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ASSESSMENT OF THE IMPACT OF COVID-RESTRICTIONS ON THE ECONOMY OF UKRAINE AND THE WORLD

The object of research is the processes of reducing economic activity in Ukraine and the world during COVID-restrictions, reducing the amount of carbon dioxide emissions in 2020 compared to 2019 by country and in various sectors of the economy. The most topical researches and publications in which the given questions are covered are analyzed. Based on statistical data, the paper shows a slight decline in Ukraine's GDP in 2020. Based on the consideration of the negative impact of quarantine restrictions, it was noted that the type of economic activity (EA) such as passenger transport suffered the most. At the same time, as the production of foreign trade, the performance of retail trade and construction has improved its dynamics. Elsewhere in the world, there has also been a slight economic downturn, while China has been able to maintain a slight increase in GDP. For 2021, there is a positive outlook for economic growth. The introduction of lockdowns and quarantine restrictions has led to a simultaneous reduction in CO_2 emissions worldwide and reduced the negative impact on the environment. Thanks to the data of carbon dioxide emissions monitoring, it is possible to see a significant reduction in emissions since the beginning of COVID-restrictions in 2020. At the end of the year, the level of emissions reached almost the same level as before the restrictions, but the total volume for the year decreased significantly. If to look at the sectors, the largest amount of carbon dioxide emissions decreased in the aviation sector. This also applies to the land transport sector. Peaks of falling CO_2 emissions occur in April 2020. The study showed that the reduction in economic activity due to «lockdowns» and quarantine restrictions affected the fall in energy consumption, especially in the aviation and land transport sectors, and this, in turn, led to a reduction carbon dioxide. This duly explains the relationship between declining economic growth and reducing CO_2 emissions.

The conducted research will be of interest to relevant ministries and departments in terms of their areas of responsibility, relevant organizations dealing with environmental and economic research, specialists who study and use in practice research on socio-economic problems of society.

Keywords: *economic activity, decarbonization, COVID-restrictions, carbon dioxide emissions, post-COVID economic system, energy consumption.*

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1. Introduction

The development of the post-COVID economic system has significantly changed the structure of social formations in the vast majority of countries. New forms of work and study have been introduced, mass events have been abolished, entry-exit restrictions and severe restrictions on the movement of citizens have been introduced in many countries, and quarantine zones have been introduced. Also, production and commercial activities were suspended during the lockdowns, air transportation was partially canceled, students and pupils were transferred to distance learning, administrative institutions switched to distance work, catering establishments work on removals and fulfill orders with delivery. This has led to a sharp decline in economic development and has had a direct impact on the ecological state of the environment. In particular, the issues of emission reduction and decarbonization are covered in detail in papers [1–3].

Therefore, it is important to conduct an in-depth study of the socio-economic development of an individual country (in our case – Ukraine) and the world as a whole under quarantine restrictions for a long time in the global value added crisis, accompanied by COVID restrictions in almost all countries.

Thus, *the object of research* is the processes of reducing economic activity in Ukraine and the world during COVID-restrictions, reducing the amount of carbon dioxide emissions in 2020 compared to 2019 by country and in various sectors of the economy. *The aim of research* is the assessment of the impact of COVID-restrictions on the economy of Ukraine and the World, in particular the dependence of CO_2 emission reductions on economic activity.

2. Methods of research

The issue of preventing the spread of COVID-19 is widely covered in periodicals and online sources, analytical research is conducted. The Ministry of Economic Development, Trade and Agriculture of Ukraine has developed a consensus forecast of post-pandemic development in 2020–2024 with the involvement of experts and youth [4]. The Institute for Economic Research and Policy Consulting (IER, Kyiv) together with the International Team of Economists of the German Economic Team (GET, Berlin) modeled three scenarios of the impact of the corona crisis on Ukraine: optimistic, basic and pessimistic [5]. The scenarios are based on an analysis of internal and external impacts from the shutdown of economic sectors, declining demand for Ukraine's main exports and declining remittances.

On the basis of statistical data processing to investigate the impact of COVID-restrictions on the economy of Ukraine and the World, in particular the dependence of CO_2 emission reductions on economic activity.

3. Research results and discussion

The «weekend» quarantine, which was introduced in November 2020, did not cause significant damage to Ukraine's economy. This is evidenced by the graphs shown in Fig. 1. Due to the experience gained at the peak of the pandemic in April–March 2020, the economic activities (EA) that were subject to restrictions did not suffer significant losses. Despite the fact that according to the National Bank of Ukraine, the index of business activity expectations (IBAE) deteriorated from 47.8 points in October 2020 to 43.4 points in November 2020, this is primarily due to not with the quarantine itself, but with the expectation of its introduction and uncertainty for the business itself, what precautions will be introduced. Quarantine had a negative impact only on such foreign trade as passenger transport. EA of trade, retail and construction performance indicators improved their dynamics. Decrease in GDP in the third quarter. 2020, compared to the third quarter. 2019, remained at –3.5 %.

According to the forecasts of the Ministry of Economy in the first quarter of 2021, the decline in GDP may reach –3 %. This slight decline is due to a reduction in the incidence rate and the easing of strict quarantine measures, which should lead to the growth of Ukraine's economy from the second quarter to the end of 2021 [7].

According to the calculations of the Ministry of Economic Development, Trade and Agriculture, the decline in Ukraine's GDP in 2020 was 4.2 % compared to the previous year, which was higher than the pessimistic forecasts. The slowdown in the Ukrainian economy was due to the growth of economic activity in the fourth quarter of 2020 [8].

The Ministry of Economy maintains the forecast of Ukraine's economic growth in 2021 at 4.6 % of GDP. The forecast of 4.6 % takes into account the risks of additional lockdowns [9].

Since carbon dioxide (CO_2) emissions represent about 90 % of all greenhouse gas emissions, let's focus this research on the impact of COVID restrictions on the environmental state on this component. As of the end of 2019, global CO_2 emissions continued to grow and reached 38 billion tons [10]. The leaders were China and India, where carbon dioxide emissions increased by 3.4 and 1.6 %, respectively. In 2018, more than 30 % of all global emissions were emitted by China.

At the same time, the European Union (EU) has been reducing its CO_2 emissions. Compared to 2018, as of 2019, the EU reduced emissions by 3.8 %. The main reason was the reduction in the use of coal. Estonia reduced its emissions by 21 % and Germany by 6.5 % [10].

In 2019, Ukraine also continued to reduce carbon dioxide emission. CO_2 emissions in 1990 amounted to 783 million tons, in 2018 emissions amounted to 203 million tons, and in 2019 they amounted to 196 million tons. This downward trend is not only due to population decline, as per capita CO_2 emissions have also declined. In Ukraine, they were over 15 tons in 1990, 4.6 tons in 2018, and 4.5 tons in 2019. At the same time, the average per capita emissions in the EU and the UK this year – 6.5 tons. The average global CO_2 emissions per capita in 2019 are 4.9 tons of CO_2. The value of this indicator for Ukraine is lower [10].

In Ukraine, greenhouse gas emissions decreased by 1,000 USD of GDP. In 1990, this figure was 0.96 tons, in 2018 – 0.39 tons, in 2019 – 0.36 tons.

The situation with CO_2 emissions changed in 2020, when production was suspended and restrictions on the movement of citizens were imposed, as well as strict quarantine measures and «lockdowns» were introduced. A significant drop in CO_2 emissions is observed in Fig. 2 since the beginning of 2020.

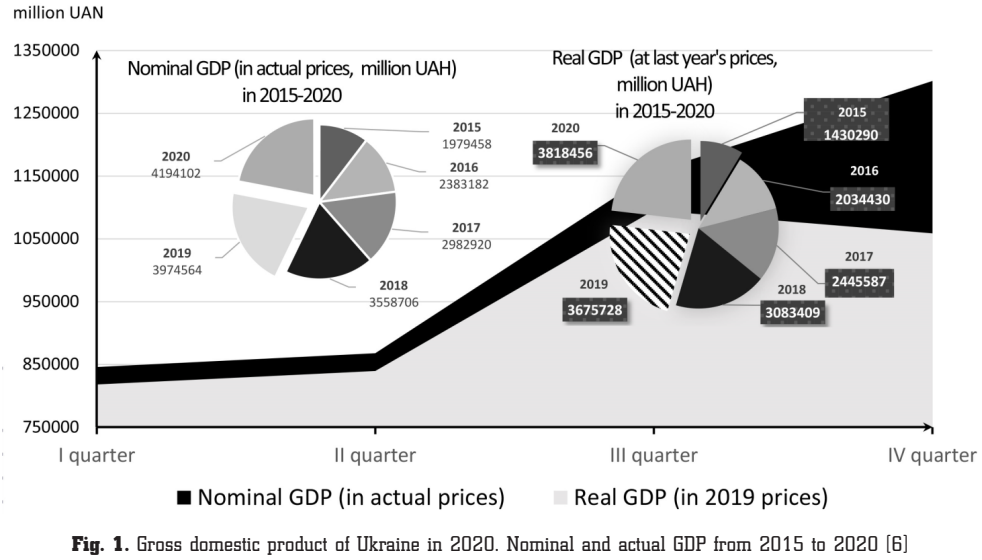

Fig. 1. Gross domestic product of Ukraine in 2020. Nominal and actual GDP from 2015 to 2020 [6]

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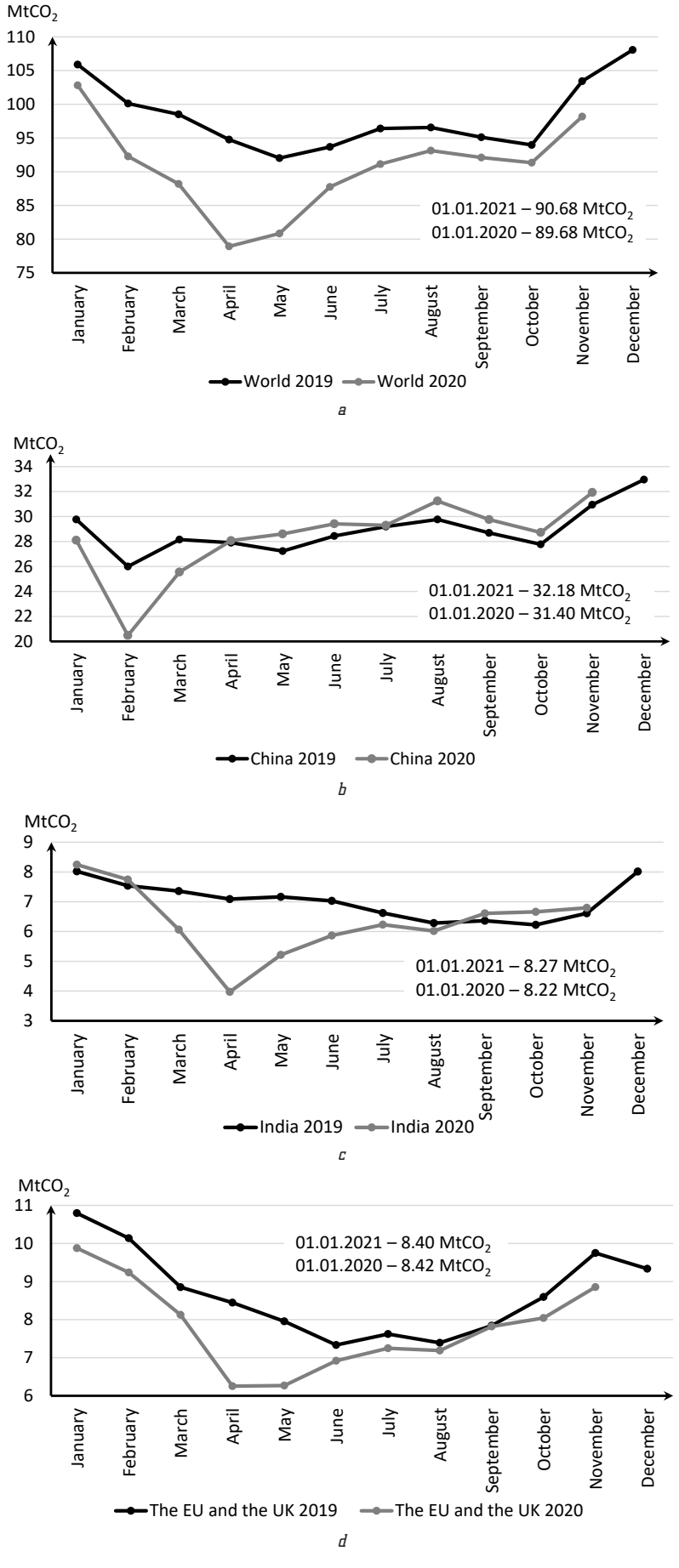

Fig. 2. Global CO_2 emissions and emissions in 2019–2020: *a* – Global; *b* – China; *c* – India; *d* – European Union and United Kingdom [11]

As for China, there has been a precipitation in CO_2 emissions since January and reached a minimum in February. Reason: China is the starting point for COVID restrictions. As for India and the EU, the rate of reduction of greenhouse gas emissions began to fall sharply from March 2020 and peaked in April. This is due to the wave of the virus, which occurred in these countries in March [10].

If to study the sectors (Fig. 3), it is also possible to observe a global decline in carbon dioxide emissions in early 2020. The largest carbon dioxide emissions fell in the aviation sector, which is primarily due to a sharp reduction in the number of flights. This also applies to the land transport sector. Peaks of falling CO_2 emissions fall in April 2020.

Regarding the monitoring of CO_2 emissions in Ukraine, from January 1, 2021 the Law of Ukraine «On the principles of monitoring, reporting and verification of greenhouse gas emissions» [12] enters into force. This is stated in the Resolution of the Cabinet of Ministers of Ukraine No. 960, adopted on September 23, 2020 «On approval of the Procedure for monitoring and reporting on greenhouse gas emissions» [13].

The introduction of the MRV system (monitoring, reporting and verification) will allow Ukraine to start trading in greenhouse gas emission allowances. The system will provide accurate information on greenhouse gas emissions from production facilities and provide control over emissions, be able to limit them [14].

According to Enerdata's Global Energy Trends 2020, given the impact of COVID-19 on economic activity, global economic growth in 2020 was –4.5 %, energy consumption fell by 5.9 % and CO_2 emissions reduced by 8.6 % [15].

In China, economic growth in 2020 was +1.8 %, energy consumption decreased by 1 %, and annual carbon dioxide emissions decreased by 2.5 %. Energy consumption in the transport sector reached –4.0 %. In the US, GDP fell by 3.8 %, energy consumption – by 7.0 %, energy consumption in the transport sector decreased by 11.0 %, annual CO_2 emissions – by 11.0 %. In the EU in 2020, economic growth decreased by 8.0 %, energy consumption in the transport sector – by 12.0 %, energy consumption – by 6.0 %, annual CO_2 emissions – by 10.0 %.

4. Conclusions

The study found that COVID-19 quarantine restrictions affected economic growth in Ukraine and the world, reduced economic activity, and, as a result, reduced energy consumption (mostly in the land transport and aviation sectors). This has led to a reduction in CO_2 emissions. Therefore, the relationship between declining economic growth and CO_2 emissions is properly explained. The reduction of CO_2 emissions in 2020 is a consequence of the economic recession, the introduction of «lockdowns» and quarantine restrictions.

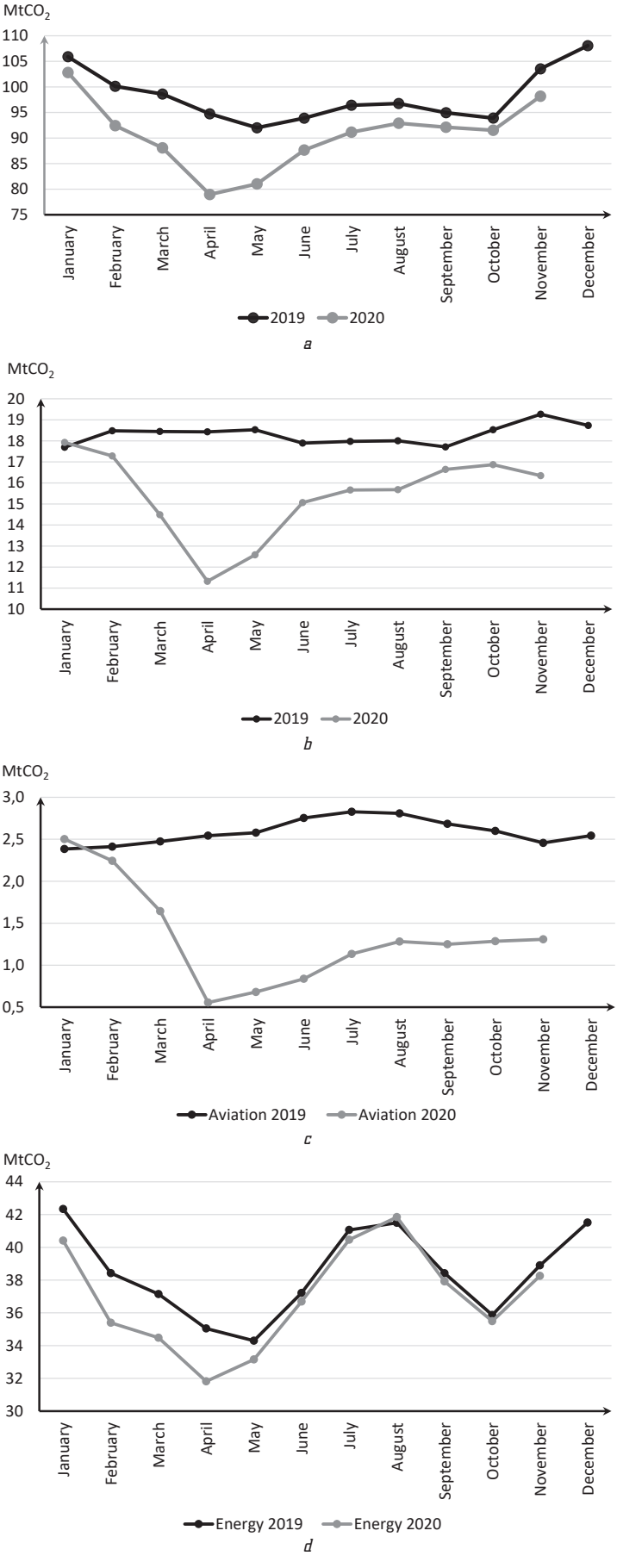

Fig. 3. Global CO_2 emissions by sectors in 2019–2020: *a* – global; *b* – in the land transport sector; *c* – in the aviation sector; *d* – in the energy sector [11]

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It is predicted that the reduction of carbon dioxide emissions in 2021 will depend on economic activity, renewal or maintenance of the same level of air transportation, activity in the field of transport, which requires further research.

The conducted research will be of interest to relevant ministries and departments in terms of their areas of responsibility, relevant organizations dealing with environmental and economic research, as well as specialists who study and use in practice research on socio-economic problems of society.

References

1. Liu, Z., Ciais, P., Deng, Z., Lei, R., Davis, S. J., Feng, S. et. al. (2020). Near-real-time monitoring of global CO_2 emissions reveals the effects of the COVID-19 pandemic. *Nature Communications, 11 (1)*. doi: http://doi.org/10.1038/s41467-020-18922-7
2. Le Quéré, C., Jackson, R. B., Jones, M. W., Smith, A. J. P., Abernethy, S., Andrew, R. M. et. al. (2020). Temporary reduction in daily global CO_2 emissions during the COVID-19 forced confinement. *Nature Climate Change, 10 (7)*, 647–653. doi: http://doi.org/10.1038/s41558-020-0797-x
3. Forster, P. M., Forster, H. I., Evans, M. J., Gidden, M. J., Jones, C. D., Keller, C. A. et. al. (2020). Current and future global climate impacts resulting from COVID-19. *Nature Climate Change, 10 (10)*, 913–919. doi: http://doi.org/10.1038/s41558-020-0883-0
4. *Department of Strategic Planning and Macroeconomic Forecasting. Additional issue of consensus forecast «UKRAINE: The Impact of COVID-19 on the Economy and Society (vision of post-pandemic development in 2020–2024 through the eyes of experts and youth)»* (2020). Available at: https://me.gov.ua/old/Documents/List?lang=uk-UA&id=767c9944-87c0-4e5a-81ea-848bc0a7f470&tag=Konsensus-prognoz
5. *Press-conference: Economic impact of COVID-19 pandemic on Ukraine: three scenarios* (2020). Available at: https://www.ukrinform.ua/rubric-presshall/3027519-ekonomicnij-vpliv-covid19-na-ukrainu-tri-scenarii.html
6. *Gross domestic product (GDP) in Ukraine 2021* (2021). Available at: https://index.minfin.com.ua/economy/gdp/
7. *Against the background of lockdown: the Ministry of Economy forecasts a fall in GDP in the first quarter by 3 %* (2021). Available at: https://www.epravda.com.ua/news/2021/01/11/669855/
8. *All forecasters were wrong: the Ministry of Economy explained the reasons for the moderate drop in Ukraine's GDP* (2021). Available at: https://finance.liga.net/ekonomika/novosti/oshiblis-vse-prognozisty-minekonomiki-obyasnilo-prichiny-umerennogo-padeniya-vvp-ukrainy
9. Petrashko, I. (2021). *The Ministry of Economy maintains the forecast of economic growth in 2021 by 4.6 %*. Available at: https://interfax.com.ua/news/economic/731072.html
10. *European Commission study: Ukraine reduces CO_2 emissions* (2020). Available at: https://www.dw.com/uk/doslidzhennia-yevrokomisii-ukraina-skorochuie-vykydy-co2/a-54868014
11. *Carbon monitor*. Available at: https://carbonmonitor.org/
12. *On Principles of Monitoring, Reporting and Verification of Greenhouse Gas Emissions* (2019). Law of Ukraine No. 377-IX. 12.12.2019. Vidomosti Verkhovnoi Rady Ukrainy (VVR), 22, 150. Available at: https://zakon.rada.gov.ua/laws/show/377-20#Text
13. *On approval of the Procedure for monitoring and reporting on greenhouse gas emissions* (2020) Resolution of Cabinet of Ministers of Ukraine No. 960. 23.09.2020. Available at: https://zakon.rada.gov.ua/laws/show/960-2020-%D0%BF#Text
14. *Monitoring of greenhouse gas emissions begins in Ukraine* (2021). Available at: https://www.kmu.gov.ua/news/v-ukrayini-rozpochinayut-monitoring-za-vikidami-parnikovih-gaziv
15. *Global Energy Trends 2020* (2020). Available at: https://www.enerdata.ru/publications/reports-presentations/world-energy-trends.html

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