In this article, from the standpoint of anthropocentrism, social history, the history of everyday life, the problem of energy supply to residents of Ukrainian cities during the years of Nazi occupation is analyzed. Energy in an industrial society is one of the most important sectors of the economy, ensuring the functioning of industry, transport, water supply and sanitation, lighting and heating of homes. It plays a particularly important role in the life of cities, because the city’s infrastructure is the center of population, industry and transport, high-rise buildings, and its normal operation without electricity is impossible. The study reveals the features of the restoration and operation of power plants, street lighting in cities, the cost of electricity, its availability for different groups of the urban population. Aspects of the functioning of urban electric vehicles are also discussed in the article. It is proven that the lack of electricity was felt throughout the entire period of occupation. Its absence restrained the restoration of communal services. Electricity was used primarily by German military units, Volksdeutsche, enterprises and official institutions. The methods of lighting and heating homes that were used by citizens during the years of occupation are considered. In the most difficult period in the winter of 1942, the local population was completely deprived of the right to use electricity at home. Violent measures (up to the execution) were threatened for violation of the order. The reverse situation was observed among the Wehrmacht soldiers who did not save electricity. In general, energy supply could not meet the needs of either the civilian population or industry, especially in the cold periods of the year. The reasons for this situation were the Soviet scorched earth tactics, the evacuation of all resources to the east of the USSR, the Reich’s policy of looting and removal of electrical equipment, the lack of fuel and the general energy crisis in Germany as a result of the failure of the blitzkrieg. In their turn, the Nazis themselves, when retreating, also resorted to scorched earth tactics, which, along with heavy fighting and moving of the front line, completely deprived the population of electricity at the final stage of occupation and the Soviet-German war.

**Keywords:** Second World War, energy production, power supply, Ukraine, city, occupation, population, Wehrmacht, Volksdeutsche, infrastructure, electric transport, scorched earth tactics, evacuation.
tional reality by those people and groups as well as its thorough analysis [51; 52; 55].

It must be pointed out that the state of industry and its electric power supply during the years of Nazi occupation is described in historical literature, but the problem of population’s and urban infrastructure’s energy needs during the years of Nazi occupation of Ukraine, in our opinion, had not received proper attention. To date this problem remains relatively understudied in historical literature. In addition, while the fundamental works on the history of Ukrainian peasant class do exist [24; 40], such works on the history of urban residents are lacking, and the unifying work still does not exist.

**Purpose Statement.** The purpose of our present article lies in the research of electric power supply of population’s and housing and utilities sector’s needs during the years of Nazi occupation of Ukraine (1941 – 1944).

**The Results.**

The scorched earth tactics which was used by the Soviet government during the retreat of the Red Army was mainly concerned with the electric power industry. Initially, we must admit that this tactics had its own laws. The farther in the East the electric energy industry facility was situated, the worse and more systematic damage it suffered from Soviet government. The large areas of West-Ukrainian regions and Right-Bank Ukraine, in military terms, were conquered by Wehrmacht relatively quickly and thus, the electric power industry infrastructure there had considerable chances to survive.

In this way, in Kirovohrad (now – Kropyvnytskyi) the retreating Red Army troops were not able to put out of commission the city’s power plant. As soon as the 9th of August 1941 it returned to full operation, all the time growing in output. While in August 1941 it produced 314,6 thousand kilowatt of electricity, in October already 1 million 577 thousand kW, i.e. over three times more than in August. The working cost of electricity amounted to 36,6 kopecks. Instead of three turbines only one was in operation, which necessitated its maintenance repairs everyday three weeks (usually during Sunday) and left the city without electricity. In December 1941 1717,8 thousand kW was produced [41, 238]. In January 1942 the largest amount of electricity was produced – 1 million 733,4 thousand kW. The power plant’s operation was ensured by a crew of 259 workers, 14 engineers and 30 security officers. Since January 1942 applications for electric supply were not accepted because of the lack of fuel for the power plant. The Germans supposed to end the war till then, but the situation on the front line changed dramatically. At the beginning of 1942 it was already obvious that the blitzkrieg had failed [41, 241]. In 1941 at the end of December the planned outages started. Other strict measures were used: for room illumination no more than one light bulb at 60 watts of power was allowed to be used. All the electric heating equipment had to be first registered at the Subscriber Service Center and later they were banned altogether [41, 238]. Unauthorized attachment to the power supply was banned on pain of 100 thousand rubles of penalty [41, 239]. Apart from central streets and occupational administration buildings the street lights were off [41, 240].

The situation with the renewal of electric power supply was far more difficult in the Eastern Ukraine. Thus, from four power plants of 162 thousand kW output in total, which supplied power to Kharkiv (occupied by Wehrmacht since 24 of October 1941) in 1941, the generator equipment of total output of 135 thousand kW was destroyed or dismantled and the rest was demolished with explosives [46, 147]. The daily struggle of local administration for normal city’s day-to-day activity and meeting of essential needs of the population had started. Some headway could be made in this. For example, at the end of November 1941 the turbo generator with an output of 1 thousand kW at a power plant No1 began its work. Later a few smaller generators were commissioned. It allowed producing over 27 million kWh of electricity during the 1942. Besides, six times more electricity was produced in the fourth quarter than in the first. But essential needs of the city amounted to 17 thousand kW of power. And in order to meet those needs it was necessary to renovate DPP – 1 and DPP – 4, what the occupational regime and city authorities failed to do. The lack of electricity was felt during the whole extent of the occupation. It also hindered the renovation of the housing and utilities sector [46, 147]. Electricity was used mostly by German military bases, factories and for lighting government institutions.

The situation in the cities of Stalin region was not much better. At the end of May 1942 the electricity from Dnipro HES, where the Nazis were able to partially restore the dam and two hydro turbines [9, 4]. During 1942 Yuzivka (until 1961 – Stalino, since 1961 up to nowadays – Donetsk) received 5 million kWh of electricity [10, 4]. Although at the end of November 1942 the population was in actuality banned from using it [11, 4]. It was caused mainly by the lack of electricity for industrial needs and the fact that the coal mining industry of the Donbas was not renewed and the general energy crisis of the Reich.

The difficult situation in electric energy production and supply started to show as early as at the end of 1941 and influenced mostly the civilian urban population. Wehrmacht cut down precisely on those needs of the population. In the West-Ukrainian regions and Right-Bank Ukraine as early as November 1941 the announcement about the necessity of electricity and gas economy started to appear in the newspapers. The Jews were ordered to turn off the lights at 20:00 (though by that time the majority of Jewish population was practically eliminated by the Nazi). For disobeying the order the offender would be charged with “high penalties”. Drohobych parish elder on 17th of November 1941 had made a speech to the population of the district, calling them to limit the use of kerosene and electricity to a minimum, and ordered the Jews to stop using electricity immediately. Electrical heaters were banned.
by being a penalty, disconnection from electric supply for the winter or even arrest could be enforced.

Current economy of electricity should have been facilitated by regulations that prohibited the use of high-power lamps or limited their number in an apartment. For example, on December 4, 1941, a Stanislavsk (Ivano-Frankivsk) newspaper submitted a notice setting limits on the use of electricity in private premises. Only one of the rooms was allowed to be lighted, and only up to 21:00 [30, 102]. Since December 1941, the Valkivsk district administration also allowed using incandescent lamps with a power not exceeding 40 watts. [30, 103]. On January 1, 1942, Gebietskommissar of Kremenets issued a special order concerning electricity consumers – Jews by nationality. They were obliged, during the compulsory resettlement process, to register power cutoffs and to pay the subscription fee according to the final metering figures. Responsibility for the implementation of the order rested with the Jewish City Council [30, 103].

The urban population of occupied Ukraine found themselves in unlit, unheated premises during the harsh winter of 1941 – 1942, when the temperature dropped to minus 40 degrees Celsius. People tried to adapt to this situation by all means. Inhabitant of Kyiv I. Khoroshunova recalled the times that in winter, ordinary residents were prohibited from using electricity. Violent measures up to execution by the firing squad were enforced to those who would violate the order. Those who had the money bought a bottle of gasoline at the bazaar and made small night lamps to last all night long. She had the money bought a bottle of gasoline at the bazaar and made small night lamps to last all night long. She wrote: “poor lighting is a kerosene lamp, but we have no right to complain, because others have only a night lamp, many don’t have even this. It’s dark, it’s cold. I want to sleep all the time. On January 13, 1942, the lights were switched off even in those rare apartments, where until recently it was allowed under special protection and permits” [52, 31]. According to D. Malakov about the occupation of Kyiv: “the electricity then shone only in the apartments occupied by the Germans and Volksdeutsche, and our own evenings were lit by the night lamps”. Inventive people of Kiev “used to illuminate the premises by many means. The most common was a night lamp, or a gas burner, or a wick lamp made from any small glassware. It could have been a pharmacy glass, a round, low glass mustard jar. A folder, made from cord or thread, was inserted into the bottleneck through a tin tube or a wire twister and kerosene was poured inside. There was not enough of kerosene, it was very saved up. The Germans, if necessary, used patent-ed carbide lamps, gasoline lighters from rifle cartridges” (cited in [31, 121]).

According to eyewitnesses, the same situation occurred in occupied Yuzivka. The people who occupied the First and Second Line homes after their permanent inhabitants were evicted were also driven out by the Nazi because they switched on power and lighting without the permission of the Germans. On the Seventh line, the Germans launched a turbine at the Stalin plant and supplied electricity, but only for themselves. It was strictly forbidden for local residents to use it. Jews were “moved” en masse to the White Quarry [48, 113].

Not surprisingly, to gain access to the benefits of civilization people tried to be cunning, and pretended to be Germans. Interesting information about this is given by researcher Valentina Shaikan, who notes that this process was greatly intensified in 1942 – 1943, when to confirm your German origin it was enough to find only three witnesses. Thus, it turned out that in Lutsk there were more than 50% of ethnic Germans (18751 people). In the Rivne region, 1,141 people were able to register as Volksdeutsche [60, 10].

How did the occupiers live in Ukrainian cities? It can be argued that they led a relatively comfortable life, some memoirs of which have been preserved. They felt no particular restrictions on lighting and heating. This was explained, among other things, by security issues. In particular, in a published diary of Nándor Fettich (1900 – 1971), a well-known Hungarian scientist, archeologist, art historian, provides some information and personal impressions about the situation on the topic under study. At the end of 1941, this scientist was sent by the Office of A. Rosenberg to describe the cultural values stored in the museums of Kyiv. Here, Nándor Fettich talked with famous Ukrainian scientists who, for various reasons, remained in the occupied city. In general, the Diary contains many interesting details about the life of occupied Kyiv. It states in particular: “We did not dim the windows, turned on four large light bulbs at home” [54, 52]. And “We always have lamps shining everywhere. Electricity is free of charge, the light is on all night in the hallway in front of the apartment and in the yard (by a higher order) for safety. Apartment with heating and electricity is free of charge” [54, 75].

He also notes the administration’s strict stance on supplying electricity to civilians: “We are going to go to Franke with a request from Shugaevsky (a well-known scientist from Kyiv – auth.) to ask him for permission, as for a person engaged in mental work, not to cut off electricity supply in his home according to the new order” [54, 75]. After the New year, they negotiated it for him [54, 81].

Meanwhile, in Kirovohrad, in the summer of 1942, a small power plant was equipped, adapting for this purpose a 15-horsepower wood-burning “Deitz” engine and a gas-generator plant based on the ZIS-21 car engine. By burning firewood up to 8 kW were generated, which was sufficient for the lighting of houses, and at daytime – for the operation of metalworking machines [41, 241]. Due to lack of electricity and the prohibition of occupiers to use kerosene for lighting the premises, night lamps or candles were commonly used for these purposes.

Constant restrictions on electricity consumption by the local population continued throughout 1942 – 1943, especially with the onset of autumn and cold, which was reflected in local editions. For example, Gebietskommissar of Konotop by resolution of October 19, 1942, allowed using only one light bulb in the apartment. Disconnection from the electrical network or arrests were
enforced for violation of these orders. The same punishment awaited those who did not have written permission to use electricity or did not pay bills [30, 87]. Strict limits were set once more. In particular, on December 13, 1942, the Gebietskommissar of Kremenchet had set the maximum number of kilowatts per month for 1943 in the following volumes: January – 12 kW, February, March – 9 kW, April–June – 3 kW, July – 2, August – 4, October–December – 10 kW each. Since household appliances at that time did not exist, such volumes of electricity consumption could provide some illumination of the premises or at least a part of them. Moreover, after 20:30 it was forbidden to switch on the lights at all. “Save up the electricity!” – local newspapers urged.

Such an appeal was made, in particular, in the newspaper “Stanislavskie Slovo”. It was reported that the city Commisssion had set monthly power consumption rates for households according the following amounts: 8 kW for non-Germans, 14 kW – for Germans. At the same time it was noted that all the utility premises, such as antechambers, lounges and cellars were not included considered living quarters. Extra kilowatts were charged an extra 5 roubles per kW. During periods of overload, certain districts of the city were shut off. For non-payers, the case usually ended with eviction from premises without providing another habitation [30, 86-87].

Regarding the cost of electricity, there was no set price per kilowatt. Regarding the established cost of services, since December 1, 1941, in Kirovohrad households paid 65 kopecks per kilowatt hour, and enterprises – 62 kopecks, which was a relatively cheap tariff compared to other cities of occupied Ukraine [41, 240]. In Shepetivka the cost of 1 kWh was 1.75 rubles. (before the war – 1 ruble) in Polonne, 1.5 rubles and 0.5 rubles respectively, Slavuta power plant sold electricity at 1.5 rubles per kWh. For consumers in Kamianets-Podilskyi since April 1942, a kilowatt hour cost 0.8 rubles [37, 116]. Given the low consumption, such prices were relatively affordable for locals.

At the request of the Rector of Odessa University, prof. P. Chasovnykov, mayor of Odessa G. Pyntia provided 65 professors with a 50% discount on rent, light and heating in the spring of 1943 [1, 830]. Similar attempts to better the life of the intelligentsia were observed in other cities of occupied Ukraine.

The state of the energy economy has directly affected other spheres of providing urban residents with the benefits of civilization. In the course of hostilities, the Donetsk water pipeline suffered especially great devastation. Its reconstruction during the winter of 1941–1942 in the war conditions was extremely difficult, and therefore the focus of the department of municipal economy was on the restoration of artesian water supply. Gradually, this network was brought to the working condition, but could be used at full power only if the electric energy was supplied up to 2,5 thousand kW. The power used for this purpose in December 1941 was only 200-300 kW, or 10 times less [46, 148]. Lack of electricity largely made it impossible for the normal water supply of Ukrainian cities occupied by Germany during the Second World War. The issue of water supply to Ukrainian cities during the Nazi occupation is discussed in more detail in one of our previous articles [56].

The lack of electricity has greatly affected electric transport, the restoration of which has progressed due to the efforts of local governments. Thus, according to Dmitry Malakov, a tram ran to the Polytechnic Institute in Kyiv [31, 151]. A trolleybus was launched on Khreschatyk in Kyiv during the pre-war years. The occupiers did not resume trolleybus traffic, and dismantled the contact network and scrapped it. According to the memoirs of Nándor Fettich, trams ran from the present-day European Square: No. 16 in the direction of Podil, number three – towards the Lavra. He wrote that “the broad gauged spacious tramcars were in a rather poor condition, worn both inside and out. The cars’ electrical appliances were in such a state it was a miracle they moved at all. The track along which they were moving also needed repair and did not allow running at high speed. Trams moved slowly, swaying as if at sea. However, they ran only on rare occasions. If people had any urgent matters, they reached their destination on foot, but if they had spare time, they always went by tram” [54, 51]. The tram line connected Darnytysia and Kyiv [54, 44]. “Trams can be ridden for free, which makes it easier to travel around the city. The military sit in front close to the driver, and the rest of the public – at the back one in a row. In winter, the tram stops at around 5 pm, which is explained by the curfew starting at 18:00. The roads were not illuminated at all” – Nandor recalls (cited in: [54, 51]).

The tram line in Dnipro was also functioning but its passenger capacity did not meet the needs of population [60, 41].

In Yuzivka (Stalino) trams ran from the city center to the market. They were actively used by German military [48, c. 221, 351].

In December 1941 special trams for the Germans started to run in Lviv [13, 4]. However, the complete restoration of electric transport was not even discussed. It lacked both the rolling stock and electricity generating capacity. All benefits of transport were enjoyed only by the occupiers, except for local residents with a special permission from military officials.

When retreating, the German occupiers also resorted to scorched earth tactics, the main purpose of which was to leave a wasteland behind. Such an instruction to the German troops included, in particular, the order of Himmler on the destruction of the Donbas to the supreme head of the SS and police in Ukraine, which reads as follows: “It is necessary to ensure that when leaving the regions of Ukraine no person, no head of livestock, no centner of grain, no rails were left ... The enemy must find a truly burned and destroyed country” [44, 261]. So the power grid network was again completely destroyed, and the energy supply of the population of cities with retreat of Nazi troops was stopped. Of course, this situation also resulted from the moving of the front line, the intense fighting for the liberation of
Ukraine from the Nazi invaders. The negative impact on the standard of living of the population also worsened because out of 64 power plants that had been active in the cities before the war, 62 had been completely destroyed and the remaining two had been significantly damaged. In their unheated apartments the townspeople constructed heat lamps, improvised stoves and potbelly stoves [6, 8].

In Yuzivka (Stalino) the occupiers burned a train fleet, 89 wagons, 4 electric locomotives, destroyed 35 km of the tram railways, 35 km of the contact grid and 10 new trolleybuses, destroyed the city water line and the city power grid [32, 141]. Before the war, 23 cities of the republic had tram traffic, the total length of tracks was 142 km. A trolleybus service has already been launched in 5 cities. At the time of liberation, the entire trolleybus service was out of order. Damage to the tramway economy in 6 major cities of Ukraine – Kyiv, Kharkiv, Voroshilovgrad, Zaporizhia, Stalino and Dnipropetrovsk amounted to 133 million rubles, i.e. 56% of their book value. The invaders resorted to widespread looting – trolleybus wire and tram rails were taken to Germany. The Kyiv trolleybuses, which had been received from the Yaroslav factory on the eve of the war, were much liked by the invaders, and so they took those trolleybuses along [6, 8].

**Conclusions.** Thus, the problem of energy supply to urban areas of Ukrainian cities occupied by the Nazis is scientifically relevant and understudied in modern historical science. In the course of research of this problem the author concluded the following. After the Red Army’s scorched earth tactics, the German occupation authorities had less time to export and destroy resources of the occupied regions and Right-Bank Ukraine (Soviet authorities, to which Kyiv region belonged). In their unheated apartments the townspeople were much liked by the invaders, and so they took those trolleybuses along [6, 8].

Street lighting, not including the central streets, was generally absent. In the inter- mediate position there were the Volksdeutsche, who retained the right to use electricity throughout the whole period of occupation. Consequently, the overwhelming majority of the population of cities in the winter of 1942 used kerosene lamps, heat lamps and other appliances and improvised means for household lighting, and improvised stoves, potbelly stoves, etc. (for houses with central heating) – for heating. Street lighting, not including the central streets, was generally absent. Electric transport functioned to a limited extent. The reasons for this situation rested in the Soviet scorched earth tactics, the evacuation of all resources to the east of the USSR, the Reich policy of looting and removal of electrical equipment, the lack of fuel and general energy crisis in Germany due to the failure of the blitzkrieg. In their turn, the Nazis themselves resorted to scorched earth tactics, which, along with heavy fighting and the moving front line, finally deprived the population of electricity on the final stage of occupation and war.

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троэнергии, её доступности для разных групп городского населения. Также освещены аспекты функционирования городского электротранспорта. Доказывается, что недостаток электроэнергии ощущался на протяжении всего периода оккупации. Её отсутствие сдерживало восстановление коммунального хозяйства. Электричество использовалось, прежде всего, немецкими военными частями, фольксдойче, предприятия и официальные учреждения. Рассмотрены способы освещения и обогрева жилищ, которые использовали горожане в годы оккупации. За нарушение приказа угрожали жесткими мерами вплоть до расстрела. Обратная ситуация наблюдалась у военнослужащих вермахта, которые электричество не экономили. В целом энергетика не могла обеспечить потребности ни гражданского населения, ни промышленности, особенно в холодные периоды года. Причины такого положения заключались в советской тактике «выжженной земли», эквакуации всех ресурсов на восток СССР, политике рейха по разработанию и выводу электрооборудования, недостаток топлива и общей энергетической кризис в Германии в результате провала блицкрига. В свою очередь сами нацисты при отступлении также прибегли к тактике «выжженной земли», что, наряду с тяжелыми боями и прохождением линии фронта, окончательно лишило население электроэнергии на завершающем этапе оккупации и советско-немецкой войны. 

Ключевые слова: Вторая мировая война, энергетика, электроснабжение, Украина, город, оккупация, население, вермахт, фольксдойче, инфраструктура, электротранспорт, жилищно-коммунальное хозяйство, тактика выжженной земли, эквакуация.

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