate	Dose the generator owner work in generators site?			Paid or not-paid		
	Number of generators owners	No	Yes	Not paid	Paid	Annual wage
Duhok	610	443	167	140	27	151147
Sulaymaniyah	1156	574	582	486	96	492925
Erbil	1342	265	1077	1023	54	271106
Kurdistan Region	3108	1282	1826	1649	177	915178

Generator Owners' Education Attainment and Gender

According to the survey of generator and electricity power, most of generator owners hold a primary education attainment. This indicator shows that working in the generator sector does not require a specific certificate. There are 1,067 (34%) generator owners with primary certificate, 732 hold secondary certificate, and 652 have no education attainment (Table 12).

Gender of Generator Owners

Women have an important role in the development of community, and their participation in the labor force is considered as an effective factor in economic growth. Women's participation in labor market (private sector) is lower than that of men due to the common custom and traditions of the community, in addition to unwillingness of women to appear under their real name. According to the results, the percentage rate of women who involving in generator sector in Kurdistan Region is 0.5% with only 14 women.

Table12 : Education attainment and gender of owners of private electric generators in Kurdistan Region 2021

governorate	Education attainment					Gender		Generator sites
	Without certificate	With certificate	Secondary	Primary	College and above	Male	Female	
Duhok	109	138	182	98	82	610	0	610
Sulaymaniyah	118	558	284	89	107	1142	14	1156
Erbil	425	371	266	118	163	1342	0	1342
Kurdistan Region	652	1067	732	305	352	3094	14	3108

Fixed assets

Fixed assets are defined as long-term physical assets that are used to generate income in organizations and companies. One of the most important goals of fixed assets is to provide long-term financial benefits for the company. The life of fixed assets is estimated to be more than one year.

Land using for electric generators

The results of the survey of generators in Kurdistan Region show that out of a total of 3,108 generator sites, the land of 240 sites owned by generators owner, 408 sites are rental that rented for more than 1.411 billion IDs annually. 2,121 sites are rent free land that covered 576,226 m^2 as shown in Table 13. Regarding the area of land used for generators, Kurdistan region has more area for each generator than other Iraqi governorates.

Land ownership

The land dedicated to generators is one of the most important requirements that directly affects the work, especially the cost and the number of amps. If the land is owned by the generator owners, the total costs will be reduced and gives owners a kind of stability in their work.

Lands of specific ownership: According to the Iraqi Property Registration Law, they refer to the lands that individuals have full ownership, rights, and benefits. They are also called pure ownership lands.

Land lease: Lease is generally defined as a contract between two sides, land owner and tenant. According to the contract, the owner of the land has the right to receive an amount of payment in advance. Depending on the contract agreement, the lease length can be on daily, weekly, monthly or yearly basis.

According to the survey, about 68% of land used for generators are rent-free land and 13% are leased.

The following picture shows a generators site in Kurdistan Region

Table 13 : Land ownership for private generators sites and the sites area occupied by governorates in Kurdistan Region 2021

Government	Type of land				Total number of generator Sites	Annual cost (1000 IDs0	Area m^2	The average area used for each generator m^2
	Property	Rental	Rent free	Other				
Duhok	29	78	503	0	610	405,578	161,186	264
Sulaymaniyah	29	165	623	339	1،156	451,295	159,822	138
Erbil	182	165	995	0	1،342	554,772	255,218	190
Kurdistan Region	240	408	2،121	339	3108	1,411,645	576,226	185

Electricity power

Energy is generally defined as the ability to do work. There are many types of energy and the most important one is electrical energy, which can be used and converted into other forms of energy easier than other form of energy, however it is difficult to store in a large scale. The results of the survey reveal several indicators related to the electrical power as follows:

Users and electricity supply

There are 1,311,598 users for electricity generators in Kurdistan Region. At the level of governorate, Sulaymaniyah governorate with 502,220 users comprise the highest rates (38%) compared to 461,993 users in Erbil (35%) and 347,385 (27%) users in Duhok governorate.

Regarding to electric output of generators in 2021, 5,290,169 Amperes have been provided to users in Kurdistan Region.

According to the results of the survey, 2,928 generators provide free electricity to mosques, schools, and houses close to generators' sites, as well as relatives of the generators' owners. The survey also shows that 180 of generators owners do not provide free electricity to any users. The number of users who are provided with free electricity is 55,125 users that employ 224,237 Amperes with the highest number in Sulaymaniyah governorate.

The difference between the numbers of users in governorates depends on various factors including:

1. The number of population in the governorate,
2. Amount of Public electricity supply,
3. Economic condition of households and individuals in the governorate,
4. Existence of users who do not rely on local generators, but on their own generators,
5. Existence of commercial places.

Table 14: Number of users and Ampere provided by electric generators in Kurdistan Region in 2021

Governorate	Number of users	Number of Amperes	Do you provide free electricity to users		Number of users with free electricity	Number of free Amperes
			Yes	No		
Duhok	347,385	1,542,310	580	30	14,049	63,662
Sulaymaniyah	502,220	1,670,835	1,123	33	21,439	67,695
Erbil	461,993	2,077,024	1,225	117	19,637	92,880
Kurdistan Region	1,311,598	5,290,169	2,928	180	55,125	224,237

Design and electricity generation capacity

The design capacity of electric generators refers to operating under ideal condition, where we have:

100KV= (350-420) A

The factors that intervene the operation of generators include:

1. Sea level (atmosphere pressure)
2. Temperature
3. Installation
4. Fuel quality which is the most important factor from the owners' point of view.

The total capacity of generators operating in Kurdistan Region is 2,865,934 K.V, while only 53% of their capacity has been used to generate electricity, Table 15.

Table 15: Capacity, used power and Percentage of used power in private generators (K.V)

Governorate	Generator capacity	Used power	Percentage of used power
Duhok	771,719	416,328	54%
Sulaymaniyah	757,935	433,563	57%
Erbil	1,336,280	683,241	51%
Kurdistan Region	2,865,934	1,533,132	53%

Average number of running hours and average ampere price.

Given the nature of the weather in Kurdistan Region, which is characterized by high temperatures in the summer and low temperatures in the winter, the work of private generators and the price of the Ampere depends to this nature. The price varies between governorates and even differs at the level of one region due to several factors, including:

1. Number of running hours of generator
2. To what extend the generator owners adhere to the prices determined by council of governorates,
3. The economic situation of the beneficiary households,
4. Providing fuel at subsidized and market prices.

Running hours for generators is divided into 1) peak time 2) Off-peak time.

Peak time: Peak time refers to the time when generators are highly loaded, which usually starts in April and ends in October. During this time, the demand for electricity increases and public electricity can't meet the needs for electricity and generator owners have to provide electricity. According to the survey results, the average running hours for generators in Kurdistan Region during peak time is 9 or even exceeds 10 hours per day. At the level of governorates, Sulaymaniyah governorate is different from Erbil and Duhok governorates and the average working hours is 8 hours per day.

Depending on the availability of public electricity, the average electricity supply varies from time to time. Sometimes generators may operate for 20 hours per day and in some conditions, it may decrease to three or four hours per day. It should be noted that there is a direct relationship between the number of running hours and the average price of the ampere. The more hours the generator work, the higher price per ampere would be. Based on the results, the average price of each ampere in Kurdistan region is 11 thousand dinars per month. At the governorate level, in Erbil governorate it is 12 thousand compared to 10 thousand dinars in Dohuk and Sulaymaniyah governorates.

Off-peak time: Off-peak time refers to the period when the generators are not as loaded as the peak time and starts in November and ends in March. It is noticed that, in Kurdistan Region, there is no difference between working hours of generators during peak and off-peak time because of the environmental conditions that exist in the region, while, difference between peak and off-peak time is obvious in other governorates of Iraq due to the climate change in these areas. For example, in southern and central Iraq, the average working hours during peak time is 11 hours and during off- peak time is only 6 hours, while, it is 9 hours for both times in Kurdistan Region, Table 19.

Table 16: The average running hours of generators per day and the monthly price for each amp in Kurdistan Region, central and southern governorates of Iraq in 2021 (1000 IDs)

Governorate	Peak time				Off-peak time			
	Working hours		Price per amp		Working hours		Price per amp	
	Average running hours	Minimum-maximum	Average price per amp	Minimum-maximum	Average running hours	Minimum-maximum	Average price per amp	Minimum-maximum
Duhok	10	14-6	10	17-6	10	16-3	12	20-4
Sulaymaniyah	8	14-1	10	17-2	8	12-3	11	16-4
Erbil	10	16-4	12	18-5	9	17-3	11	19-5
Kurdistan Region	**9**	**16-1**	**11**	**18-2**	**9**	**17-3**	**12**	**20-4**
central and southern governorates of Iraq	**11**	**20-3**	**13**	**25-4**	**6**	**20-1**	**8**	**23-2**

Mechanism of measuring the average running hours of generators in Kurdistan Region

The relevant authorities in Kurdistan region instructed all generator owners to install a device to measure the running time of the electric generator. Then all generator owners would send the monthly records of operating hours of generators. This mechanism relies on calculating the ampere price in the districts and sub-districts. The following picture shows a measuring device which is used in Kurdistan Region with taking into account the average fuel price.

Revenue

Revenue refers to all cash income received from the main activities of the establishment, which includes revenue from services and other activities. According to the results of the survey of generators, in Kurdistan Region, the revenue earned during the peak time period is more than 273 billion and 772 million dinars and during off-peak time period is about 452 billion and 535 million dinars. The total revenue generated in both periods is more than 726 billion dinars in 2021. As results show, a significant income is generated from electricity generators. Therefore, the government should reconsider its policy towards the electricity sector.

However, a huge revenue earned from generators, there are shortages in electricity supply and citizen need to pay extra amount for electricity. Here, governments should intervene and work to develop the electricity sector and reduce the burden on citizens, especially in summer and winter, when citizens need more hours for electricity and pay more per ampere.

According to the electric generators' survey in 2021, the revenue earned from private electric generators during winter (off-peak period) is higher than the income earned during the summer due to using electricity for more hours and paying more per ampere as results, Table 17.

Table17 : Revenue from electric generators during peak and off-peak period at the level of Kurdistan Region and governorate in 2021, value in 1000 IDs

Governorate	Revenue during peak period	Revenue during off-peak period	Total revenue
Duhok	68,454,600	151,502,715	219,957,315
Sulaymaniyah	84,193,081	131,966,882	216,159,962
Erbil	121,125,025	169,065,741	290,190,766
Kurdistan Region	273,772,706	452,535,338	726,308,043

Supplies and fuel

Fuel is an important factor for running generators. This means that a good-quality and enough fuel needed in order to keep generator running. It is recommended to check the fuel system and its flow before operating the generator to ensure that all parts work as expected, and there are no defects or blockages in the fuel pipes.

Each generator has its own fuel tank in order to continue operation and produce electricity. There are several main parts in an electric generator, including the pipes that connect the fuel tank to the engine, the air ventilation, the fuel filter, the fuel pump, and the fuel injector. In a small generator, the fuel tank is part of the generator or is placed on top of the generator. Generator's fuel tank capacity often provides fuel for 6-8 hours. Therefore, it is recommended to install external fuel tanks for generators.

Fuel quota (government support)

The government's provision of subsidized fuel to generator owners is an effective factor in reducing the price of electricity and encourage the owners to work better and meet the people's need for electricity. According to the survey's results, in Kurdistan region, there is no government support for providing fuel. Generators owners need to buy fuel at market price. In other Iraqi governorates, government provides sufficient fuel for generator despite the low fuel prices in these governorates comparing to Kurdistan region (Table 18).

Table 18: Fuel quota provided for electric generators in Kurdistan region by governorate in 2021

Governorate	Does it receive fuel quota from government?	
	Yes	No
Duhok	0	610
Sulaymaniyah	0	1156
Erbil	0	1342

The amount and price of fuel purchased during peak and off-peak period

According to the results of the survey, in Kurdistan Region, the total fuel used during the peak period was 311,250,568 liters at a price of more than 165 billion dinars. For off-peak period, the total fuel reached 443,571,942 liters at a price of about 263 billion and 755 million dinars (Table 19).

Table 19: The amount and price of fuel purchased during peak and off-peak period for generators by governorate in Kurdistan Region 2021, value in 1000 IDs

Governorate	Amount and price of fuel purchased during peak period		Amount and price of fuel purchased during off-peak period	
	Amount (liter)	Price	Amount (liter)	Price
Duhok	58,057,615	37,631,502	110,255,047	77,071,651
Sulaymaniyah	103,347,883	52,093,571	139,852,947	80,929,360
Erbil	149,845,071	75,385,891	193,463,948	105,753,947
Kurdistan Region	311,250,569	165,110,964	443,571,942	263,754,958

Table20 : The average market price of fuel for private generators at the level of governorate and Kurdistan Region 2021, Value in 1000 IDs

Governorate	The average Fuel price for generators	
	Peak period	Off-peak period
	Average market price	Average market price
Duhok	648	699
Sulaymaniyah	504	579
Erbil	503	547
Kurdistan Region	530	599

The amount and price of lubricant for peak and off-peak periods

Lubrication is one of the main needs of generators that is used for maintenance and operation of generators. According to the results of the survey in 2021, the amount of lubricant used in Kurdistan Region during the peak period is more than 2 million and 861 thousand liters that worth more than 10 billion and 943 million dinars, and during off-peak period is more than 3 million and 903 thousand liters worth more than 15 billion dinars.

The total amount of lubricant used in both periods is more than 6 million and 764 thousand liters worth about 26 billion Iraqi dinars during their working year (Table 21).

Table21 : The amount and price of lubricant used during peak and off-peak period at the level of governorate and Kurdistan Region 2021, Value in 1000 IDs

Governorate	lubricant used during peak period		lubricant used during off-peak period		Total	
	Liter	Price	Liter	Price	Liter	Price
Duhok	776,598	3,022,855	1,144,224	4,556,928	1,920,823	7,579,783
Sulaymaniyah	576,276	2,267,295	797,325	3,265,052	1,373,601	5,532,347
Erbil	1,508,250	5,653,686	1,962,069	7,284,263	3,470,319	12,937,949
Kurdistan Region	2,861,125	10,943,836	3,903,618	15,106,243	6,764,743	26,050,079

Fuel transportation Cost

According to the results of the survey of generators in Kurdistan Region, in 2021, the total transportation cost of fuel for generators' use reached 335 million and 393 thousand dinars. Some generator owners determine the transportation cost according to the agreement, while others buy it somewhere else and pay for transportation (Table22).

Maintenance, Repairing and other costs

Maintenance and repairing are continuous process for operating machine, equipment and all production tools as they are continuously exposed to defects such as corrosion, damage and rust during their operational life. The important role of maintenance and repairing is in achieving the following objectives:

- Keeping machines and equipment running longer and ensuring good performance that leads to qualified production,
- Reducing damages that cause economic losses, productivity and doubling maintenance costs,
- Increasing the lifespan of equipment, which reduces costs,
- Achieving a stable and safe environment for generators.

Maintenance costs include: changing generator engine that causes entire failure. The other costs we can refer to is cleaning costs, taxes, etc.

According to the survey results, in Kurdistan Region, the total cost of generators, which includes the cost for maintenance, repair, fuel transportation and other cost is more than 14 billion and 909 million dinars. The cost of maintenance and repair is about 12 billion and 400 million dinars, the cost of fuel transportation is about 335 million and 400 thousand dinars, and other costs are about 2 billion and 237 million dinars (Table22).

Table 22: Annual cost for private electric generators at the level of governorate and Kurdistan Region, 2021, value in 1000 IDs

Governorates	Maintenance and repairment cost	Other costs	Fuel transportation	Total
Duhok	1,965,896	556,903	206,955	2,729,754
Sulaymaniyah	4,183,133	906,895	20,978	5,111,006
Erbil	6,187,959	773,511	107,460	7,068,929
Kurdistan Region	12,336,987	2,237,309	335,393	14,909,689

The impact of generators on the environment

The impact of generators on the environment

The electricity industry is an important branch of economic activity; however, it has a negative impact on the environment. Generators contribute to a lot of environmental damage due to the burning of fuel and emitting toxic gases such as carbon dioxide. Generators also cause noise pollution as well as water and soil pollution as a result of throwing generators wastes directly on the soil or into the water. Some of these gases produced by burning of raw materials cause global warming and also cause significant pollution of the air inhaled by humans and other creature that resulted health risk.

Solutions to reduce the environmental damage caused by electric generators:

We can take the following actions to save energy and avoid environmental damage:

- **Planting trees**: Trees absorb carbon dioxide through the process of photosynthesis. One tree is capable of absorbing one ton of carbon dioxide.
- **People awareness:** People should be aware of saving energy and not to consume more than their daily needs. This will be done by conducting awareness workshops for people and students in schools.
- **Using energy saving light bulbs:** Replacing energy saving light bulbs with ordinary ones will lower the overall electricity consumption.
- **Using renewable energy:** Renewable energy is energy derived from natural sources such as water, wind, and sunlight. Sunlight and wind, for example, are such sources that are constantly being replenished. These energy sources are plentiful and all around us.
- **Improving public electricity:** The private generators which are used to provide electricity and located near residential places cause noise and environmental pollution. A long-term planning is needed to get rid of these generators and improve the national electricity supply.

Water Cooling Systems for generators

Water is one of the necessary requirements for generating electrical energy. Water is also used for the purpose of cooling electric generators. Depending on the accessible water, there are two methods to use water in the cooling process of generators, which are Internal Method and External Method.

In internal method, cold water is pushed into pipes in the engine body by using a water pump. Water is transferred from the engine body to the flowing water and then to the radiator. This process needs a large amount of water. In Kurdistan Region, only 4% of the generators' sites do not use water to cool the generators. Regarding **External method**, which known as open method or waterfall method is considered the most common depending on the origin of the generator the amounts of water used vary according to temperature and number of operating hours.

Below are the main indicators in the survey about the water used to cool generators, as well as the sources and methods of getting rid of it.

The amount of water used for cooling

Amount of water used for the purpose of cooling generators depends to the kind of generator and the country of origin. The results of the survey of generators In Kurdistan Region show that the total number of generators' sites that use water for cooling is 2,988 (96%) sites, and those generators' sites that do not use water are 120 (4%). In 2021, in Kurdistan Region, the amount of water used for cooling generators is 1,154,391 m^3 (Table 23).

Table 23: Amount of water used for cooling generators at the level of governorate and Kurdistan Region in 2021

Governorate	Does generator site need water for cooling?				Total generators' sites	Amount of water used for cooling generators during one year (m^3)
	Yeas)Number(	Yes %	No)Number(	No %		
Duhok	542	89	68	11	610	181,586
Sulaymaniyah	1,115	96	41	4	1,156	726,624
Erbil	1,331	99	11	1	1,342	246,182
Kurdistan Region	2,988	96	120	4	3,108	1,154,391

For the cooling purpose, generator owners rely on several sources of water. The survey results show that using public water network has the highest rate compared to other sources. According to the results, 2,404 of generators' sites (64%) use public water network for the cooling purpose. Also, 0.1% of the generators use water illegally. The number of sites that use tanker water are 1042 (28%) sites, and those sites that use wells and other sources are not noticeable. The cost of public water used for generators cooling in 2021 was 87 million IDs and tanker water costed more than 184 IDs (Table 24).

Table 24: The source of water used for generators cooling at the level of governorate and Kurdistan Region 2021 (more than one answer)

Governorate	Water source					Total	Cost of water (1000 IDs)	
	Public network	Illegal	Well	Tanker	Other		Public network	Tanker
Duhok	483	0	63	184	0	730	33479	37774
Sulaymaniyah	675	5	9	505	182	1376	19216	73807
Erbil	1246	0	27	353	28	1654	35048	72671
Kurdistan Region	2404	5	99	1042	210	3760	87742	184252

The way of disposal of waste water

The survey of electric generators in 2021 shows that more than half of the generators' sites in Kurdistan Region, which are 2,097 (69%) in number use sewerage to get rid of their cooling water. The number of those that dump into beside ground is 604 (20%). The way such as using sub tanks and throwing in rivers are less used (Table 25).

Table25 : The way of disposal of water used for generators cooling at the level of governorate and Kurdistan Region in 2021 (more than one answer)

Governorate	The way of disposal of waste water					Total
	Sewage	Beside ground	Sub tank	River	Other	
Duhok	250	345	0	21	0	616
Sulaymaniyah	779	113	0	5	147	1044
Erbil	1038	146	122	20	18	1345
Kurdistan Region	2067	604	122	46	165	3005

Exhaust system and silencer

Exhaust is considered an essential part of any electric generator as it helps to get rid of gases, noises, etc. This system is responsible for getting rid of gases generated from the power generation process, such as carbon monoxide. As for silencer, it is a device to reduce the sound caused by electric generator engines.

The picture below shows the outer cover of a generator.

To find out the exhaust and silencer system used to get rid of the gases and noises, generator owners were asked if they use the exhaust and silencer system. According to the results, In Kurdistan Region, 93% of generators use vertical exhaust and 7% use horizontal exhaust and the average height of the exhausts is between 2-3 meters. About 59% of the generator owners use silencers (Table 26).

Table 26: Using exhaust and silencer in electric generators at the level of governorate and Kurdistan Region 2021

Governorate	Is there vertical exhaust		Hight of exhaust	Is there silencer?	
	Yes	No		Yes	No
Duhok	513	97	2	87	523
Sulaymaniyah	1057	99	2	871	285
Erbil	1313	29	3	875	467
Kurdistan Region	2883	225		1833	1275

The ways of getting rid of waste oils

There are many ways that generator owners use to get rid of waste oil. The results of the survey show that in 2021, in Kurdistan Region, 2,415 of the owners of generators (78%) sell the used oils in exchange for money that is 149 million IDs, while there are 678 owners who donated this waste oil for free and 15 of owners dump the waste oil into beside ground that causes environmental pollution.

Table 27: The ways of disposal of used oils of private generators at the level of governorate and Kurdistan Region 2021

Governorate	The ways of getting rid of waste oils						Value of sold oil (1000 IDs)
	Selling	Dumping into beside ground	Dumping into sewage	Dumping into rivers	Donating for free	Other	
Duhok	179	10	0	0	421	0	11,347
Sulaymaniyah	917	5	0	0	234	0	36,147
Erbil	1319	0	0	0	23	0	101,850
Kurdistan Region	2415	15	0	0	678	0	149,344

Type of fuel used for electric generators

Fuel is one of the main needs for any industry and also in the field of producing electrical power from private generators. Supporting the generators owner and providing fuel by governorate could directly reduce the price of amperes. According to the results of the survey in 2021, generators' owners mostly use gas to operate their generators.

Fuel storage

Generators need fuel storage tanks and the tanks have different capacities and sizes. 99% of generator owners have fuel storage tanks and 1% of owners supply fuel on daily bases. According to the survey results, most of these storages are safe for fuel storage accounting for 83% and those who do not have a safe storage accounting for 17% (Table 28).

The following picture shows a fuel storage tank.

Table 28: Fuel storage for generators in Kurdistan Region 2021

Governorate	Do you have a place to store fuel?		Is the fuel storage place safe?	
	No	Yes	No	Yes
Duhok	0	610	339	271
Sulaymaniyah	5	1151	1124	26
Erbil	40	1302	1074	229
Kurdistan Region	45	3063	2537	526

The fixed assets

It is obvious that the capital of any organization is the fixed assets of the organization that used for the production purpose and not for sale, such as building, equipment, tools and furniture. The total value of fixed assets related to generators field in Kurdistan region is more than 205 billion IDs. The value of generators alone is nearly 173 billion IDs that includes 84% of the total fixed assets (Table 29).

Table29 : Total value of fixed assets for private generator at the level of governorate and Kurdistan Region 2021, value in 1000 IDs

Governorate	Value of fixed assets			Value of electrical devices		Not electrical devices	Total value of fixed assets
	Generators	Caravans and offices	Water tanker + Fuel tanker	Water heater+Cooler+TV+ Satellite+ Refrigerator+Water cooler + Split air conditioner	Computer, Laptop+ Mobile+ Cameras	equipment + fire extinguisher + ladder	
Duhok	40,012,561	1,864,953	1,658,971	553,418	216,445	208,308	44,514,655
Sulaymaniyah	52,296,855	4,055,234	1,862,272	1,256,968	304,963	235,374	60,011,666
Erbil	80,513,998	14,905,652	3,373,234	1,307,667	757,140	268,927	101,126,620
Kurdistan Region	172,823,414	20,825,839	6,894,477	3,118,053	1,278,548	712,609	205,652,941

Part Three:

Summery and Recommendations

Section three: Summery and Recommendations

Summery

1. According to the results, the total number of generator sites in Kurdistan Region is 3,108 sites with the highest number in Erbil governorate with 1,342 sites followed by Sulaymaniyah governorate with 1,156 sites and Duhok governorate with 610 sites. 90% of the generators are in urban areas and 10% in rural areas.
2. The results show that the generators were not active in the 1990s, but after the year 2000, their number started to rise.
3. The total number of workers working in the generators field in Kurdistan Region is 7,746 workers, of which 7,524 are Iraqi and 222 are non-Iraqi workers.
4. Out of the 3,108 generator owners, only 14 are women.
5. The annual compensation for workers working in the field of generators in Kurdistan Region reached about 36.47 billion IDs, with a monthly average of 392 thousand IDs per employee.
6. The results of the survey show that working in the generator sector does not require an academic degree, but it is according to the needs. 34% of generator owners hold a primary school degree.
7. Today, the style of living request more electricity and in the absent of public power people need to rely on private electric generators.
8. According to the results, the total annual income from generator sector in Kurdistan Region is more than 726 billion IDs.
9. The total area used for generators in Kurdistan Region is 576,226 m^2 in 2021.

Recommendations

1. Relying on new strategy to improve performance of electricity, using other source for producing electricity, improving the distribution and transportation of electricity.
2. Providing the owners of generators in Kurdistan Region with low price fuel to reduce the price of amps for the benefit of the users.
3. Increasing the awareness of citizens for the correct and economic use of electricity and avoiding waste of electricity.
4. Doing projects and research aimed at developing alternative energy sources.
5. Installing exhaust filters to reduce environmental pollution.
6. Remove generators from residential areas and transfer electricity through cables and then to external boards.
7. Surrounding the generators in a room to reduce the impacts,
8. Regular maintenance of generators to reduce pollutants as a result of improper operation of generators.
9. Installing environmentally-friendly generators alternative to traditional generators in order to save fuel and reduce pollution resulting from increasing the number of generators.
10. One of the most obvious recommendations is to remove generators that cause environmental pollution and rely on public electricity.

section four :Questonnair

پرسیارنامەی رووپێوی توانای مۆلیدەکانی کارەبایي لە کەرتی تایبەت

چوارچێوە

* زنجیرەی فۆرم

* پارێزگا

دهوك
سلێمانی
هەولێر

* قەزا

* ناحیە

* ژینگە

شار
گوند

* دراوسێیەتی (حەی)

ژمارەی گەڕەک

* گوندە

* کەرت

* ناونیشان یان نزیکترین خاڵی ناسینەوە

* شوێنی جوگرافی

(° latitude (x.y

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*** ئایا چاوپێکەوتنەکە ئەنجامدرا؟**

- ◯ چاوپێکەوتن ئەنجامدرا
- ◯ چاوپێکەوتنەکە ڕەت کرایەوە
- ◯ مۆلیدە داخراو بوو
- ◯ توانای پەیوەندیکردنی نییە

:

» :

*** ناوی خاوەن مۆلیدە:**

*** ڕەگەزی خاوەن مۆلیدە:**

- ◯ نێر
- ◯ مێ

*** بڕوانامەی خاوەن مۆلیدە چیە؟**

- ◯ نەخوێندەوار
- ◯ سەرەتایی
- ◯ ناوەندی
- ◯ دواناوەندی
- ◯ زانکۆ و بەرزتر

*** ئایا خاوەن مۆلیدە لە شوێنەکە کاردەکات؟**

- ◯ بەڵێ
- ◯ نەخێر

*** ئایا خاوەن مۆلیدە مووچەی هەیە؟**

- ◯ بەکرێ
- ◯ بۆ خۆی

*** مووچەی خاوەن مۆلیدە چەندە؟**

0

ژمارەی تەلەفۆنی خاوەن مۆلیدە:

ژمارەکان بە زمانی ئینگلیزی بن

*** ژمارەی کرێکارانی عێراقی لە شوێنی مۆلیدە چەندن؟**

0

*** کۆی گشتی حەقدەستی کرێکارانی عێراقی چەندە؟**

مانگانە بە 1000 دیناری عێراقی

» زانیاری کرێکارانی عێراقی

*** بڕوانامەی کارپێکەری مۆلیدە 1:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

*** بڕوانامەی کارپێکەری مۆلیدە 2:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

*** بڕوانامەی کارپێکەری مۆلیدە 3:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

*** بڕوانامەی کارپێکەری مۆلیدە 4:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

*** پرۆوانامەی کارپێکەری مۆلیدە 5:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

» :

ژمارەی کرێکارانی غەیرە عێراقی لە شوێنی مۆلیدە

0

*** کۆی گشتی حەقدەستی کرێکارانی غەیرە عێراقی**

مانگانە بە 1000 دیناری عێراقی

» زانیاری کرێکارانی غەیرە عێراقی

*** پرۆوانامەی کارپێکەری مۆلیدە 1:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

*** پرۆوانامەی کارپێکەری مۆلیدە 2:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

*** پرۆنامەی کارپێکەری مۆلیدە 3:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

*** پرۆنامەی کارپێکەری مۆلیدە 4:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

*** پرۆنامەی کارپێکەری مۆلیدە 5:**

- نەخوێندەوار
- سەرەتایی
- ناوەندی
- دواناوەندی
- زانکۆ و بەرزتر

*** تەمەن:**

تەمەن نێوان 10 بۆ 80 بیت

» :

0

کۆی گشتی ژمارەی کرێکارانی عێراقی و غەیرە عێراقی

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* کۆی ژمارەی کرێکاران لە شوێنی مۆلیدە

0

* رێکەوتی چاوپێکەوتن

2022-06-21

» زانیارییەکانی مۆلیدە

* ژمارەی یەکەکانی کارپێکردن (ژمارەی مۆلیدەکان)

* ساڵی دەستپێکردنی چالاکییەکە
کەی یەکەم جار مۆلیدەکە دەست بە کارکردووە

yyyy

* وڵاتی دروستکەری مۆلیدەی 1

وڵاتی دروستکەری مۆلیدەی 2

وڵاتی دروستکەری مۆلیدەی 3

وڵاتی دروستکەری مۆلیدەی 4

وڵاتی دروستکەری مۆلیدەی 5

* ئایا مۆلیدە بە فەرمی تۆمار کراوە؟

- بەڵێ
- نەخێر

* جۆری زەوی

- مولک
- کرێ
- بێ بەرامبەر(هەرمەکی)
- هیتر

* تێچووی کرێی مانگانە
مانگانە بە 1000 دیناری عێراقی

* **جۆری تری زەوی**

* **ڕووبەری زەوی بەکارهاتوو (م2)**
ڕووبەر بە مەتر دووجایە

» وزەی کارەبا

* **کۆی گشتی بەشداربووان (هاوبەشەکان)**

* **کۆی گشتی نەمێرەکان**

* **ئایا بەشداربووی بێ بەرامبەرت هەیە؟**

- بەڵێ
- نەخێر

* **ژمارەی بەشداربووانی بێبەرامبەر**

* **ئەمێرەکانی بێ بەرامبەر**

* **ئایا بۆردی دابەشکردن بەکاردێت؟**

- لە ناوەی مۆلیدە
- لە دەرەوەی مۆلیدە
- هەردووک

* **توانای مۆلیدە (توانای دیزاینکراو) بۆ هەموو مۆلیدەکان لە شوێنەکەدا چەندە؟**
KVA

* **توانای بەکارهێنراو بۆ هەموو مۆلیدەکان چەندە؟**
KVA

* **تێکڕای کاتژمێرەکانی کارکردنی هاوین (حوزە یران)**
کاتژمێر/ ڕۆژ (حوزەیران)

0

* **نرخی ئەمپێر**
مانگانە بە 1000 دیناری عێراقی

* **تێکڕای کاتژمێرەکانی کارکردن لە زستاندا (کانوونی یەکەم)**
کاتژمێر/ ڕۆژ (کانوونی یەکەم)

0

* **نرخی ئەمپێر**
مانگانە بە 1000 دیناری عێراقی

* **ژمارەی مانگەکانی هاوین**

0

* **ژمارەی مانگەکانی زستان**

0

کۆی گشتی مانگەکان:

0

» پێداویستی و سووتەمەنی

* **چ جۆرە سووتەمەنییەک بەکاردەهێنرێت؟**

- گازوایل
- هیتر

* **جۆری سووتەمەنیەکە دیاری بکە**

* **بەکارهێنانی سووتەمەنی مانگانە بۆ (حوزە یران)**
لتر

0

* **بەها**
1000 دینارێن عێراقی

0

* **بەکارهێنانی سووتەمەنی مانگانە بۆ (کانوونی یەکەم)**
لتر

0

*** بەها**

1000 دینارێن عێراقی

0

*** ئایا سووتەمەنی وەردەگریت لە (دەزگاکانی حکومەت)؟**

- بەڵێ
- نەخێر

*** بڕی سووتەمەنی وەرگیراو**

لتر

0

*** بەها**

1000 دینارێن عێراقی

*** ئایا بڕی سووتەمەنی وەرگیراو بەشت دەکات؟**

- بەڵێ
- نەخێر

*** بڕی ئەو سووتەمەنیەی کە مانگانە لە بازاڕی ناوخۆیی دەکڕدرێت (بە نرخی بازرگانی) لە ماوەی مانگی حوزەیران چەندە؟**

لتر

*** بەهای مانگانەی سووتەمەنی کڕدراو لە بازاڕی ناوخۆیی (بە نرخی بازرگانی) لە ماوەی مانگی حوزەیران چەندە؟**

1000 دینارێن عێراقی

*** بڕی ئەو سووتەمەنیەی کە مانگانە لە بازاڕی ناوخۆیی دەکڕدرێت (بە نرخی بازرگانی) لە ماوەی مانگی کانوونی دووەمدا چەندە؟**

لتر

*** بەهای مانگانەی سووتەمەنی کڕدراو لە بازاڕی ناوخۆیی (بە نرخی بازرگانی) لە ماوەی مانگی کانوونی دووەمدا چەندە؟**

1000 دینارێن عێراقی

*** تێچووی گواستنەوەی سووتەمەنی**

1000 دینارێن عێراقی/ لەکاتێك کە بەهای کرێ گەیاندن لەگەل کڕینەکە بیت تکایە نرخەکە (0) تۆمار بکە

*** ئایا شوێنێک هەیە بۆ هەڵگرتنی سووتەمەنی؟**

- بەڵێ
- نەخێر

* **ئایا ئەو شوێنەی کە سووتەمەنی تێدا هەڵدەگیرێت پارێزراو و دوور لە سەرچاوەی گەرمییە؟**

- ◯ بەڵێ
- ◯ نەخێر

* **بڕی ئەو ڕۆنانەی کە لە مانگێکدا بەکاردەهێنرێن لە ماوەی مانگی حوزەیران چەندە؟**

لتر

---

* **بەهای ئەو ڕۆنانەی کە لە مانگێکدا بەکاردەهێنرێن لە ماوەی مانگی حوزەیران چەندە؟**

1000 دینارێن عێراقی

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* **بڕی ئەو ڕۆنانەی کە لە مانگێکدا بەکاردەهێنرێن لە ماوەی مانگی کانوونی دووەمدا چەندە؟**

لتر

---

* **بەهای ئەو ڕۆنانەی کە لە مانگێکدا بەکاردەهێنرێن لە ماوەی مانگی کانوونی دووەمدا چەندە؟**

1000 دینارێن عێراقی

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* **خەرجی چاککردنەوە و چاککردنەوە (فلتەر، وایەر، گوێز، چاککردنەوەی ڕادیاتۆر و هتد..) ساڵانە چەندە؟**

1000 دینارێن عێراقی

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* **خەرجییەکانی تر (کارگێڕی، کرێ، کرێی پاککردنەوە، نوێکردنەوەی پشوو، هتد..) ساڵانە چەندە؟**

1000 دینارێن عێراقی

» ئاو و ژینگە

ئایا مۆلیدە پێویستی بە ئاو هەیە بۆ ساردکردنەوە؟

- ◯ بەڵێ
- ◯ نەخێر

* **بڕی ئەو ئاوەی کە بۆ ساردکردنەوە بەکاردێت (مانگانە) چەندە؟**

م3

*** سەرچاوەی ئاو کە بۆ ساردکردنەوە بەکاردێت چییە؟**

هەموو ڕێگاکانی بەکارهێنراو هەڵبژێرە

- [ ] گەیزاو
- [ ] زیادەڕوویی
- [ ] ڕووبار
- [ ] تەنکەر
- [ ] هیتر

*** بەهای سەرچاوەی ئاوی گەیزاو چەندە؟**

1000 دینارێن عێراقی

*** بەهای سەرچاوەی ئاو لە تەنکەر چەندە؟**

1000 دینارێن عێراقی

*** شێوازی ئاوەڕۆی ئاو**

هەموو ڕێگاکانی بەکارهێنراو هەڵبژێرە

- [ ] ئاوەڕۆ
- [ ] زەوی دراوسێ
- [ ] سپتیك تانک
- [ ] ڕووبار
- [ ] هیتر

*** ڕێگاکانی تر کە بۆ ئاوەڕۆی ئاو بەکاردەهێنرێن**

*** ئایا مۆلیدەکە سالنسەی ستوونی هەیە**

- ◯ بەڵێ
- ◯ نەخێر

*** بەرزی سالنسەی**

مەتر

0

*** چۆنێتی ڕزگاربوون لە ڕوونی بەکارهێنراو**

هەموو ڕێگاکانی بەکارهێنراو هەڵبژێرە

- [ ] فرۆشتن
- [ ] فڕێ دەدرێتە سەر زەوی
- [ ] فڕێدان بۆ ناو ئاوەڕۆ
- [ ] فڕێ دەدرێنە سەر ڕووبارەکە
- [ ] دیاری (بەخۆڕایی)
- [ ] هیتر

* **بەهای فرۆشتنی رووبی بەکارهاتوو**
1000 دینارێن عێراقی

* **باسی رێگەیەکی تر بکە بۆ ڕزگاربوون لە رووبەکە**

* **ئایا هەموو مۆلیدەکان بێدەنگکەریان (کاتم) هەیە**

- ◯ بەڵێ
- ◯ نەخێر

» هەبووەکانی جێگیر

* **هەبووەکانی جێگیرکراو لە شوێنی مۆلیدەکان**

- ☐ کەرەفان/بینا
- ☐ مۆلیدە
- ☐ گەرمکەرەوەی ئاو
- ☐ تانکی ئاو
- ☐ تانکی سووتەمەنی
- ☐ ساردکەرەوە
- ☐ جێگەی نوستن (سیستەم)
- ☐ تەلەفزیۆن
- ☐ سەتەلایت
- ☐ حاسیبە
- ☐ سپلیت
- ☐ کامێرا
- ☐ مۆبایل تایبەت بە مۆلیدە
- ☐ سەلاجە
- ☐ پلیکانەکان (پەیژە)
- ☐ (کیت و قاڵب)
- ☐ کوژێنەرەوەکان
- ☐ ساردکەرەوەی ئاو (براد)
- ☐ مێزی مەکتەبی
- ☐ هیتر

* **ژمارەی کەرەفان/بینا**

* **بەهای کەرەفان/بینا**

* ژمارەی مۆلیدە

* بەهای مۆلیدە

* ژمارەی گەرمکەرەوەی ئاو

* بەهای گەرمکەرەوەی ئاو

* ژمارەی تانکی ئاو

* بەهای تانکی ئاو

* ژمارەی تانکی سووتەمەنی

* بەهای تانکی سووتەمەنی

* ژمارەی ساردکەرەوە

* بەهای ساردکەرەوە

* ژمارەی جێگەی نوستن

* بەهای جێگاکە

* ژمارەی تەلەفزیۆن

* بەهای تەلەفزیۆن

* ژمارەی سەتەلایت

* بەهای سەتەلایت

* ژمارە کومپیوتەر

* بەهای کومپیوتەر

* ژمارەی سپلیت

* بەهای سپلیت

* ژمارەی کامێرا

* بەهای کامێرا

* ژمارەی مۆبایل تایبەت بە مۆلیدە

* بەهای مۆبایلی تایبەت بە مۆلیدە

* ژمارەی سەلاجە

* بەهای سەلاجە

* ژمارەی پلیکانەکان (پەیژە)

* بەهای پلیکانەکان (پەیژە)

* ژمارە (کیت و قاڵب)

* بەها (کیت و قاڵب)

* ژمارەی کوژێنەرەوەکان

* بەهای کوژێنەرەوەکان

* ژمارەی ساردکەرەوەی ئاو (بڕاد)

* بەهای ساردکەرەوەی ئاو (بڕاد)

* ژمارەی مێزی مەکتەبی

* بەهای مێزی مەکتەبی

* ناوەڕۆکی تر

تکایە کەلوپەلی نەگۆڕی تر بنووسە

تێبینی گشتی

*

پوختە

ژمارەی فۆرم:

کۆی ژمارەی کرێکارەکان

0

کۆی گشتی مووچە

0

هاوین

داهاتی فرۆشتنی کارەبا

0

پێداویستییەکانی سووتەمەنی

0

پێداویستییەکانی رووەن

زستان

داهاتی فرۆشتنی کارەبا

0

پێداویستییەکانی سووتەمەنی

0

پێداویستییەکانی رووەن

بەهای پاشماوەی رووەنی بەکارهاتوو

بەهای سەرچاوەی ئاوی گەیشتوو چەندە؟

بەهای سەرچاوەی ئاو لە تەنکەر چەندە؟

خەرجییەکانی بەردەوامی و چاککردنەوە

Ministry of Planning-Kurdistan Region Statistics Office
www.krso.gov.krd