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WHOLESALE ENERGY SUPPLIES DISRUPTION AS THE HUMAN RIGHTS BREACH: CHARACTERISATION AND CAUSALITY ASPECTS

Abstract

This paper explores the intersection of energy security supply and human rights in Ukraine, focusing on the implications of disruptions in the supply of wholesale energy products. Ukraine's wholesale energy sector is being under attack since early October 2023, with no legally sound reaction from the international community. The article studies, past hindrance of the economic development and personal liability caused by the attacks, the risks posed to human rights and other peremptory rules of public international law, including access to essential services, health, and an adequate standard of living. By examining the legal frameworks and international human rights standards, this study argues that sustained or significant interruptions in wholesale energy supply constitute a breach of human rights and sufficient cause of action by the Government of Ukraine under multilateral international instruments.

Keywords: Energy Security, Human Rights, Russia-Ukraine War, Wholesale Energy Products, Supply Disruptions, War Crime, Crime of Genocide.

Introduction. Russian attacks on Ukraine's energy grid, as far as consensus goes, started in early October 2022 with massive missile and unmanned aerial attacks that continue, in a systematic way to threaten civilians; millions of Ukrainian nationals remained for hours, days and weeks without electricity and the utilities that run on the power: natural gas, water and heat. Access to electricity is a basic human right. We submit that access to electricity is not only a vital necessity for the well-being and advancement of communities and individuals but also a basic human right. Governments and organizations must fight back the threats by Russia to destroy essential power infrastructure through the framework of the international treaties. In the forward-looking assessment of the technology development, the elements of the infrastructure should include the downstream and upstream links in the chain of supply.

Literature review. The United Nations' Sustainable Development Goals (SDGs), 1 and 7, assert that access to safe and affordable energy is essential for human development,¹ which brings

researchers to the thought that an access should be ensured, and any obstacles removed² in the trilemma of access, affordability and sustainability, balancing of which establishes energy justice. It is a well-established fact that energy is a crucial part of everyday life and determines the quality of life, with several themes in energy justice: distributive, procedural, recognition and restorative.³

The energy justice then is explored in a number of publications, concentrated mostly on the distributive and recognition theme. For example, the concept of energy poverty is explored in the concept of access as a subjective right or entitlement: according to Suástegui Macías, energy poverty refers to the inadequate accessibility and affordability of energy services.⁴ They further argue on the dichotomy of electrification and access to the energy services, which should be balanced in the

¹ United Nations, Resolution adopted by the General Assembly no. 70/1 on 25 September 2015 [without reference to a Main Committee (A/70/L.1)]. Transforming our world: the 2030 Agenda for Sustainable Development, https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf.

² Rigoberto García Ochoa, Daniel Itzamna Avila-Ortega, and Jordi Cravioto, "Energy services' access deprivation in Mexico: A geographic, climatic and social perspective," *Energy Policy* 164 (2022): 112822, <https://doi.org/10.1016/j.enpol.2022.112822>.

³ Iñigo del Guayo, Lee Godden, Donald D. Zillman, Milton Fernando Montoya, and José Juan González, *Energy Justice and Energy Law* (Oxford: Oxford University Press, 2020), <https://doi.org/10.1093/oso/9780198860754.001.0001>.

⁴ J. A. Suástegui Macías, A. J. López Valenzuela, A. Acuña Ramírez, P. F. Rosales Escobedo, and A. H. Ruelas Puente, "Reduction of energy poverty in Mexico by applying an optimization model to residential energy tariffs," *Energy Reports* 9 (2023): 3431-9, <https://doi.org/10.1016/j.egy.2023.02.022>.

assessment of whether the sustainability goal is advanced. Cervantes and Solis define energy poverty as an absence, in a household, of modern energy products, such as electricity and gas, or financial inability of a household to cover the costs of the electricity and gas, going further and suggesting the ways to fight energy poverty in the centralized system of supply.⁵

An academic concept was offered for research and policy development of energy poverty and fuel poverty, their common points, overlapping and distinctions to fight both phenomena.⁶ A number of technical literature pieces establish efficiencies of the centralized grid with the wholesale energy products optimizing the cost for the access to the energy. Several measures to diversify the risk for the security of supply and add flexibility were suggested in the form of the coordination between transmission and distribution (smart) grids⁷ as well as nuanced balancing obligation with carve-out for the settlements with the prosumer aggregators.⁸

The right of access to the energy go hand in hand with concept of the energy poverty, through negative concept rather than symbiotic relationship as explained by Iñigo del Guayo, “Where there is poverty, there is no access or low access to energy and where there is no access or low access to energy, there is poverty”,⁹ although it is worth noting that International Energy Agency (IEA) departed from its definition of energy poverty of 2018 cited by del Guayo, and now simply recognizes people with no access to electricity, which worldwide has decreased by more than 45 % since 2010, primarily driven by Asia; IEA stresses that 760 million people has no access, with the most dire situation in sub-Saharan Africa, where 20 % or less of population have access to electricity.¹⁰

⁵ Miguel Ángel Marmolejo Cervantes and Lisa Reilly Solis, “Energy poverty and social justice in Mexico: The rights of electricity consumers,” *The Electricity Journal* 37, no. 2 (2024): 107372, <https://doi.org/10.1016/j.tej.2024.107372>.

⁶ Kang Li, Bob Lloyd, Xiao-Jie Liang, and Yi-Ming Wei, “Energy poor or fuel poor: What are the differences?” *Energy Policy* 68 (2014): 476–81, <https://doi.org/10.1016/j.enpol.2013.11.012>.

⁷ Wandry Rodrigues Faria, Gregorio Muñoz-Delgado, Javier Contreras, and Benvido Rodrigues Pereira Junior, “A trilevel programming model for the coordination of wholesale and local distribution markets considering GENCOs and proactive customers,” *Applied Energy* 357 (2024): 122509, <https://doi.org/10.1016/j.apenergy.2023.122509>

⁸ J. Mello and J. Villar, “Integrating flexibility and energy local markets with wholesale balancing responsibilities in the context of renewable energy communities,” *Energy* 282 (2023): 128853, <https://doi.org/10.1016/j.energy.2023.128853>.

⁹ del Guayo, Godden, Zillman, Montoya, and González, *Energy Justice and Energy Law*.

¹⁰ International Energy Agency, Energy Access: Achieving modern energy for all by 2030 seems unlikely, accessed May 18, 2024, <https://www.iea.org/topics/energy-access>.

The Energy Community Secretariat initiated legal research to develop theories and process strategies for Ukraine and energy asset owners against Russia with the view of bringing the perpetrator to justice and helping to restore the Ukrainian energy sector by collection of the damages suffered.¹¹ This is an innovative way of mimicking support of the Ukrainian military by the civil society and foreign governments through shared funding. For the lack of better term, this collective *pro bono* legal support can be branded ‘crowd-braining’. The legal community will be crucial in engineering solutions and pushing for a political decision to implement it.

Research methodology. This paper aims to overview the status quo, related notions under the public international law to argue that attacks leading to wholesale energy disruptions and energy poverty constitute a grave violation of the international obligations by the Russian Federation. The Russian and Belarus aggression against Ukraine presents a case for legal characterization of the activities leading to energy poverty. Since the recognition of the right to access the energy gains academic consensus, albeit on a different material, we will concentrate in this paper predominantly on the procedural and restorative aspects of energy justice in the context of the Russia-Ukraine war’s implications on the multilateral instruments of human right law. The qualitative side will concentrate on analyzing Russia’s attacks as a violation of the public international law. We will aim to overview and interpret the body of public international law in an outline that can generalize the restrains on the cause of action and the relief available to Ukraine, so that the results can be used for research and policy development by the government of Ukraine, its partner governments as well as international organizations concerned with the poverty, energy access and restorative justice in case of international conflicts. Eventually, the results can be used for bringing the aggressor countries to accountability.

Findings. The access to the energy as a global sustainability goal has two prongs of (a) the access to the energy (actual functioning grid, i.e., supply side) and (b) affordability (supply side), the lack of which results in fuel poverty. Depriving the population of either access or affordability or both would be sufficient to constitute the energy poverty given that the home grid or micro grid technology is accessible but less affordable.

¹¹ Energy Community, “Ukraine Legal Support Platform,” accessed May 18, 2024, <https://www.energy-community.org/Ukraine/platform.html>.

An attack on the wholesale energy infrastructure, which is a civilian object, constitutes the breach of international law. Wholesale is defined, for our purposes, as a volume extending to more than one household, although for the purpose of the market transparency threshold is higher and this is how the term became known and primarily used.¹² While some might maintain that electricity is used equally by the civilians and the military, the laws of war clearly maintain that military targets must not be attacked where the consequence expected is an excessive civilian casualty or a cause thereof, or damage to civilian objects, or a combination.¹³ While neither Ukraine nor Russia had ratified the Rome Statute, each country owes an obligation to do everything feasible to assess proportionality of any attack in the context of any concrete and direct anticipated military advantage stems from 1949 Geneva Convention on the protection of the civilians, in particular, women and children as well as the provisions pertaining to the hospitals.¹⁴ Intentional disproportionate attack with the knowledge or anticipation of clearly excessive civilian casualties and damage constitutes a war crime of Russia, where Rome Statute provisions can be illustrative of the prohibited actions¹⁵ if not peremptory rules of international humanitarian law.

Besides, electricity access is already well established within the framework of human rights, either as an implicit attribute of a pre-existing right such as non-discrimination or sustainable development or explicitly in the context of eliminating discrimination against women. The body of the environmentally conscious studies on the sustainable and affordable in the recent past helped to establish a broad acknowledgement by states of the desirability of eliminating energy poverty – for all, but particularly for the rural poor, and women.¹⁶

¹² Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency, *Official Journal of the European Union*, Articles 2(4) and 2(5), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L._2011.326.01.0001.01.ENG&toc=OJ%3AL%3A2011%3A326%3ATOC.

¹³ Rome Statute of The International Criminal Court adopted on 17 July 1998, Article 8(b)(iv), https://legal.un.org/icc/statute/99_corr/cstatute.htm.

¹⁴ Geneva Convention relative to the Protection of Civilian Persons in Time of War adopted on 12 August 1949 as amended, Article 12, <https://www.ohchr.org/en/instruments-mechanisms/instruments/geneva-convention-relative-protection-civilian-persons-time-war>.

¹⁵ Rome Statute of The International Criminal Court adopted on 17 July 1998, Articles 6, 7.1(b), 7.2(b), 8.2(b)(iv) and (xiii), 8.2(e)(xii), https://legal.un.org/icc/statute/99_corr/cstatute.htm.

¹⁶ Stephen Tully, “The Human Right to Access Electricity,” *Electricity Journal* 19 (2006): 30–39, <https://doi.org/10.1016/j.tej.2006.02.003>.

The provision of electricity is recognized as an essential component of human rights, both implicitly and explicitly, to ensure non-discrimination, sustainable development, and the elimination of discrimination against women. States also widely acknowledge the importance of eradicating energy poverty, especially for underserved populations such as the rural poor and women.¹⁷ Access to electricity is crucial for the realization of various human rights, including the rights to health, education, and a decent standard of living. ‘*Electricity access is already well-established within the framework of human rights, either as an implicit attribute of a pre-existing right (non-discrimination, adequate living standards, housing, health, and sustainable development) or explicitly in the context of eliminating discrimination against women*’.¹⁸

Accountability of the aggressor state is a challenge from several angles as we will see below with the review of the formal elements of a crime. Some instances of the liability require more elements than others, for example strict liability applies for nuclear incidents^{19, 20, 21} whereas the crimes against humanity provide the liability only if the person acted with intent and knowledge as the Assembly of States Parties to the Rome Statute, cf. Official Records, 2002. Therefore, establishing the act, the intent, concurrence, causation and the harm would be a minimum scope of review and proof required to complete the intellectual exercise and we will strive to provide an outline per classic doctrine of the elements of the crime.

The outlawed act. While ‘the scorched earth’ policy has been known for millennia and was specifically made a war crime, the electricity presents a new case and requires additional support in terms of procedural tools and material law background.

¹⁷ F. S. Javadi, B. Rismanchi, M. Sarraf, O. Afshar, R. Saidur, H. W. Ping, and N. A. Rahim, “Global policy of rural electrification,” *Renewable and Sustainable Energy Reviews* 19 (2013): 402–416, <https://doi.org/10.1016/j.rser.2012.11.053>.

¹⁸ Tully, “The Human Right to Access Electricity.”

¹⁹ Convention on Nuclear Safety adopted on 17 June 1994 by a Diplomatic Conference convened by the International Atomic Energy Agency at its Headquarters, Article 9, <https://www.iaea.org/publications/documents/infcircs/convention-nuclear-safety>.

²⁰ Vienna Convention on Civil Liability for Nuclear Damage adopted on 21 May 1963, Article IV, <https://www.iaea.org/topics/nuclear-liability-conventions/vienna-convention-on-civil-liability-for-nuclear-damage>.

²¹ Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960, as amended by the Additional Protocol of 28 January 1964, by the Protocol of 16 November 1982 and by the Protocol of 12 February 2004, NEA (2023), Paris Convention on Third Party Liability in the Field of Nuclear Energy: Unofficial consolidated text and exposé des motifs, OECD Publishing, Paris, Article 3, https://www.oecd-nea.org/jcms/pl_79139/paris-convention-consolidated?preview=true.

Russia has ratified and/or acknowledged successorship of the USSR obligations under a number of public international law instruments on human rights, both with general scope and specialized object of protection – Russian Federation undertook to comply with 11 out of 18 major international human rights treaties listed by the Office of the United Nations High Commissioner for Human Rights (UN OHCHR), among them general instruments included International Covenant on Civil and Political Rights and (the first) Optional Protocol to it (ICCPR), International Covenant on Economic, Social and Cultural Rights (ICESCR), and International Convention on the Elimination of All Forms of Racial Discrimination. Human Rights instruments protecting vulnerable social groups include Convention on the Elimination of All Forms of Discrimination against Women and Optional Protocol to it, Convention on the Rights of the Child and two of three Optional Protocols to it. Finally, UN treaties ratified by Russia prohibiting specific forms of the human rights abuses and violation are Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment. 1948 Convention on the Prevention and Punishment of the Crime of Genocide (CPPCG) is not a part of package monitored by UN OHCHR but can also be part of the last group. Russia had acceded to CPPCG as a self-proclaimed successor of the Union of Soviet Socialist Republics. Incidentally, Russia is also a successor to the declaration, by the USSR, that “*all the provisions of the Convention should extend to Non-Self-Governing Territories, including Trust Territories*”. Thus, Russia deprived themselves of the argument that some of the international law obligations of the CPPCG do not apply with respect to the non-recognized governments or regimes in post-2014 Ukraine.²² To be fair, Belarus and Ukraine made identical declarations and had not withdrawn them ever since.

ICCPR guarantees in its Article 6.1 that “*Every human being has the inherent right to life. This right shall be protected by law. No one shall be arbitrarily deprived of his life.*”

In its public stance, being not so fond of the civil and political rights of the person,²³ Russia remained a champion of the cultural, economic and social human rights, in particular, to the ‘*the right of everyone to an adequate standard of living for himself and his family,*

including adequate food, clothing and housing, and to the continuous improvement of living conditions’ (ICESCR, Article 11) and ‘*the right of everyone to the enjoyment of the highest attainable standard of physical and mental health. ... The steps to be taken by the States Parties to the present Covenant to achieve the full realization of this right shall include those necessary for: (d) The creation of conditions which would assure to all medical service and medical attention in the event of sickness*’ (ICESCR, Article 12). This provision *prima facie* makes unlawful denying access to the life-supporting devices inside and outside the hospitals, to the lifestyle accessories that run on electricity for the people who are handicapped (bionic prosthetics, electric wheelchair, artificial kidney, oxygen camera) or have chronic medical condition (sleep apnea machines, blood dialysis). While generation may be available and, to certain extent, affordable to the general population, the handicapped person is vulnerable to any interruption of the access to the supply of the electricity, including disruption of the elevators and public transport. This social strata of the people, one can argue, is the most sensitive to the disruptions of the heat and power supply, they are vulnerable on the brink of life and death situations.

In the less controversial area of women rights, the states have long been consistently acknowledging the desirability of improving consumer choice in accessing adequate, reliable, affordable, high-quality, economically sustainable access to the utilities, that the state parties must “*take all appropriate measures to eliminate discrimination against women in rural areas ... and, in particular, shall ensure to such women the right ... to enjoy adequate living conditions...*”²⁴ Adequate living condition is, arguably, a part of the dignity and, thus, denying an access to the electricity and other energy products can be characterized as torture, as denial of access to the heat, water and medical assistance can be and indeed “*is inflicted by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official capacity*”, and such disruption of access to the utilities caused “*severe pain or suffering, whether physical or mental, ... intentionally inflicted on a person*”.²⁵ The torture is further prohibited and

²² Deutsche Welle, “Putin rejects Ukraine ‘coup,’” March 4, 2014, accessed July 15, 2024, <https://www.dw.com/ru/proryv-vsu-na-vostoke-glavnye-sobytia-200go-dna-vojnny-russii-protiv-ukrainy/a-63086395>.

²³ Russia will no longer participate in the Council of Europe: a problematic Member State who could not commit to peace, March 10, 2022, *ECHR blog*, accessed May 18, 2024, <https://www.echrblog.com/2022/03/russia-will-no-longer-participate-in.html>.

²⁴ United Nations, 1979 Convention on the Elimination of All Forms of Discrimination Against Women, Article 14(2)(h), <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-elimination-all-forms-discrimination-against-women>.

²⁵ United Nations, Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment adopted on 10 December 1984, Article 1(1), <https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-against-torture-and-other-cruel-inhuman-or-degrading>.

“[n]o exceptional circumstances whatsoever, whether a state of war or a threat of war, internal political instability or any other public emergency, may be invoked as a justification of torture”.²⁶ All instruments were ratified by Russia and contain dispute resolution clauses that give jurisdiction to the UN International Court of Justice.

In addition, CPPCG prohibits “*Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part*” (Article II(c)). Attacks on the wholesale energy infrastructure, as evidenced, endanger the lives of those reliant on continuous electricity and may compel other civilians to leave if these interruptions persist for extended periods. Ukraine has recently secured a favorable judgment under the CPPCG cause of action²⁷ and possesses a competent team with ample resources to promptly file another complaint based on a separate cause of action. This action can be taken without the need to await evidence for other CPPCG violations, such as the massacre in Bucha (a breach under Article II(a)) or the forcible transfer of children (a breach under Article II(e)).

Guilty mind and concurrence. A claim can be made that Russia, and its army is denying the lives of the non-combatants, in particular civilians that may not help combatants directly or, as one can maintain, indirectly through ensuring universal access to the electricity, including, among others, defense facilities as well as defense and dual-purpose technology. The central government of the aggressor state is deliberately creating informational chaos to obscure its attack on Ukraine’s wholesale energy infrastructure. The Russian government has issued numerous official statements, many of which are misleading, false, or self-serving. For example, repeatedly accused Ukrainian army of shelling Zaporizhzhia Nuclear Power Plant²⁸ or destructing Kakhovska dam – with the purpose, allegedly, to cut water in the canal to the Crimean peninsula²⁹; Russia claimed that civilian infrastructure is used for military purposes³⁰ and, most recently, that

Ukrainian government is in conspiracy to sabotage Kyivska and Kanivska dams on the Dnieper.³¹

However, within the framework of non-totalitarian legal traditions such attacks are inherently illegal and constitute a clear violation of international law when using the key concept of wholesale energy products in relation to hypothetically self-sustaining households capable of producing their own heating and electricity.

Russian tactics of heavy shelling and massive attacks on the infrastructure nodes is, allegedly, unparalleled in terms of resources devoted to committing this particular type of the war crimes. Hence, the need to properly investigate all attacks, where each combined missile and drone strike involved hundreds or even thousands of people, immediately renders the probability of judgment quite distant, even with the special tribunal. The need of committing the investigation task force, train and coordinate operatives, detectives, prosecutors and judges can be compared with social transformation of post-World War II Germany (*Entnazifizierung*) by the Allied Forces, except on the larger country of Russia with smaller resources that Ukraine and its partners in the international community currently have at their disposal.

It should be reminded that International Criminal Court has issued warrants of arrest for four (to date) Russian citizens in connection with the damage to civilian infrastructure, in particular, energy objects: two in March, 2024 – for Sergei Kobylash, the Commander of the Long-Range Aviation of the Aerospace Force in 2022-2023 and Viktor Sokolov, Commander of the Black Sea Fleet in 2022-2023; and two in June, 2024 – for Russia’s former Minister of Defense Sergey Shoigu and Valery Gerasimov, incumbent Chief of the General Staff of the Armed Forces of the Russian Federation and First Deputy Minister of Defense of the Russian Federation. One of the bases to seek prosecution of the high-ranking defense agency officials was determination by the judges that conducted acts were part of the policies by the Russian State, moreover, as of June 2024, the acts were continuing.³² While the warrants are not made public “*in order to protect witnesses and to*

²⁶ Ibid., Article 2(2).

²⁷ International Court of Justice, Allegations of Genocide under the Convention on the Prevention and Punishment of the Crime of Genocide (Ukraine v. Russian Federation): Judgement of 2 February 2024, <https://www.icj-cij.org/sites/default/files/case-related/182/182-20240202-jud-01-00-en.pdf>.

²⁸ Reuters, “Russia-installed official accuses Ukraine of fresh shelling of nuclear plant,” August 30, 2022, <https://www.reuters.com/world/europe/russia-accuses-ukraine-fresh-shelling-nuclear-plant-2022-08-30/>

²⁹ BBC, “Ukraine dam: What we know about Nova Kakhovka incident,” June 8, 2023, <https://www.bbc.com/news/world-europe-65818705>.

³⁰ Radio Free Europe / Radio Liberty, “Russia Targets Port Installations, Civilian Facilities in Southern Ukraine, Causing

Deaths, Damage,” July 21, 2023, <https://www.rferl.org/a/russia-targets-port-southern-ukraine/32511356.html>.

³¹ The New Voice of Ukraine, “Russia claims Ukraine plans Kyiv and Kaniv dams sabotage,” July 12, 2024, <https://english.nv.ua/nation/russia-lies-ukraine-allegedly-plans-blow-up-kyiv-hydroelectric-power-plant-and-kaniv-reservoir-50434439.html>.

³² International Criminal Court | Cour Pénale Internationale, Situation in Ukraine: ICC judges issue arrest warrants against Sergei Kuzhugetovich Shoigu and Valery Vasilyevich Gerasimov, press-release, June 25, 2024, <https://www.icc-cpi.int/news/situation-ukraine-icc-judges-issue-arrest-warrants-against-sergei-kuzhugetovich-shoigu-and->

safeguard the investigations”, the reasonable assumption can be made that materials leading to the warrants could be sufficient or constitute substantial part of the evidence, sufficient to meet the standard of proof for intent and concurrence in the violation of the human rights instruments that protect individuals from the energy poverty. At the same time, the ICC statement raises two questions. First, whether the court limited its analysis only to the strikes to the *‘electric infrastructure from at least 10 October 2022 until at least 9 March 2023’*, thus, setting aside issues of the harm to district heating, water and/or natural gas supply. Second, whether a sitting tribunal would determine a person accountable for the attacks preceding October 2022 as well as the continuation of the attacks, whereas Sergey Shoigu was transferred to a different function in the Russian government as of middle May 2024.

In this respect, it may be helpful to establish a date when the attack began and, in retrospect, to determine whether the attacks, in their different forms, were a part of a single plan and/or intent. It should be noted that Zaporizhzhia Nuclear Power Plant (ZapNPP) was a primary target of the Russian offensive in the beginning of 2022, and was attacked as early as March 5, 2022 and became a subject of the UN Security Council Debate with a reminder, by Rosemary DiCarlo, UN Under-Secretary-General for Political and Peacebuilding Affairs, that Russia has to abide Article 56 of the Protocol additional to the Geneva Conventions of 12 August 1949, and relating to the protection of victims of international armed conflicts, which provides protection, against military attacks, to *‘works or installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations’*.³³ The nuclear plant was seized by the Russian army on March 5, 2022.³⁴ Noteworthy, ZapNPP accounts for half of the installed nuclear capacity in Ukraine, and, therefore, up to 30 % of the electricity annually produced in the country prior to 2022. It is the largest single piece that can be used to deprive Ukraine of electricity and it was declared a property of the Russian government on October 5, 2022.³⁵ Not only

is it taken out of the security of supplies to Ukraine’s population on the government-controlled and occupied territories, but it also actually consumes significant amounts of energy for stabilization of its reactors’ cooling.³⁶ Same could be said for Chornobyl Nuclear Power Plant and the disturbance of the contamination sites.

By June 2022, the renewable energy sector in Ukraine was negatively affected by the Russian Federation’s invasion so that 90 % of the wind power capacity, more than 30 % of solar PV installations and over 50 % of thermal plants were reported by UNECE and REN21 as out of operation.³⁷ The same report estimates partial or complete destruction of generation capacity in Ukraine at 5 % already by June 2022.

In September 2022, Russia heavily shelled power and district heating infrastructure in Kharkivska oblast, including Kharkivska Heat and Power Plant-5, the largest power generation installation in the regions affected,³⁸ following successful pushback by Ukrainian forces of defense a few days earlier. As a result, several oblasts were affected – Dnipropetrovska (including dam in Kryvyi Rih), Donetska (Slovianska TPP), Kharkivska (Zmiivska TPP, Kharkivska HPP-5 as mentioned), key power transformers in Poltavska and Sumska oblasts – all reported major issues with supply of electricity and water.

Together, the facts in the timeline prior to the heating season of 2022-2023 and the attacks afterwards paint a holistic mission by the Russian Federation to deprive Ukrainian people of a universal and affordable access to electricity, often related to an access to water and district heating. It must be established that the energy infrastructure of Ukraine was attacked, with intent and knowledge, by the Russian Federation from the outset of direct aggression in 2022, with attacks that intensified from time to time. Seizure of ZapNPP was one of the first successful milestones in implementation of the criminal plan.

³³ UN News, “Security Council debates Russian strike on Ukraine nuclear power plant,” March 4, 2022, <https://news.un.org/en/story/2022/03/1113302>.

³⁴ World Nuclear Association, Ukraine: Russia-Ukraine War and Nuclear Energy. Timeline – key events, updated April 15, 2024, <https://world-nuclear.org/information-library/country-profiles/countries-t-z/ukraine-russia-war-and-nuclear-energy#zaporizhzhia-nuclear-power-plant>.

³⁵ Radio Free Europe / Radio Liberty, “Zaporizhzhia Nuclear Plant Declared Russian ‘Federal Property’ After Putin Signs Annexation Decrees,” October 5, 2022, <https://www.rferl.org/a/ukraine-russia-us-aid/32066068.html>.

³⁶ Radio Free Europe / Radio Liberty, “Russia Says Main Power Line to Zaporizhzhia Nuclear Plant Goes Down,” May 23, 2024, <https://www.rferl.org/a/ukraine-russia-zaporizhzhia-nuclear-power/32960891.html>.

³⁷ UNECE Renewable Energy Status Report 2022, prepared jointly by the Renewable Energy Policy Network for the 21st Century (REN21) and the United Nations Economic Commission for Europe (UNECE), accessed July 15, 2024, <https://unece.org/sustainable-energy/renewable-energy/unece-renewable-energy-status-report>.

³⁸ Deutsche Welle, “Breakthrough of the Ukrainian Armed Forces in the East: the main events of the 200th day of the war,” September 11, 2022, accessed July 15, 2024, <https://www.dw.com/en/putin-ouster-of-ukrainian-president-was-an-unconstitutional-coup/a-17472054>.

Harm and causation. The sheer breadth of the damages is coming from the dense grid networks and high generation capacity available in Ukraine, both far exceeding domestic consumption and capable of ensuring proportionally much higher transit. It is allegedly unmatched by other examples in history because, in particular, the last extensive wars in Europe happened before universal access to the electricity and other big conflicts had involved limited industrialized areas. Thus, establishing the single methodology and determining the damage under the circumstances of continuous repairs and damages is a complex task with thousands of surveyors to be recruited, trained and coordinated, the databases compiled, validated, verified and updated. With the dozens of companies involved, mechanics to preserve the cause of action and, potentially, funding and assignment of the claims to ensure that all the war crimes have just resolution. Assessment of the damage is another potentially contentious issue, a strategy 'build back better Ukraine' is widely advocated to make zero emission technologies and underground grid a backbone of the new economy while abandoning outdated coal, oil and gas generation plants that were destroyed. Procedurally, however, Russia had taken steps against straightforward liability for the attacks on civilian objects: back in 2019, the country had withdrawn its declaration on authority of the International Fact-Finding Commission established to investigate serious violations of the Geneva Conventions and Protocol I to it. Therefore, while Ukraine can borrow methodology for assessment of the damages to ZapNPP, for example, the acceptance of such assessment can be stuck with obstruction of the adjudication and/or negotiations by the perpetrator.

Incidentally, since Protocol I also directly protects the river dams from military attacks, the same analysis of the human right violations would apply to the destruction of Kakhovska dam, destroyed on June 6, 2023 and called "possibly the most significant incident of damage to civilian infrastructure since the start of the Russian invasion of Ukraine in February 2022" by UN Under Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator, Martin Griffiths in his remarks to the UN Security Council on Ukraine, 6 June 2023.³⁹ Many also argue that Kakhovska dam and HPP should not be restored, at least not at the same scale and the land resources are used in a sustainable eco-friendly way: the creation of the cascade of Dnieper

reservoirs back in 1930-1970 activated destructive exogenous processes that led to the destruction of coastal ecosystems, forest vegetation, black earth soils, buildings and structures, roads and other communications systems. Environmental science has been proving that the plain river is damaged by artificial water stocks while transport purposes and access to the drinking water can be achieved by other means, much less invasive to the ecosystems.⁴⁰ Accordingly, the program of the Dniester River new reservoirs was halted since 2017; besides, the environmental academics have been pleading deregulation of the Dnieper basin for many decades and alternative river transportation solutions from the 19th century, whereas the Dnieper rapids can be used to produce electricity by the tidal and the flow technologies using the current flows of the river. Thus, a counterargument of restoring natural balance, albeit violently, through deregulation of the flow should be analyzed and countered rather than bluntly dismissed. At the very least, the evaluation of the damage should use not only the replacement or the restoration cost method.

Technological advancements in the 20th and 21st centuries have established centralized natural gas and electricity infrastructures, along with nationwide wholesale energy markets, as essential components of modern living and electricity access. While efforts toward decarbonization, along with scalable energy storage solutions, can enhance the resilience of infrastructure nodes and sub-nodes and empower consumers to become producers ("prosumers"), national grids and inter-state connectors will remain indispensable for ensuring security of energy supply. Therefore, the references to alternatives available to Ukrainian households would not hold the systematic scrutiny.

The Russian Federation, in planning its attacks on the electricity and natural gas infrastructure, is well aware of the state of technology in Ukraine, dependence of many people on the devices that run on electricity for the food preparation and storage, and the district heating system that uses pumps for the water and the fuel. Natural gas is widely used for the cooking and the heat generation in millions of households. Depriving people of electricity for a significant period would amount to sickness, aggravated disease and death. In fact, with the similar or harsher climate conditions compared to Ukraine, the Russian Federation and Belarus have

³⁹ UN Office for the Coordination of Humanitarian Affairs, News and Press Release, Jun 6, 2023, <https://reliefweb.int/report/ukraine/under-secretary-general-humanitarian-affairs-and-emergency-relief-coordinator-martin-griffiths-remarks-un-security-council-ukraine-6-june-2023>.

⁴⁰ Shapar A., Shmatkov H., and Skrypnyk O., "Komu potribni vodoskhovishcha" ["Who needs open water reservoirs?"], 2000 16-19, August 7-12, 2020, in *The press service of the NAS of Ukraine*, accessed May 18, 2024, <https://www.nas.gov.ua/UA/Messages/Pages/View.aspx?MessageID=6751> [in Ukrainian].

quite similar levels of reliance on the centralized energy infrastructure.

The technology of the small-scale power generation is widely available, making claim by Ukraine objectionable on the ground that the damage caused could or was largely avoided through, in particular, off-grid generation such as *invincibility hubs (punkty nezlamnosti)* deployed in the Ukrainian cities when the district heating was failing due to power grid damage. The debate, therefore, could be refocused into the affordability issue of the off-grid generation as well as the use of health-damaging (less environmentally friendly) power generation technology. The natural gas substitutes are also available, but are heavily dependent on the core infrastructure: the LPG and PNG sources come from a few production facilities that takes quarters if not years, whereas electricity-generating mobile devices were bought, installed and operated in the hundreds of thousands as off-shelf products in various sizes – from energizing a single-device (0.5 kW) to backing up a block of apartments (0.5-1 MW). The generation for own needs has been used along with the storage at the level of the household appliance. The argument also should be held against the energy poverty benchmark, which the UK government recognized to be at 10 % of the household income and 20 % for extreme poverty.⁴¹ Ukrainian government, while it did not define the energy / fuel poverty, established 15 % of the household income as a threshold for subsidies on the utility bills, which includes, along with the electricity, heating and cooking energy, also water, sewage and solid waste disposal; the threshold will be raised to 20 % after the martial law expires.⁴² The costs in excess of the benchmark could be proved by averaging income and costs indicated by IEA⁴³ or International Renewable Energy Agency (IRENA) on the relevant technology of the household or multiapartment building scale.⁴⁴

The wholesale energy product studies come to help with their consensus that a centrally dispatched power system provides better security supplies and, besides, a competitive and transparent market of the

wholesale energy products is the most effective.⁴⁵ Quick addition of the self-generation, which is not only more expensive but also less sustainable and less efficient alternative to the centralized grid, ticks all three items on the energy injustice checklist. We submit that such degrading transformation of the supply side in Ukrainian energy system amounts to coercive practice that threatens political independence (due to fragmentation of the energy supplies) and, as a consequence, threat to the territorial integrity, both contrary to the principles of the UN Charter, Article 2(4).

While scalable energy storage for the bare household needs (e.g., lighting, communications, refrigerators) is on the brink of commercialization, scalable facilities remain in the testing or pilot stage. The alternatives for heating, in the multiapartment houses especially, remains a huge issue and can indeed, be argued to cause big cities in particular, all with some portions already affordable and subsidized by the state. The claim of the breach of the right to life, therefore, has its merit primarily in the context of cold weather during late October – early April, exactly the front and center of the Russian attacks on the energy infrastructure in the ninth year of aggression, that is, during first 15 months after military intervention under its own flag in February 2022.

The wholesale energy products can be viewed as the single object of the power attack, since the supply of the natural gas is undercut when electricity is not available, whereas much of the electricity supply, especially on the balancing and ancillary side of the market, is dependent on the availability of the natural gas. With evolving technologies for renewable electricity and energy storages that are mutually dependent might change, albeit not by decoupling the natural gas and electricity but by a wider mix of the energy products, such as hydrogen and biomethane. Water and heat are products of their own markets although they are, necessarily, derivatives of the wholesale energy products whenever supply of any scale is concerned.

On the physical side of electricity and the natural gas infrastructure, Ukraine's wholesale energy products are, ultimately, one and the same with the molecules and electrons of the ENTSO territories. Member-states of the Energy Communities and the companies operating in this common energy space are part of the environment. That is, they sustain damages – (a) as an indirect cost for technical

⁴¹ del Guayo, Godden, Zillman, Montoya, and González, *Energy Justice and Energy Law*.

⁴² Cabinet of Ministers of Ukraine, *On the new amount of expenses for housing and communal services payment, the purchase of liquefied gas, solid and liquid stove fuel in case a housing subsidy is provided*, Resolution 1156, July 27, 1998, Section 1, <https://zakon.rada.gov.ua/laws/show/1156-98-%D0%BF#Text> [in Ukrainian].

⁴³ International Energy Agency, *Energy System*, accessed May 18, 2024, <https://www.iea.org/energy-system>.

⁴⁴ International Renewable Energy Agency, *Renewable Power Generation Costs in 2022*, accessed May 18, 2024, <https://www.irena.org/Publications/2023/Aug/Renewable-Power-Generation-Costs-in-2022>.

⁴⁵ Kashif Imran and Ivana Kockar, "A technical comparison of wholesale electricity markets in North America and Europe," *Electric Power Systems Research* 108 (2014): 59–67, <https://doi.org/10.1016/j.epr.2013.10.016>.

support with the frequency reserves to prevent failures of the Ukrainian system; (b) direct cost of enhancing own safety and security of supplies – through increased reserves for network resilience, safeguards, repairs after cyberattacks and mysterious incidents, for example, damaged underwater pipelines and cables in the Baltic Sea, provided, the investigation proves causal connection to the activities of Russia or its allies; (c) indirect cost of higher prices on the natural gas and electricity caused by decrease of Ukrainian export and diversification of supplies.

Efficiency of the market for the wholesale energy products suffered due to suspension of the transparency data publication, delays in introduction of the insider platforms, reporting of the trades under Regulation (EU) No 1227/2011 (aka REMIT) and the quotes under REMIT II⁴⁶ as regards improving the Union's protection against market manipulation on the wholesale energy market), which can be established as systemic losses of two kinds: (a) idle reporting infrastructure; and (b) enabled market manipulation and insider trading that causes prices spikes or prevents the prices from falling.

Power traders can suffer significant damages due to market intransparency, which impedes their ability to make informed decisions and manage risks effectively. Key issues include (a) financial losses due to inaccurate pricing information and resulting poor trading decisions; (b) increased risk exposure to market volatility due to incomplete dataset on the historical trends, making hedging difficult; (c) mentioned above competitive disadvantage due to inferior information in comparison to a few well-connected participants; (d) operational inefficiencies due to increased costs of market intelligence and wrong hedging; (e) direct losses due to enabled price manipulation and insider trading, as well as indirect losses on the compliance exercise caused by internal and external investigations, litigations etc. as well as harm to the business reputation. Market intransparency undermines the trust and efficiency of power trading, ultimately harming the broader energy market and its stakeholders, martial law circumstances being no different in consequences. Accordingly, a case law on the damages suffered by the traders for intransparency should be developed. Part of the intransparency damages could be attributed to the

(over)reaction of the regulators, who are only now adjusting data exchange protocol appropriate for the circumstances,⁴⁷ but main causation can be placed on Russia as the perpetrator of the attacks.

Similarly, a causal link is present for the case of regulated retail prices on the electricity as well as ban on export and moratorium on retail price hike for the natural gas in Ukraine introduced soon after the start of the 2nd phase of Russia's aggression, i.e., after February 2022. The only difference between the natural gas and the electricity markets is that the former had halted the retail pricing mechanics and free export whereas the latter had deferred price liberalization (still in place as of the day of the article). Regulated prices in the energy market can lead to several detrimental effects on both traders and producers, such as: (a) financial losses due to suboptimal distribution of value, with reduced profit margins for traders who buy and prices below the cost of production for the producers, (b) reduced investment incentives both in the trading infrastructure and the production stages from deposit exploration to downstream fuel production, stifling industry growth and innovation; (c) market distortions that make difficult for traders to manage risks and for producers to underinvest or overinvest in the production and relevant resources with resulting supply shortages or surpluses; (d) negative cash flow due to inelastic overhead costs of compliance and administrative burdens that does not reward productivity. As a result, the state will bail out some of the players, increasing structural distortion and the share of the public sector. Thus, regulated prices undermine the economic viability and operational efficiency of the energy market, leading to broader market inefficiencies and hindering the sector's growth and development – the method for calculation of the damage and allocating the part to the aggressor state has yet to be proposed.

The donor countries and companies contributed funds and equipment aiding access to Ukrainian wholesale energy products and risking or incurring shortage of supply and price inflation on the equipment for generation and networks. Those donors incurred direct and indirect costs that would not be recoverable under normal circumstances, if only Civil Code and Commercial Code principles of loss recovery were to apply. The ecosystem of compensation should take into account these donors as potential claimants and award them with the standing as well as ranking among the creditors with

⁴⁶ Regulation (EU) 2024/1106 of the European Parliament and of the Council of 11 April 2024 amending Regulations (EU) No 1227/2011 and (EU) 2019/942 as regards improving the Union's protection against market manipulation on the wholesale energy market, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32024R1106>.

⁴⁷ Oleh Zahnitko, "Legal Ensure of Transparency of Data on Wholesale Energy Products," *Economics and Law* 2 (2024): 50–63, <https://doi.org/10.15407/econlaw.2024.02.050> [in Ukrainian].

the claims to the (frozen) assets of the Russian government and delinquent civil servants, officers and soldiers.

The immense and complex task requires not only innovation but also the systematic effort on the part of the legislature. The class action, litigation funding and more generous legal fees should be part of an approach for bringing Russia to justice for its war crimes and ensuring a fundamental right of every citizen to access energy, lighting, water and heating.

Conclusions and implications. The attack by Russia on Ukraine's wholesale energy system appears, in retrospect, an intentional, pre-planned and consistently executed aspect of the aggression, which started in February 2022 and first milestone completed with the seizure of ZapNPP, second phase – incapacitation of the renewables within the first months and the third – attack on thermal generation and co-generation, which started in September 2022. The coordinated strikes by long-range missiles and drones since early October 2022 was an eventual escalation through a wider range of weaponry to achieve the initial goal.

While it is unclear, whether ICC considered attacks on the non-electricity infrastructure in its 2024 rulings on issuing the warrants of arrests, the same elements of a crime are present, in our view in attacks to water and district heating infrastructure as well as, to a lesser extent, natural gas transportation and distribution infrastructure.

The assessment of the damages after the attacks requires vigorous effort. The replacement cost method of valuation does not seem appropriate with respect to thermal and nuclear facilities without adjustment due to ageing fixed assets of the generating facilities. An adjustment for the optimization of the wholesale energy systems in technology and efficiency should be considered as a factor. Another aspect to be taken into account is environmental factors – installation, utilization and conservation costs that are being incurred through decentralization of the generation and replacement of Russia's nuclear and nuclear safety technology.

The renewable generation capacity (except large hydro) and grid, however, may well use the cost-plus lost income methodology. Finally, it might be appropriate to use a bespoke approach to each case. A consistency can be added, however, if (when) the Government of Ukraine accepts a strategic view that of the Dnieper flow as well as the flow of other river valleys must be deregulated.

As one of the consequences of the attack on Ukrainian energy infrastructure, Russia should be

brought to accountability for the human rights violations, with the range of the causes of action. We maintain that Russia violated the following human rights, which it has undertaken to protect, under the international treaties:

(a) the right to life of the civilians provided under ICCPR, Article 6.1, CPPCG, Article II(c). Russia breached these provisions by depriving Ukrainians of access to water (through outage of the water supply facilities), as well the lives of individuals with acute or chronic condition, who depend on access to electricity;

(b) the right to physical and mental health under ICESCR, Article 12, Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, Article 1(1), Article 2(2), CPPCG, Article II(c). Disruption of the power deprived individuals of the access to the proper medical care and electricity-powered devices for daily care, disrupted pharmaceutical industry and supply chain that requires, in particular, proper manufacturing and storage temperatures;

(c) the right to adequate standard of living under ICESCR, Article 11, Convention on the Elimination of All Forms of Discrimination Against Women, Article 14(2)(h). Millions of individuals were deprived of access to the food storage, cooking, hygiene facilities; they were also restricted in mobility and accessibility to the medical and social services, public and individual transportation powered by electricity.

CPPCG, however, is a priority mechanism due to oversight by the UN International Court of Justice; the case will also be helped by the materials and decisions in the ongoing proceedings initiated by Ukraine against Russia. The toolkit of energy justice can be used thanks to the exponentially growing body of studies on the sustainability, affordability and accessibility of energy. Premises for procedural and restorative justice in the Ukrainian case are unprecedented and will require theoretical innovations to assess the damage and prove the causal link.

The case study is by no means exhaustive and should be used as a part of broader effort to systematize the data on the violations by the Russian Federation and its agents in their reckless and malicious activities in Ukraine since late February 2014. The article, in particular, did not look closely at the violation of Geneva Conventions and nuclear safety conventions, which, in our view, could be studied in the wider context of the humanitarian law violations directed at specific objects rather than the entire wholesale energy system.

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ЗРИВ ОПТОВИХ ЕНЕРГЕТИЧНИХ ПОСТАВОК ЯК ПОРУШЕННЯ ПРАВ ЛЮДИНИ: ПИТАННЯ КВАЛІФІКАЦІЇ ТА ПРИЧИННО-НАСЛІДКОВОГО ЗВ'ЯЗКУ

Досліджено перетин безпеки постачання енергії та прав людини в Україні із фокусом на міжнародно-правових наслідках збоїв у постачанні оптових енергетичних продуктів. З початку жовтня 2023 року український оптовий енергетичний сектор зазнає атаки, проте міжнародна спільнота не виробила чіткої юридичної позиції. У статті залишено поза увагою шкоду для економічного розвитку країни та особисту відповідальність безпосередніх виконавців та організаторів нападів, натомість розглянуто ризики, спричинені атаками на енергетичну систему, для прав людини та інших імперативних норм міжнародного публічного права, включно з доступом до життєво важливих послуг, права на охорону здоров'я та на достатній життєвий рівень. Цілі сталого розвитку до 2030 року, ухвалені на саміті ООН, передбачають гідне життя та доступ до енергії, який розглядають як невідчужувану частину достатнього рівня життя та оперують поняттям енергетичної бідності як явища, якого слід уникати. Енергетична бідність, за сучасного технологічного розвитку України, переважно означає недоступність або надмірно дорогу енергію (порогом можна вважати 10–20 % доходів

домогосподарства). Атаки російської федерації позбавляють домогосподарства різних регіонів доступу до енергії, спричиняючи енергетичну бідність по всій території України, під особливою загрозою – люди з особливими потребами та люди з гострими захворюваннями, адже велика частина діагностики та лікування потребує медичних приладів, які мають мережеве електроживлення. Низка конвенцій загального (пакти про права людини 1966 року) та спеціального характеру (конвенції про заборону тортур, про ліквідацію всіх форм дискримінації щодо жінок, Римський статут, про запобігання злочину геноциду) зобов'язують держави забезпечити різні аспекти права людини на достатній рівень життя, що є об'єктивною стороною правопорушення. Суб'єктивну сторону проаналізовано через передбачуваність наслідків атак та очікувані заперечення про технологічні можливості самозабезпечення домогосподарств і пом'якшення наслідків від переходу енергетичної системи України до більш сталих джерел енергії через зобов'язання Уряду України зменшення шкідливого впливу на довкілля. На основі аналізу норм позитивного права та міжнародного стандарту прав людини це дослідження доводить, що тривалі або значні перебої в постачанні оптової енергії є порушенням прав людини та достатньою підставою для процесуальних дій Уряду України, на підставі багатосторонніх міжнародних угод та в порядку, передбаченому ними, проти Уряду російської федерації.

Ключові слова: енергетична безпека, права людини, російсько-українська війна, оптові енергетичні продукти, зрив постачання оптової енергії, воєнний злочин, злочин геноциду.

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