



CUARTO EJERCICIO TURNO LIBRE

PARTE A

HOW DOES WAR DAMAGE THE ENVIRONMENT

The environmental impact of wars begins long before they do. Building and sustaining military forces consumes vast quantities of resources. These might be common metals or rare earth elements, water or hydrocarbons. Maintaining military readiness means training, and training consumes resources. Military vehicles, aircraft, vessels, buildings and infrastructure all require energy, and more often than not that energy is oil, and energy efficiency is low. The CO₂ emissions of the largest militaries are greater than many of the world's countries combined. We estimate that militaries are responsible for 5.5 % of all greenhouse gas emissions globally, however military emissions reporting to the UN Framework Convention on Climate Change is poor.

Militaries also need large areas of land and sea, whether for bases and facilities, or for testing and training. Military lands are believed to cover between 1-6% of the global land surface. In many cases these are ecologically important areas. While excluding public development from these areas can benefit biodiversity, the question of whether they could be better managed as civil protected areas is rarely discussed. Military training creates emissions, disruption to landscapes and terrestrial and marine habitats, and creates chemical and noise pollution from the use of weapons, aircraft and vehicles.

Sustaining and renewing military equipment and materiel means ongoing disposal costs, with implications for the environment. It is not just the most hazardous nuclear and chemical weapons that create environmental problems throughout their lifecycle. The same is also true for conventional weapons, particularly where they are disposed of through open burning or detonation. Historically, vast quantities of surplus munitions were also dumped at sea.

A history of weak environmental supervision has left many countries with serious environmental legacies linked to military pollution, with impacts on public health and vast costs for environmental remediation.

Indirectly, high levels of military spending diverts resources away from solving environmental problems and away from sustainable development. International tensions



fed by high levels of military spending also reduce opportunities for international cooperation on global environmental threats, such as the climate emergency. It is also important to consider how security policies and militarism are tailored to ensuring access to, and control of, natural resources like oil, gas, water and metals.

Environmental damage during conflicts

The environmental impact of conflicts themselves vary greatly. Some international armed conflicts may be brief but highly destructive. Some civil wars may last for decades but be fought at low intensity. Many contemporary conflicts have blurred the lines, lasting years but with sustained periods of high intensity warfare. Who is fighting, where they're fighting and how they're fighting all strongly influence the environmental impact of a conflict.

High intensity conflicts require and consume vast quantities of fuel, leading to massive CO2 emissions and contributing to climate change. Large scale vehicle movements can lead to widespread physical damage to sensitive landscapes and geodiversity, as can the intensive use of explosive ordnance. The use of explosive weapons in urban areas creates vast quantities of debris and rubble, which can cause air and soil pollution.

The loss of energy supplies can have reverberating effects that are detrimental to the environment, shutting down treatment plants or pumping systems, or can lead to the use of more polluting fuels or domestic generators.

Severe pollution incidents can be caused when industrial, oil or energy facilities are deliberately attacked, inadvertently damaged or disrupted. In some cases, deliberate attacks on oil or industrial facilities are used as a weapon of war, to pollute large areas and spread terror. Other damaging techniques include the destruction of agricultural infrastructure like canals, wells and pumps and the burning of crops. Tactics like these threaten food security and livelihoods, increasing the vulnerability of rural communities. Whether unintended or deliberate, these large-scale pollution incidents can lead to transboundary impacts from air pollution or through the contamination of rivers, aquifers or the sea. In some instances, these even have the potential to affect weather or the global climate.



1. When does war start damaging the environment?
 - A. When the fight is in the battlefield.
 - B. Well before the war itself takes place.
 - C. Once the training is over.
 - D. When military troops are equipped.
2. How does the war impact on the environment?
 - A. It impacts on the military activities.
 - B. It impacts because of the military energy consumption.
 - C. It impacts as a result of resources gathered.
 - D. It impacts on account of energy, and resources needed.
3. Which of the following statements is true?
 - A. Most military infrastructures and means of transport consume low energy.
 - B. Many of the world's countries together emit less CO₂ than some of the biggest militaries.
 - C. The UN Framework Convention on Climate change receives an accurate annual report of military emissions.
 - D. Greenhouse gas emissions from the military are estimated to be up to 6%.
4. Military facilities require huge extensions of land and sea _____
 - A. For several purposes.
 - B. For training their weapons.
 - C. Only for training their troops.
 - D. For providing shelter to their soldiers.
5. Military lands are _____ important ecological areas.
 - A. Always placed in
 - B. Never located in
 - C. Hardly ever restricted from
 - D. Often forbidden from
6. The use of weapons, aircraft and vehicles _____ for both marine and land habitats.
 - A. Are harmful
 - B. Are harmless
 - C. Are naïve
 - D. Are paired



7. Military equipment and materiel ____
 - A. Is usually recycled.
 - B. Can be reused.
 - C. Is disposable.
 - D. Tend to be repurposed.
8. Most environmental problems are caused by ____
 - A. Both the most hazardous nuclear and chemical weapons
 - B. The most hazardous nuclear and chemical weapons as well as conventional ones alike.
 - C. Conventional weapons lifecycle.
 - D. weapons storage and leakage throughout their lifecycle.
9. What did militaries do with the surplus of munitions?
 - A. They burnt them.
 - B. They exploded them.
 - C. They dropped them into the sea.
 - D. All the above answers are correct.
10. What is the closest in meaning to “remediation” in paragraph 4?
 - A. Compensation.
 - B. Damages.
 - C. Sanitation.
 - D. Recovery.
11. Sustainable development has ____ because of the military spending.
 - A. Decreased.
 - B. Increased.
 - C. Grown.
 - D. Diverted.
12. _____, international cooperation on global environmental threats is reduced.
 - A. Likewise
 - B. Alike
 - C. Unlike
 - D. Likely



13. Armed conflicts _____ from short and destructive _____ long but low intense.
A. May range / to
B. May lengthen / from
C. May last /to
D. May continue /from
14. How are high intensity conflicts contributing to climate change?
A. Because their large consumption of fuel.
B. Due to they consume large amounts of fuel.
C. Because they consume large amounts of fuel.
D. On account of they consume large amounts of fuel.
15. _____ large scale vehicle movements _____ the intensive use of explosive weapons can lead to damage to sensitive landscapes and geodiversity.
A. Not only/but also
B. Both /and
C. Neither /nor
D. Whether /if
16. Air pollution and soil pollution in urban areas can be caused by ____
A. The debris and rubble when bombarded.
B. The transportation of explosive weapons through them.
C. Large scale vehicle movements within them.
D. The chaos caused by the destruction.
17. Which statement is false?
A. The loss of energy supplies can have long-lasting negative effects to the environment.
B. Population may use more polluting fuels or domestic generators as a result of the loss of energy supplies.
C. Treatment plants or pumping systems are polluting fuel systems.
D. Domestic energy generators could generate a higher amount of pollution.
18. What is the opposite word in meaning to “inadvertently”?
A. Accidentally.
B. Intentionally.
C. Casually.
D. By chance.



19. Wells, canals and pumps are mentioned as examples of:
- A. Likely military objectives.
 - B. Sources of livelihood for rural communities.
 - C. Industrial facilities used as weapon of war.
 - D. Military techniques to spread terror and pollute large areas.
20. Transboundary environmental impacts result from:
- A. Damaging sensitive landscapes.
 - B. Air pollution.
 - C. Agricultural infrastructures.
 - D. Pumping systems.



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PARTE B

ELECTRIC MOUNTAIN

I've been fascinated by science and engineering my entire life. The first thing I remember wanting to be when I was a kid was an astronaut – it was the 1970s, the cultural peak of space exploration. By the time I was 10, I wanted to be a nuclear physicist, and this took me all the way through to a degree in engineering physics.

I was born in Canada, but when I was nine, my family lived in India, in my father's family home, for six months. If culture is everything that you do without thinking about why you're doing it, then our infrastructural systems, and the ways of life they make possible, are unquestionably an important part of culture. Even as a child, the differences between Canada and India – language, social norms, the deep poverty and the unignorable inequality – required serious adjustment.

In India, we only had running water for an hour or so in the morning and again in the evening. We collected it in buckets to use for bathing and flushing toilets the rest of the time. My mother boiled and filtered the water to make it potable to digestive and immune systems that were accustomed to clean, cold, carefully treated water from Lake Ontario. We quickly learned to expect dim lights and power cuts as the growing city's electrical grid struggled to cope with the fans and evaporative coolers that helped to bear the summer heat.

I doubt I would have given much thought to infrastructure had I not lived in these two different places. By moving to Canada, my parents had given me a new citizenship in a country with a different set of educational and economic opportunities, alongside the infrastructure that made it possible for me to access them.

Collective infrastructures – water and sewage, transportation, electricity, telecommunications – are good candidates for the most complex systems created by humans. They are planetary in scale, build on their own histories, interact with one another and have effects that extend far into the future. Their design, construction and operation require a wide range of technical disciplines – civil engineering, obviously, but also electrical, mechanical, environmental engineering, and the science of systems and of networks. All of these fields incorporate not just technologies but practices, ways of thinking, doing and building.



All over the world, charismatic megastructures are the public faces of our collective infrastructural systems. Bridges, of course, but also the soaring spaces of railway stations, from Grand Central terminal in New York City to the CN Tower in my home town of Toronto, which was built to be a communications hub, makes the skyline instantly recognisable or The Hoover Dam, in the desert outside Las Vegas which hosts 7 million visitors every year.

I have a deep affection for a lot of charismatic infrastructural megastructures. I adore the calm quiet of the paired hydroelectric power plants set inside green and forested Niagara Gorge, several miles downstream of the thunderous falling water and crowds of tourists at Niagara Falls. But if I had to name a favourite, one infrastructural installation does stand out.

Snowdonia national park, in north Wales, is idyllic, all green hills surrounding blue glacial lakes. Old farmhouses, ruined castles and modern buildings alike show off the magnificent locally quarried slate, which grew into an important industry in the 19th century (the region recently became a Unesco world heritage site because of the historic mining facilities). A Victorian-era railway carries tourists to the top of Snowdon, to take in the view. If you're lucky enough to be there in May, like I was, the charm of the landscape is further enhanced by absolutely adorable playful baby lambs everywhere. But I was there to see something that had been made deliberately, carefully and beautifully invisible, concealed inside a giant cavern carved out of a mountain. Like a supervillain, it gathers power to itself, usually under cover of darkness. The power, in this case, mostly lets people watch TV and make tea.



1. What childhood aspirations did the speaker have related to science and engineering?
 - A. Astronaut and artist.
 - B. Engineer and doctor.
 - C. Nuclear physicist and astronaut.
 - D. Environmentalist and engineer.

2. How long did the speaker's family live in India during their childhood?
 - A. A quarter of a year.
 - B. Half a year.
 - C. A year.
 - D. Two years.

3. What were the major differences the speaker noticed between Canada and India?
 - A. Language, social norms, and technological advancements.
 - B. Social norms, economic disparities, and language.
 - C. Language, poverty, and inequality.
 - D. Cultural norms and electricity usage.

4. How did the speaker's family manage water usage in India?
 - A. Collected water from Lake Ontario.
 - B. Used water only in the evenings.
 - C. Collected and used limited water for bathing and flushing.
 - D. Boiled water from the river for safe drinking.

5. What did the experience of living in Canada and India teach the speaker?
 - A. The importance of language diversity.
 - B. The significance of cultural differences.
 - C. The value of different citizenships and infrastructural systems.
 - D. The beauty of living near natural water sources.

6. What are considered as examples of collective infrastructures?
 - A. Agricultural systems and social networks.
 - B. Water and sewage, transportation, and electricity.
 - C. Educational systems and health facilities.
 - D. Telecommunications and entertainment industries.



7. What fields of expertise are crucial for the operation of infrastructural systems?
 - A. Civil engineering only.
 - B. Civil engineering and environmental science.
 - C. Civil, electrical, mechanical engineering, and system sciences.
 - D. Environmental engineering and mechanical sciences.

8. What do charismatic megastructures represent in the world?
 - A. Complex systems created by humans.
 - B. Architectural masterpieces.
 - C. Engineering achievements in transportation.
 - D. Modern technological advances.

9. Which famous structures serve as public faces of collective infrastructural systems?
 - A. The Great Wall of China and the Eiffel Tower.
 - B. Grand Central Terminal and the CN Tower.
 - C. The Roman Colosseum and the Sydney Opera House.
 - D. The Pyramids of Giza and the Taj Mahal.

10. What activities are the Hoover Dam and Grand Central Terminal known for?
 - A. Hosting millions of visitors annually.
 - B. Acting as communication hubs.
 - C. Generating hydroelectric power.
 - D. Providing power for nearby regions.

11. What is the speaker's favourite infrastructural installation?
 - A. Niagara Falls.
 - B. Hoover Dam.
 - C. Snowdonia National Park.
 - D. CN Tower.

12. What is notable about the paired hydroelectric power plants in Niagara Gorge?
 - A. They operate silently in a forested area.
 - B. They are located near the tourist-filled Niagara Falls.
 - C. They power the entire Niagara Falls region.
 - D. They have an impact on the region's water supply.



13. Where is the Niagara Gorge?
- A. Just by the Niagara Falls.
 - B. Upstream the Niagara Falls.
 - C. In the Niagara Falls touristic centre.
 - D. In a forested area downstream the Niagara Falls.
14. What landmark became a UNESCO World Heritage site due to its historic mining facilities?
- A. CN Tower.
 - B. Grand Central Terminal.
 - C. Snowdonia National Park.
 - D. Niagara Falls.
15. What do visitors to Snowdonia National Park enjoy in May, according to the speaker?
- A. Watching TV and making tea.
 - B. Viewing historic mining facilities.
 - C. Exploring Victorian-era buildings.
 - D. Observing playful baby lambs.
16. What surprising element is concealed within Snowdonia National Park?
- A. A massive communications hub.
 - B. A secret laboratory.
 - C. A giant cavern carved out of a mountain.
 - D. A hydroelectric power plant.
17. What purpose does the hidden installation in Snowdonia National Park serve?
- A. Generates power for running amusement parks.
 - B. Provides energy for heating purposes.
 - C. Supplies power for watching TV and making tea.
 - D. Supports agricultural systems.



18. What elements in Snowdonia National Park made it become a Unesco world Heritage site?

- A. Its green hills and blue glacial lakes.
- B. Its forested areas.
- C. Its mining facilities.
- D. Its Victorian-era railway.

19. What feature better describes collective infrastructures?

- A. They require a wide technological knowledge and skills to be developed.
- B. They all require natural landscapes and concealed energy installations.
- C. They are considered UNESCO World Heritage sites.
- D. They are all hydroelectric plants.

20. What is the speaker's perspective on the infrastructural installation in Snowdonia National Park?

- A. It is disruptive and harmful to the environment.
- B. It is an architectural masterpiece.
- C. It is an incredible and beautifully concealed power source.
- D. It has no significant impact on the landscape.