

# Global Environmental Hotspots: Arctic Meltdown, Carbon Capture Leaps, and

Environment · Answer Key · 17 Questions

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**1. Recent research indicates that the Arctic Ocean may have crossed an irreversible chemical tipping point due to sea ice loss. What is the primary nutrient decline identified as a critical impact on the Arctic marine food web?**

- A) Phosphate
- B) Nitrate**
- C) Potassium
- D) Ammonia

**2. The COP29 summit in Baku, Azerbaijan, concluded with a new climate finance goal. What is the minimum annual financial target agreed upon by governments for developing countries by 2035?**

- A) USD 100 billion
- B) USD 200 billion
- C) USD 300 billion**
- D) USD 500 billion

**3. What significant advancement in carbon capture technology has MIT engineers developed, potentially increasing efficiency by six times and reducing costs by up to 30%?**

- A) Advanced metal-organic frameworks (MOFs)
- B) Nanofiltration membranes**
- C) Direct air capture (DAC) systems
- D) Cryogenic carbon capture

**4. As of early 2024, the European Union implemented the EU Emissions Trading System (EU ETS) to cover maritime shipping. What percentage of emissions from voyages that start or end outside the EU are covered by this system?**

- A) 100%
- B) 75%
- C) 50%**
- D) 25%

**5. What innovative electrolysis cell technology has an Australian company developed, claiming 95% efficiency and significantly reducing energy consumption in hydrogen production?**

- A) Solid Oxide Electrolysis Cells (SOEC)
- B) Alkaline Water Electrolysis (AWE)
- C) Proton Exchange Membrane (PEM) Electrolyzers

**D) Capillary-fed electrolysis cell**

**6. Recent research on the Arctic Ocean indicates that increased sunlight exposure due to sea ice loss is accelerating a natural process that removes nitrate from seawater. What is this process called?**

- A) Ocean acidification

**B) Benthic denitrification**

- C) Eutrophication
- D) Photosynthesis enhancement

**7. The Global Methane Pledge, introduced at COP26, aims to collectively reduce global methane emissions. Which country recently announced it will issue a proposed rule to update its Clean Air Act emission standards for municipal solid waste landfills to cut methane emissions?**

- A) Canada
- B) European Union

**C) United States**

- D) Brazil

**8. At COP28, a historic agreement was reached to transition away from fossil fuels. In parallel, what is the target set for global renewable energy capacity by 2030, mentioned in the first Global Stocktake?**

- A) Doubling

**B) Tripling**

- C) Quadrupling
- D) Quintupling

**9. What type of advanced material, described as highly porous and functioning like molecular sponges, is being developed for more efficient and cost-effective carbon capture?**

- A) Zeolites
- B) Activated carbon

**C) Metal-organic frameworks (MOFs)**

- D) Graphene oxide

**10. Which international convention, at its COP15 summit in Campo Verde, Brazil, introduced and enhanced treaty protections for 40 species, adding them to its Appendices I or II?**

- A) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- B) Convention on the Conservation of Migratory Species of Wild Animals (CMS)**
- C) Convention on Biological Diversity (CBD)
- D) Ramsar Convention on Wetlands

**11. As of early 2025, the International Energy Agency (IEA) reported that global CO2 capture and storage (CCS) capacity has reached a significant milestone. What is this approximate capacity?**

- A) 10 million metric tons
- B) 50 million metric tons**
- C) 100 million metric tons
- D) 250 million metric tons

**12. What is the primary focus of the 'Circular Economy in 2024: Global Trends Transforming Waste' movement, emphasizing a shift from the linear 'take-make-waste' model?**

- A) Increased resource extraction
- B) Emphasis on planned obsolescence
- C) Resource efficiency and waste reduction**
- D) Single-use product promotion

**13. In 2024, the EU began applying its Emissions Trading Scheme (ETS) to maritime shipping. What is the main objective of this financial incentive for large ship operators?**

- A) To encourage increased fuel consumption
- B) To incentivize rapid emissions reduction**
- C) To subsidize the purchase of older vessels
- D) To standardize shipping routes

**14. What technological advancement is revolutionizing farming practices by using data from satellite imagery, drones, and IoT devices to optimize resource usage such as water and fertilizers?**

- A) Vertical Farming
- B) Agroforestry
- C) Precision Agriculture**
- D) Hydroponics

**15. The Global Methane Pledge aims for a specific reduction in methane emissions by 2030. What is this target percentage reduction from 2020 levels?**

- A) 15%
- B) 20%
- C) 30%**
- D) 45%

**16. The 2024 UN climate summit (COP29) established a new finance goal. What is the total estimated annual climate finance target from public and private entities to developing countries by 2035?**

- A) USD 1 trillion
- B) USD 1.3 trillion**
- C) USD 1.5 trillion
- D) USD 2 trillion

**17. What is a key innovation in green hydrogen production highlighted in recent reports, capable of producing hydrogen directly from untreated seawater without pre-desalination?**

- A) Electrolysis using purified water
- B) Seawater electrolysis**
- C) Steam methane reforming
- D) Biomass gasification