Gulf Research Center
Knowledge for All

مركز الخليج للأبحاث
المعرفة للجميع


Photo Source: GCC-SG (2025)

# Operation Epic Fury is Environmental Warfare

Mohamed Abdelraouf *

March 2026

# Operation Epic Fury is Environmental Warfare


**Executive Summary**

The ongoing war known as Operation Epic Fury, involving Iran, Israel, and the United States (as of March 2026), poses severe, long-term environmental hazards, including toxic air pollution, marine oil spills, and potential radioactive contamination from strikes on energy and nuclear infrastructure.

The conflict has already shown clear elements of the weaponization of the natural environment (such as water and oil) as well as the deliberate destruction of environmental infrastructure for hostile military purposes.

Regional consequences of such activities include ruined desalination plants, severe air pollution (NOx, SO2), and damaged ecosystems, while global impacts include accelerated climate change through massive greenhouse gas emissions from fires. Ironically, this war has underscored the strategic necessity of the Gulf Cooperation Council (GCC') countries' economic diversification and energy transition goals.


In addition, the International Energy Agency (IEA) has stated that this conflict threatens to impose "the greatest global energy and food security challenge in history."[1] The closure of the Strait of Hormuz on March 4, 2026, has removed approximately 20 million barrels of oil and 20% of global liquefied natural gas (LNG) from the market, with no clear indication of when the strait will reopen.

The extent to which the current conflict will harm the environment cannot yet be fully understood. The undeniable truth is that a region whose ecosystem is already fragile and whose natural resources are already scarce is undergoing significant further damage, leaving behind an "invisible casualty" whose loss will have heavy long-term consequences. The numerous serious health, economic, and social side effects of pollution are severe, and much of the current damage being witnessed is permanent; thus, its long-term effects will ultimately be felt by future generations. While buildings can be rebuilt and military resources

[1] International Energy Agency. "Iran war triggers 'greatest energy security crisis in history,' IEA chief warns." *Turkiye Today*. March 20, 2026. https://www.turkiyetoday.com/business/iran-war-triggers-greatest-energy-security-crisis-in-history-iea-chief-warns-3216611.

replenished, the ecological effects of this war cannot be reversed.

**Water Warfare**

Desalination plants have become a direct target, threatening the primary water source for millions in the arid Arabian Gulf. Both direct strikes and collateral damage from intercepted drones have impacted facilities across the region. Strikes on or near desalination plants in the Gulf region threaten water supplies for the over 100 million people who reside there. Several documented incidents of damage to desalination plants include the following:

- **Kuwait:** On March 2, the Doha West Power and Water Desalination Station was damaged by missile debris and falling fragments from intercepted drones.
- **Iran:** On March 7, a desalination plant on Qeshm Island was struck, which Iran attributed to the United States.[2]
- **Bahrain:** On March 8, an Iranian drone attack resulted in material damage to a desalination plant.[3] Bahrain: On March 8, an Iranian drone attack resulted in material damage to a desalination plant.[4]

GCC countries are uniquely vulnerable when it comes to water supply, because they rely on desalination for up to 90% of their drinking water. Experts warn that some Gulf cities would be forced to evacuate within a week if their primary desalination plants were fully disabled.

Beyond direct strikes, oil spills from targeted tankers could block intake systems, effectively shutting down desalination plants even without a direct hit on the facility itself. Thus, long-term policy in the GCC should pivot toward massive investments in groundwater recharge and treated sewage effluent (TSE) for agriculture, with the goal of decoupling food and water security from the vulnerable coastline, and creating inland "strategic reserves" immune to maritime conflict.

**Air Pollution**

[2][2] Al Jazeera. "How Targeting of Desalination Plants Could Disrupt Water Supply in the Gulf." March 8, 2026. https://www.aljazeera.com/news/2026/3/8/how-targeting-of-desalination-plants-could-disrupt-water-supply-in-the-gulf

[3] Nereim, Vivian. "Vital Water Desalination Plants in Iran and Bahrain Are Attacked." The New York Times, March 8, 2026. https://www.nytimes.com/2026/03/08/world/middleeast/desalination-plants-iran-bahrain.html

[4] Nereim, Vivian. "Vital Water Desalination Plants in Iran and Bahrain Are Attacked." The New York Times, March 8, 2026. https://www.nytimes.com/2026/03/08/world/middleeast/desalination-plants-iran-bahrain.html

The region is a major oil and gas producer with extensive fossil fuel infrastructure, including oil refineries, storage facilities, and gas processing plants, as well as export terminals. The targeting of these industrial sites has released significant plumes of particulate matter and toxic gases, including NOx, carbon monoxide, and sulfur dioxide, degrading air quality across the region and increasing respiratory health risks for GCC residents.

In Iran, attacks on oil depots resulted in “black rain” (acidic precipitation containing fuel byproducts, soot, and sulfur), which posed immediate health issues such as headaches and breathing difficulties, alongside long-term risks including carcinogenic effects.

Beyond the immediate damage to infrastructure, the use of explosives and pulverization of buildings can lead to hazardous air pollution and serious health risks to civilians. In urban areas, damage to and collapse of buildings can release a toxic mix of airborne particles--from crushed construction materials to combustion byproducts--exposing communities to significant inhalation hazards and long-term consequences such as a higher risk of respiratory disease, cardiovascular conditions, and even cancer.

**Land and Marine Ecosystem Damage**

On the water, especially as the Strait of Hormuz has become a battlefield for oil tankers and coastal pipelines, sunken ships, debris, oil spills, and other damage in the Arabian Gulf have posed major hazards for coastal ecosystems, threatening over 2,000 marine species, including the endangered green turtle and dugongs.

The conflict has also severely polluted the land, as military strikes target critical energy and industrial infrastructure, leading to the persistent release of toxins into the soil. Environmental monitors have identified over 300 incidents of potential harm, noting that the destruction of military hardware and strikes on chemical plants have released heavy metals, energetic compounds, and Per- and polyfluoroalkyl substances (PFAS), These contaminants are expected to create a "toxic legacy" that could degrade soil quality and agricultural viability for decades, essentially turning parts of the region into "environmental sacrifice zones."[5]

[5] Damien Gayle. "5m Tonnes of CO2 Emitted in Just 14 Days of US War on Iran, Analysis Finds." *The Guardian*, March 25, 2026, www.theguardian.com.

**Potential Damage: Nuclear Facility Risks**

Attacks on nuclear sites pose risks of radioactive pollution, which would severely degrade the environment and cause widespread, long-term contamination. A radiological release could affect both terrestrial and marine biodiversity, as well as critical man-made infrastructure. Such an incident could render large areas of West Asia uninhabitable. Of particular concern is the Bushehr Nuclear Power Plant, located on the shores of the Arabian Gulf. Any radioactive release from this facility would pose an immediate threat to the Gulf's marine ecosystem and jeopardize regional water security, as the majority of the Gulf Cooperation Council (GCC) countries' desalination plants are located along the Gulf coast.

**War and Economic Diversification Strategies in GCC**

The vision of a "post-oil" economy in GCC countries relies on sectors that are highly sensitive to regional instability, such as tourism and logistics. Persistent geopolitical risk acts as a "tax" on diversification, potentially diverting sovereign wealth funds from long-term sustainability projects toward immediate defense and energy security needs.

In addition, the targeted attacks on coastal infrastructure threaten the nascent "blue economy," which seeks to leverage sustainable fisheries and coastal tourism as alternative revenue streams. Thus, the conflict threatens to delay sustainable, green diversification investment plans, at least in the short-term.

**Energy Transition**

The impact of war on the GCC's shift to renewables is a double-edged sword. The disruption of traditional supply routes (e.g., the Strait of Hormuz) has intensified the "energy autonomy" argument. Despite high oil prices driven by conflict providing a short-term fiscal cushion, decentralized solar and wind projects are increasingly viewed as strategic assets that are harder for adversaries to disrupt than centralized fossil-fuel grids. We will see a shift toward micro-grids—smaller, localized energy systems that can operate independently if a main plant is targeted.

Thus, as a result of the current conflict, short-term energy transition plans are expected to be delayed, but the transition will accelerate in the long term. Funds like Saudi Arabia's PIF or the UAE's Mubadala are likely to increase "defensive green investing"—buying up stakes in the mining and processing companies that provide the raw materials for the

energy transition to ensure they aren't cut off during future escalations.

**Hidden and Long-Term Environmental Costs**

At this stage, it is very hard to calculate the environmental cost of the conflict. Nevertheless, it is estimated to be in the billions due to the destruction and pollution of both man-made and bio assets.

While oil spills make headlines, the "silent" costs are often more damaging to long-term sustainability. The GCC is the world's most water-stressed region, and it simply cannot afford the threats posed by maritime conflict (mines, sunken vessels, damage to desalination plants, or chemical leaks).

In addition, increased carbon emissions resulting from military operations, as well as the war-related disruptions to the supply chain for polysilicon and rare earth metals, mean that for every month a project is delayed, the region continues to burn crude and gas for power, adding millions of tons of unnecessary CO2 to the atmosphere. Moreover, the physical destruction of coral reefs is often irreversible in human timescales.

**Conclusion**

Operation Epic Fury has caused severe, lasting environmental damage across the Gulf region, including for instance, widespread toxic air pollution, damaging vital infrastructure (sanitation, industrial sites), impacting ecosystems and threatening regional biodiversity and human health. Its long-term effects will ultimately be felt by future generations.

For The Gulf Cooperation Council GCC, the current armed conflict is a stress test for Vision 2030 and similar national agendas. So far, (GCC) countries have indeed demonstrated significant resilience by leveraging their advanced infrastructure and strategic long-term investments to mitigate the environmental and economic fallout from this conflict.

* Dr. Mohamed Abdelraouf is the Director of the Environmental Security and Sustainability Research Program at the Gulf Research Center.

Gulf Research Center
Knowledge for All

مركز الخليج للأبحاث
المعرفة للجميع

**Gulf Research Center Jeddah (Main office)**

19 Rayat Alitihad Street
P.O. Box 2134
Jeddah 21451
Saudi Arabia
Tel: +966 12 6511999
Fax: +966 12 6531375
Email: info@grc.net

**Gulf Research Center Riyadh**

Unit FN11A
King Faisal Foundation
North Tower
King Fahd Branch Rd
Al Olaya Riyadh 12212
Saudi Arabia
Tel: +966 112112567
Email: info@grc.net

**Gulf Research Center Foundation**

Avenue de France 23
1202 Geneva
Switzerland
Tel: +41227162730
Email: info@grc.net

**Gulf Research Centre Cambridge**

University of Cambridge
Sidgwick Avenue,
Cambridge CB3 9DA
United Kingdom
Tel:+44-1223-760758
Fax:+44-1223-335110

**Gulf Research Center Foundation Brussels**

4th Floor
Avenue de
Cortenbergh 89
1000 Brussels
Belgium
grcb@grc.net
+32 2 251 41 64

@Gulf_Research Gulfresearchcenter gulfresearchcenter gulfresearchcenter

www.grc.net

مركز الخليج للأبحاث
المعرفة للجميع