

SUSTAINABILITY HORIZON

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EDITORIAL

The word sustainability is nothing new in the context of human civilization. It was ingrained in the lifestyle of most olden societies. In the context of the modern world, sustainability is not just an objective, but also a way of thinking, and should be embedded in most activities of mankind. However, the practice of sustainability is often looked at as a cultural dimension and is often questioned by many political establishments. It is therefore very much needed to establish the practices of a sustainable world for a clean and healthy planet for the coming generations.

In recent years, war, wildfires, poor manufacturing, and mining practices have left almost irreversible damages, which need to be evaluated and restored by stronger means. Among these, the impacts of war are yet to be reckoned and policies to be formed to avoid further sustainable governing disasters. The real and direct impacts of war are comparatively easier to assess, whereas indirect impacts such as "Loss of environmental knowledge and expertise", "Disruption of environmental monitoring and enforcement", "Landmines and unexploded ordnance" etc. have farfetched implications for environmental sustenance. In this newsletter, we explore the impacts of the Russia-Ukraine war on sustainability.

The articles in this newsletter explore the existing humanitarian crisis along with economic disasters, infrastructure demolition and its consequences, environmental degradation, and finally geopolitical implications. The accumulation finally focuses on the other impacts of this gruesome war. As the war wages on, the NATO alliances should not only focus on the political and nuclear impacts but also the issues such as genocide, human and animal trafficking, soil erosion, air pollution, seismic balance, and many other bearings.

Our collective effort to assess the situation and its impacts is the essence of this particular episode. We humbly thank our readers for motivating us to compile this newsletter and expanding its horizon. We request you to send us feedback on our efforts. We sincerely hope that our readers will continue their journey with us and holistically promote the concept of sustainability as a core dimension and not as an alternative to current ideologies and practices.



Dr. Diya Guha Roy
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THE RUSSIAN INVASION – A HUMANITARIAN CRISIS

The War in Donbass (named after the place in Eastern Ukraine where armed hostilities have been rampant) between the Ukrainian Government forces and Russian-backed separatists, since the Russian annexation of Crimea in 2014, escalated to the Russian invasion of Ukraine in February 2022.

A series of geo-political, historical, cultural, energy generation and distribution routes have led to an extreme ecological and humanitarian crisis, especially after the full-scale Russian invasion, rendering human settlements vulnerable to violence (*SDG 11), health risks (*SDG 3), food scarcity (*SDG 2), and climate disasters (*SDG 13) triggered due to war.

62,95,051+ Ukrainians have been internally displaced and 36,21,308+ Ukrainians are refugees in the neighbouring countries of Poland, Slovakia, Hungary, Romania, Moldova and even Russia. With major conflicts, happening in Syria and Yemen, the refugee crisis has deepened. It falls to the rest of the world to take up the task of shelter, medical aid, facilitating livelihoods, and food for these refugees.

However, Russia, recently withdrew from the Black Sea grain deal, which primarily assured a safe passage to vessels carrying grains from Ukraine. Ukraine is one of the biggest exporters of wheat and corn, and was a major contributor to the UN's food aid programmes. This may likely cause food prices to soar in the poorer countries of the world and an impending food security concern.

Meanwhile, the Russian shelling, bombs and missiles dropping continue today. The IAEA (International Atomic Energy Agency), has reported explosions near the Zaporizhzhia Nuclear Power Plant, creating a déjà vu of a potential nuclear security risk (Hiroshima and Nagasaki bombings and the aftermath of the destruction of lives and radiation poisoning are still fresh in our minds, courtesy of the recently released movie Oppenheimer).

Though Ukraine has established the National Council for Recovery from the War, which is currently formulating a comprehensive Post-war Recovery and Development Plan to aid the country's recovery, the health risks due to pollution caused by military activities go unreported.

The UNHCR (United Nations High Commissioner for Refugees) has set up the 2023 RRP (Regional Refugee Response Plan) to systematically outline a multi-sector response strategy to aid and assist the Ukrainian refugees through inter-agency partners like the governments of host countries, the NGOs, UN agencies, Faith-based organizations, the Red Cross, the academia, Refugee led organizations and several regional organizations, which may yet provide a ray of hope to the Ukrainian refugees in these dark times.

*SDG: Sustainable Development Goals



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IMPACT OF RUSSIA - UKRAINE WAR ON SUSTAINABILITY

The Russia-Ukraine war has had significant implications for sustainability in various aspects. The conflict has impacted sustainability in various ways. Armed conflict often leads to environmental degradation due to factors like infrastructure damage, increased pollution, and disruption of ecosystems. The Russia-Ukraine war has resulted in damage to industrial facilities, potential water pollution from destroyed infrastructure, and damage to natural habitats.

Ukraine plays a crucial role in the transit of natural gas from Russia to Europe. The conflict has disrupted energy supplies and highlighted the vulnerabilities of energy security in the region, potentially encouraging a shift towards more sustainable energy sources and supply routes.

The war has led to a significant number of internally displaced persons and refugees. This influx of people can strain local resources and disrupt sustainability efforts in terms of housing, food, water, and waste management in affected areas.

The conflict has affected agricultural production and food security in the region. Disrupted supply chains, damaged infrastructure, and displacement of farmers can lead to food shortages and higher food prices, impacting local communities' sustainability and resilience.

The war's humanitarian and economic consequences can divert resources away from sustainability initiatives. Funds that could have been used for environmental conservation or sustainable development projects might be redirected to address immediate humanitarian needs. The conflict has strained diplomatic relations between Russia, Ukraine, and other nations. International cooperation on environmental and sustainability issues could be affected as tensions rise.

Infrastructure damage can hinder efforts to address sustainability challenges, such as clean water supply, waste management, and transportation networks. Rebuilding infrastructure in a sustainable manner might be a more complex task amidst conflict. Prolonged conflict can create long-term instability in the region, hampering efforts to plan and implement sustainable development projects. Economic uncertainty and social upheaval can delay progress towards environmental and social goals.



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In summary, the Russia-Ukraine war's impact on sustainability is indeed far-reaching due to its influence on various interconnected factors, its potential regional and global consequences, and the lasting effects it can have on communities, economies, and environments. It underscores the complexity of addressing sustainability in the midst of conflicts and highlights the need for continued international collaboration to mitigate these impacts.

It's important to note that the full impact of the Russia-Ukraine war on sustainability is complex and can vary depending on specific circumstances and local contexts. Monitoring the situation through reputable news sources, international organizations, and research publications can provide more detailed insights into the ongoing effects of the conflict on sustainability.

RUSSIA - UKRAINE WAR AND GLOBAL SUSTAINABILITY

A sustained war between Russia and Ukraine since February 24, 2022, has been weighing heavily on global sustainability. The latest in the row is the collapse of the Black Sea Grain deal with Russia by the United Nations for exporting Ukrainian grain via the Black Sea on July 17, 2022, termed as *"a beacon of hope"*. The deal entailed a safe passage of ships carrying Ukrainian Grains to global markets to curtail soaring global food prices and stave off famine, affecting millions. The damage is evident under various heads.



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1. **Environmental Degradation:** The destruction of industrial facilities and critical infrastructure, such as power plants and chemical storage, leading to the release of hazardous materials, has resulted in pollution, soil degradation, and contamination of water sources. Further, the demolition of forests and natural habitats, causing the loss of critical ecosystems and biodiversity, is bound to have a long-term impact on global environmental sustainability.
2. **Humanitarian Crisis:** Sizable displacement of people to neighbouring countries puts immense pressure on the resources of the host countries, perpetrating a refugee crisis. UNHCR reports the number of Ukrainian refugees across Europe at around 7.8 million by November 2022. Needless to say that swarming refugee camps coupled with inadequate access to basic necessities like food, clean water, and sanitation facilities are playing havoc with global social sustainability.
3. **Economic implications:** The two warring nations have historically been the major oil and gas suppliers to the world. Russia controlling the oil and gas supply, even from Ukraine, has led to spiraling of oil prices globally. A disruption in energy supply has led to steep inflationary conditions in many countries. A decline in industrial output and exports from Ukraine, coupled with sanctions on trade from Russia, has added fuel to the rising inflation. The world observes the need to diversify its sourcing of energy and other supplies which is a long-term plan.
4. **Geopolitical Implications:** The war of supremacy between Russia and the USA proxied through Ukraine is now challenging the existing world order. There are strained international relationships and realignment of countries like India, Australia, Japan, and the USA forming Quadrilateral Security Dialogue, commonly known as Quad. Sanctions, trade restrictions, and political tensions affect cooperation on global sustainability challenges such as climate change, biodiversity conservation, and sustainable development goals.

In addition, the war has caused immense psychological stress and trauma for Ukrainian citizens and, to some extent, Russian citizens. The multidimensional impact of the Russia - Ukraine war on global sustainability demands concerted efforts from every country to foster peace and stability to get the world back on track.

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EFFECT OF RUSSIA - UKRAINE WAR ON ENVIRONMENTAL SUSTAINABILITY

The Russia-Ukraine war refers to the ongoing conflict between Russia and Ukraine, which began in 2022. The conflict originated from tensions between Russia and Ukraine over Ukraine's political orientation and aspirations for closer integration with the European Union. The Russia-Ukraine war has resulted in severe environmental degradation, including infrastructure destruction, water and soil contamination, ecosystem damage, and disruption of agricultural practices. These impacts undermine environmental sustainability, requiring comprehensive efforts to restore ecosystems, promote sustainable practices, and mitigate pollution. Table 1 tabulates the various impacts of this war on sustainability.



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Impact of Russia-Ukraine War on Environmental Sustainability	Description	Solution
Destruction of infrastructure	The conflict has led to the destruction of critical infrastructure, releasing hazardous substances and causing immediate and long-term damage.	Rebuilding infrastructure, implementing sustainable construction practices, and minimizing pollution in reconstruction.
Contamination of water resources	Disruption of water supply systems and industrial activities have contaminated water sources, posing risks to public health.	Repairing water treatment facilities, implementing water purification measures, and promoting sustainable water management.
Damage to ecosystems	The war has caused extensive damage to ecosystems, leading to biodiversity loss and disruption of ecological balance.	Restoring ecosystems, protecting wildlife habitats, and implementing sustainable land-use practices.
Disruption of agricultural practices	Agricultural activities and infrastructure have been disrupted, leading to food shortages and decreased self-sufficiency.	Supporting farmers, providing agricultural assistance, and promoting sustainable farming practices.
Displacement of populations	The conflict has resulted in population displacement, increasing resource pressure and inadequate waste management practices.	Providing support for displaced populations, promoting sustainable resource use, and implementing proper waste management.
Landmines and unexploded ordnance	The presence of landmines and unexploded ordnance poses threats to humans and wildlife, limiting land access and resource use.	Clearing landmines and unexploded ordnance, ensuring safe access to land, and implementing landmine education programs.
Climate change implications	Environmental degradation contributes to climate change through carbon emissions and reduced carbon sequestration.	Promoting reforestation, renewable energy adoption, and climate change mitigation strategies.
Air pollution	Intensive military activities, destruction of industrial sites, and burning of fossil fuels contribute to air pollution in the region.	Implementing emission controls, promoting renewable energy sources, and encouraging energy-efficient practices.
Soil degradation	Heavy machinery, explosions, and contamination lead to soil erosion, degradation, and reduced agricultural productivity.	Implementing soil conservation measures, promoting sustainable land management practices, and providing soil remediation.
Disruption of waste management	The conflict disrupts waste collection and disposal systems, leading to uncontrolled dumping and hazardous waste accumulation.	Establishing efficient waste management systems, promoting recycling and waste reduction, and conducting proper waste disposal.
Loss of environmental knowledge and expertise	Displacement and migration result in the loss of local environmental knowledge and expertise, hindering sustainable practices.	Supporting environmental education and capacity-building initiatives, and engaging local communities in decision-making processes.
Wildlife trafficking	The conflict creates a conducive environment for illegal wildlife trafficking, leading to the depletion of biodiversity.	Strengthening law enforcement, enhancing wildlife protection measures, and raising public awareness against wildlife trafficking.
Disruption of environmental monitoring and enforcement	The war disrupts environmental monitoring systems and weakens enforcement mechanisms, allowing environmental violations to go unchecked.	Restoring monitoring capabilities, strengthening environmental regulations, and ensuring compliance through strict enforcement.

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THE ENVIRONMENTAL IMPACT OF INCREASED WEAPONS MANUFACTURING

The Ukraine - Russia war has had an immediate and longer-term, widespread, damage to the environment, human health, ecosystems, and the economy. According to a report by Stockholm International Peace Research Institute¹, from 1991 until the end of 2021, Ukraine imported few major arms. As a result of military aid from the USA and many European states following the Russian invasion of Ukraine in February 2022, Ukraine became the 3rd biggest importer of major arms during 2022². In this article let's look at the environmental damage caused by the surge in arms manufacturing in many western countries.

Arms and ammunition manufacturing uses lead, copper, zinc, antimony, and even mercury in the production of weapons and ammunition. The U.S. Environmental Protection Agency (EPA)³ notes that much of the 80,000 tons of lead involved in the production of bullets. Bullets are made of a lead alloy, often containing tin and antimony. Some bullets have a thick jacket of copper over the out-side for improved performance. While the cases are mostly made of Brass but can also made of brass, steel, aluminium or in some cases plastic. The entire manufacturing process and the supply chain uses a significant amount of plastic and fossil fuels. According to a study by Conflict and Environment Observatory Above 25,000 metric tons of CO₂ equivalent per year⁴.

However, despite the large amount of evidence, few studies have been conducted on the environmental impact of the arms and ammunition manufacturing. The U.S. Roots & Shoots National Youth Leadership Council is currently Investigating the Environmental Impacts of Firearms and Ammunition Manufacturing on the Environment⁵.

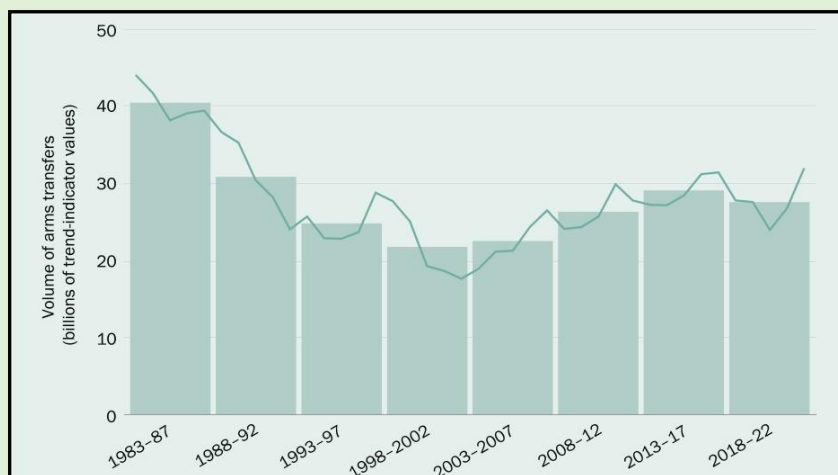
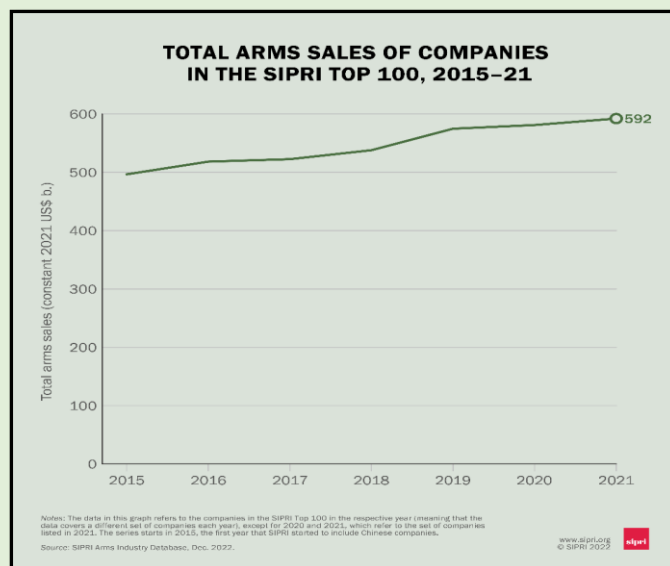
Many of the world's largest arms manufacturers are looking for ways to lower their environmental impact and increase sales. From developing new, greener weapons to investing in technologies that are either "low carbon or do not require as much fossil fuel". One of U.S.'s largest weapons manufacturer, Lockheed Martin, has committed to reduce absolute carbon emissions by 36% from a 2020 baseline by 2030⁶. The Ministry of Defence, in the UK, has said it is looking to cut down on plastic and other forms of waste by reusing "munition packages", used to hold everything from bullets to missile components.

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IMPACT OF RUSSIA-UKRAINE WAR ON ENVIRONMENTAL SUSTAINABILITY

In February 2022, Russia invaded Ukraine, which led to unprecedented environmental problems.

Relentless bombings by both sides resulted in the deterioration of fertile land and soil, thereby creating problems for agriculture. Due to the war, the world faces acute food insecurity, as Ukraine and Russia are major grain producers worldwide. Additionally, bomb strikes emit a massive amount of gases like Trinitrotoluene (TNT) and Royal Demolition explosive (RDX). These bombings have led to an uptick in respiratory and carcinogenic diseases among the residents of Ukraine. Also, there



Kaustubh Nimbalkar
BIFS 2022-24

have been numerous attacks on manufacturing plants, chemical factories and industrial hubs, which contain toxic substances prone to health diseases among the people.

The world is on the verge of incorporating renewable energy for good. But the war has acted as a massive setback to those plans. Western countries imposed stringent economic sanctions on Russia in response to the attack on Ukraine. Retaliating to these sanctions, Russia cut off natural gas transport to European countries. Countries like Germany receive almost 60 percent of their total natural gas supplies from Russia. It now faces acute energy woes as its alternative, renewable energy sources, must be more robust to substitute natural gas. Consequently, due to gas cuts, western countries have started looking for alternative fossil fuel-providing countries. So, a world with net-zero carbon emissions remains a distant dream currently.

The war has also generated an enormous quantity of debris and waste. Infrastructure like buildings, communication towers, and vehicles have been destroyed. It is an uphill task to eliminate this waste, some of which contain heavy metals like lead and mercury that are detrimental to health.

The invasion of Ukraine has given rise to catastrophic environmental implications which have gone unnoticed. It is time to acknowledge the same and take decisive actions to save our environment.

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IMPACT OF THE RUSSIA – UKRAINE CONFLICT ON ENVIRONMENT SUSTAINABILITY

A zoo located in Zambia (Lusaka) has a cage called world's deadliest animal, the cage has a mirror where humans can see their own reflection. Humans have yet again caused a travesty in the form of war between Russia and Ukraine.

The data collected shows huge damage to land and specifically farming land. The decrease in production of wheat in the city Zaporizhzhia has gone down from 2.4 million metric tonnes to 236,000 metric tonnes. World food programme estimates around 400 million worldwide rely on Ukraine for food, the impact could be serious enough for a global hunger crisis.

Ukraine has lost more than 12000 square kilometres of its natural reserves due to active war on these lands. World bank reports that 1/3rd of the most fertile soil (the chernozem soil) is in Ukraine and 68% of that land is plowable, which is heavily affected, fear of losing this marvel at the hands of yet another war is a great blow to the environment. Many endangered and migratory species have suffered a lot, their migratory routes all blocked, their nest gone. This displacement of animals cannot be recovered anytime soon affecting the ecosystem of that region.

The on-going war has increased the level of greenhouse gasses, fighting near the nuclear power plants have raised an alarm for radioactive leaks which could make the region inhabitable for a very long time. War has also contaminated the underground water source, this could lead to water borne diseases and worse shortage of water in Ukraine.

The emissions caused by both of these countries in trying to keep the armoury ready, destruction of buildings causing huge increases of dust in the atmosphere is a severe concern. The environment crisis due to Russia-Ukraine war will have a serious impact on the world environment, expediting and increasing chances of Doomsday.

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IMPEDING INDIA'S LOW CARBON EMISSION GROWTH: THE IMPACT OF RUSSIA-UKRAINE WAR ON NATURAL GAS SUPPLY

As India pursues its ambitious goal of achieving net-zero emissions, the country is exploring various avenues to reduce pollution and transition towards cleaner energy sources. One significant step is the widespread adoption of natural gas for vehicles and household consumption. With its lower emission profile compared to other fossil fuels, natural gas presents a viable solution. To ensure broad accessibility, the Indian government aims to extend piped cooking gas coverage to over 82 percent of the land area and 98 percent of the population after the 11th bidding round for geographical area allocation to various private and government entities by PNGRB.

Despite India's aspirations to become self-reliant in energy, the nation currently faces a significant hurdle in terms of gas imports. According to Press Information Bureau and EIA for 2022-2023 (April to October) imports accounted for a substantial 46.3 percent of the country's gas consumption and 4th fourth-largest importer of liquefied natural gas (LNG) since 2011.

Russia, the world's largest exporter of natural gas, has caused a global panic regarding the natural gas crisis, following the Russia-Ukraine incident. Countries worldwide have hurriedly begun stockpiling and replenishing their inventories, fearing a potential



Gaurav Kumar
PGDM 2023-25

shortage and the resulting price surge. In March- September 2022, India experienced a severe shortage of gas due to curtailment by PNGRB, leading to prices skyrocketing to 30rs per kg in several states. Although the situation has somewhat eased, prices remain alarmingly high due to the ongoing war scenario. Consequently, people are resorting to old fossil fuels like coal and petrol, further exacerbating the issue. While it is true that natural gas is not a sustainable long-term solution, it can serve as a temporary alternative that is comparatively better than other fossil fuel methods. By utilizing natural gas, India can buy valuable time to transition towards more sustainable energy sources in the future.

The ongoing conflict highlights the need for India to diversify its energy portfolio and prioritize renewable and sustainable energy generation methods. By doing so, India can enhance its energy resilience and contribute to a cleaner and more sustainable future.

"ECO-CRISIS IN THE SHADOWS: UNCOVERING THE ENVIRONMENTAL IMPACT OF THE RUSSIA-UKRAINE CONFLICT"



Asmita D
PGDM 2023-25

The Russia-Ukraine war, now entering its prolonged and tragic phase, extends its devastating impacts beyond the human and geopolitical realm, casting a long shadow over environmental sustainability in the region. In this brief article, I express my profound concern about the ecological consequences of this protracted conflict.

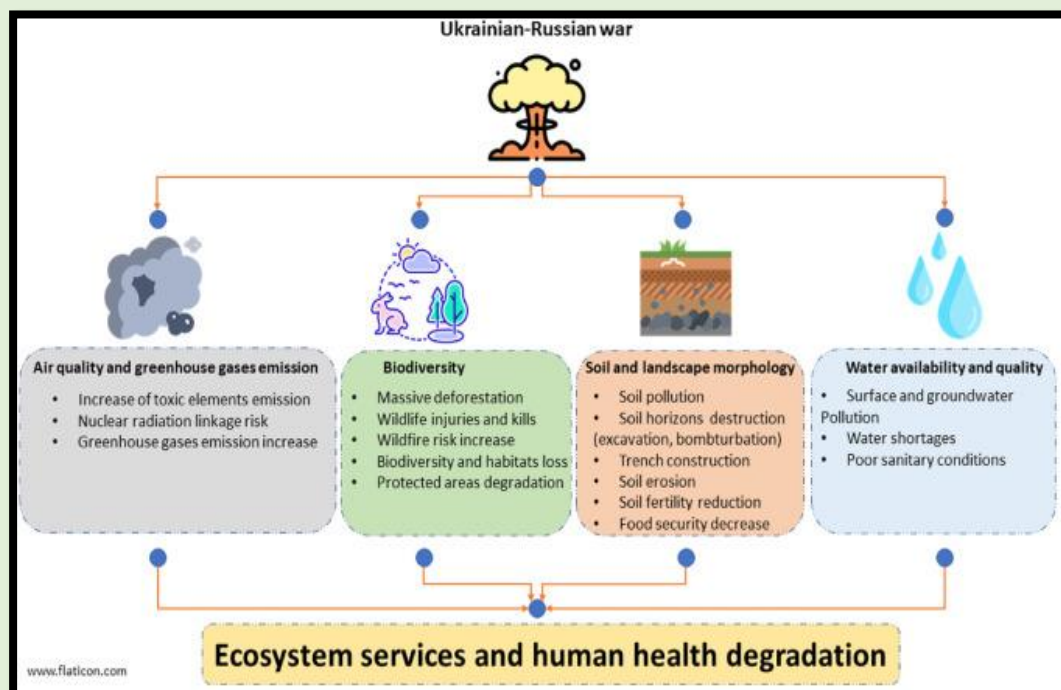
Disruption of Ecosystems: The war's relentless violence, mass population displacement, and infrastructure destruction have wreaked havoc on natural ecosystems. Wetlands, forests, and rivers are suffering from the disruptive forces at play, resulting in habitat loss and fragmentation. This turmoil is pushing various species to the brink of extinction.

Water Pollution: The destruction of industrial facilities, including factories, power plants, and chemical storage sites, has led to extensive water contamination. Hazardous waste dumping and chemical spills have severely polluted water sources, rendering them unsafe for human consumption and decimating aquatic life.

Air Pollution: Military activities release a toxic mix of pollutants into the atmosphere, including harmful particulate matter, heavy metals, and volatile organic compounds. These pollutants pose significant health risks for civilians and military personnel. Additionally, the widespread burning of buildings and vehicles further worsens air quality, exacerbating respiratory issues and contributing to the region's carbon footprint.

Soil Degradation: Landmines and remnants of war pose a continuous threat to soil quality. These explosive remnants not only harm the environment directly but also hinder access to vital agricultural land, exacerbating food production challenges and increasing food insecurity. The consequences of soil contamination can persist for generations.

Energy and Resource Depletion: The conflict disrupts energy supply chains, leading to heightened dependence on fossil fuels and a diminished capacity to harness renewable energy sources. This shift intensifies climate change concerns and depletes finite resources in the long run.



In conclusion, the Russia-Ukraine war's unrelenting violence and destruction exact a grievous toll on environmental sustainability in the region. This includes the destruction of vital habitats, water and air pollution, soil degradation, and an increased reliance on non-renewable energy sources. As the conflict persists, addressing these urgent environmental challenges becomes increasingly crucial, not only for the well-being of those directly affected but also for the health of our planet. We must support initiatives for environmental restoration in conflict zones and stay vigilant regarding the ongoing ecological impact of this war.

ABOUT THE CENTRE

GIM has always been conscious about the impact of its decisions on the ecosystem around it and has continuously strived to reduce its carbon footprint. Along with measures like rainwater harvesting, solar-powered street lamps, treatment of water for reuse, tree plantation drives and many more, the institute has expressed its commitment to this philosophy also through its mission statement which talks about sustainable business and an inclusive society for India and the world. In line with this commitment, the [Centre for Excellence in Sustainable Development](#) was officially formed in July 2018 to contribute to GIM's quest for sustainability. The Centre started working with three core objectives in mind:

1. KNOWLEDGE CREATION

- To develop a model institute for green campus in India and transform GIM community into a more sustainable community. At the same time, use these processes for action research in the field of sustainable development.
- To help develop knowledge through research in the aforesaid fields.

2. KNOWLEDGE DISSEMINATION

- To increase awareness about green living and sustainable development in the community around us
- To carry out activities to try to reduce the carbon footprint of the state of Goa and India as a whole.

3. KNOWLEDGE APPLICATION

- To develop a resource Centre for sustainable development at GIM for imparting training, providing consultancy and participating in policy making.
- To contribute to the development of start-ups and ventures for sustainable development at the grassroots level.

Over the next few years, Centre plans to contribute towards the following five sustainable development goals adopted by United Nations member states in 2015:



CESD believes that every graduate of GIM should be a sustainability ambassador and every employee should be a part of GIM's journey towards environmental sustainability.

Some of the current projects and activities of the Centre include:

- Development of a Sustainability Report for GIM
- Development of a Biodiversity Register of the GIM Campus
- Formation of the CESD Advisory Board
- Celebrated World Environment Day by organising a Sustainability Walk through GIM campus and an interactive session
- Selection of Sustainability Ambassadors of CESD for 2023-24



Faunal Biodiversity Flyer released as part of the Faunal Biodiversity register of GIM campus

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