

GENERAL STUDIES III

Baltic Sea Crisis 2026: Complete UPSC Notes

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The Baltic Sea has returned to the international environmental agenda as Nordic countries explore stronger measures against nutrient pollution, eutrophication, oxygen-depleted seabeds and declining fish stocks. Situated in Northern Europe, the Baltic Sea is a semi-enclosed brackish-water sea connected to the North Sea through the Danish Straits and bordered by nine countries. Its restricted water exchange, low salinity and stratification make it particularly vulnerable to ecological degradation. These original Civil Service Gurukul UPSC notes explain the Baltic Sea's geographical characteristics, surrounding countries, major gulfs and rivers, causes of eutrophication, HELCOM's Baltic Sea Action Plan, maritime significance and lessons for marine conservation.

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UPSC PRELIMS & MAINS 2027

WORLD GEOGRAPHY | MARINE ECOLOGY

Complete UPSC notes on the Baltic Sea map, nine bordering countries, Danish Straits, brackish water, marine biodiversity, Nordic cooperation and HELCOM.

21 October 2026 GS Paper I & III UPSC 2027

Why in News? On 19 October 2026, the Nordic Council's Committee for a Sustainable Nordic Region highlighted persistent environmental deterioration in the Baltic Sea and proposed renewed international initiatives. The principal concerns include **eutrophication, oxygen-depleted seabeds and declining commercial fish stocks**. The issue is relevant to UPSC questions on world geography, marine ecosystems, transboundary pollution and environmental governance.

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Coastal Countries

Brackish

Low-Salinity Marine Water

HELCOM

Regional Marine Protection Body

GS Section / Paper — UPSC Syllabus

GS-I: World Geography, important physical features, seas, straits and regional geography.**GS-III:** Environmental pollution, ecological degradation, marine biodiversity and conservation.**GS-II:** International cooperation and regional environmental institutions.**Prelims:** Map locations, coastal countries, gulfs, straits, water salinity and HELCOM.

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1. Where Is the Baltic Sea Located?

The Baltic Sea is a semi-enclosed marine waterbody in Northern Europe. It separates much of the Scandinavian Peninsula from the mainland European coast.

It is connected to the North Sea through the narrow Danish Straits. The North Sea, in turn, forms part of the Atlantic Ocean system.

The Baltic Sea includes several gulfs and bays and drains a large catchment area extending beyond its nine coastal countries.

Prelims map reminder: The Baltic Sea is not the Black Sea, the Caspian Sea or the Mediterranean Sea. Its outlet is through the Danish Straits toward the North Sea.

2. Nine Countries Bordering the Baltic Sea

Country	Geographical Position
Sweden	Western and northern coast
Finland	Northern and northeastern coast
Russia	Gulf of Finland and Kaliningrad coasts
Estonia	Eastern Baltic region
Latvia	Eastern coast and Gulf of Riga
Lithuania	Southeastern coast
Poland	Southern coast
Germany	Southwestern coast
Denmark	Western entrance and Danish Straits

Important Distinctions

The Baltic states are **Estonia, Latvia and Lithuania**. These three countries should not be confused with all nine Baltic Sea coastal states.

Norway does not have a Baltic Sea coastline, although it is a Nordic country.

Russia's Kaliningrad Oblast is geographically separated from the main territory of Russia. It provides Russia with a Baltic Sea coastline.

3. Major Gulfs, Straits and Rivers

Major Gulfs

Gulf	Location
Gulf of Bothnia	Between Sweden and Finland
Gulf of Finland	Between Finland and Estonia, extending toward Russia
Gulf of Riga	Between Latvia and Estonia

Danish Straits

Important straits include the Øresund (The Sound), Great Belt and Little Belt.

These passages connect the Baltic region with the Kattegat, Skagerrak and the North Sea system.

Important Rivers

Major rivers draining into the Baltic Sea system include the Vistula, Oder, Neva, Daugava and Neman.

River runoff introduces freshwater as well as nutrients and pollutants from large terrestrial catchments.

4. Unique Physical Characteristics of the Baltic Sea

Brackish Water

Freshwater from rivers mixes with saline seawater, creating lower salinity than in the open ocean.

Restricted Exchange

Narrow and shallow connections to the North Sea limit water renewal.

Water Stratification

Less-dense freshwater can remain above denser saline water, restricting vertical mixing.

Post-Glacial Landscape

Its modern geography developed following the retreat of Pleistocene ice sheets.

Why Is the Baltic Sea Vulnerable?

Slow water exchange means that nutrients and pollutants may remain within the system for extended periods.

Salinity differences can produce stable water layers that hinder oxygen transfer to deeper water.

This increases susceptibility to oxygen depletion, particularly when organic matter from algal blooms decomposes.

5. Why Is the Baltic Sea in the News in 2026?

On 19 October 2026, the Nordic Council highlighted continuing nutrient pollution and declining marine ecosystem health.

Agricultural runoff and wastewater have contributed to nitrogen and phosphorus accumulation.

Despite reduced nutrient emissions over previous decades, significant ecological problems remain.

The Nordic Council reported that, among 15 assessed commercial fish stocks, an average of only four were in good condition during 2016–2021.

Current Affairs Takeaway

The Baltic Sea illustrates how ecological recovery can remain slow even after measures are introduced to reduce pollution.

Long-term monitoring, nutrient reduction and cross-border cooperation remain essential.

6. What is Eutrophication?

Eutrophication occurs when a waterbody receives excessive nutrients, particularly nitrogen and phosphorus.

These nutrients stimulate rapid growth of algae and other primary producers.

Process of Eutrophication

Agricultural Runoff and Wastewater

?

Excess Nitrogen and Phosphorus

?

Excessive Algal Growth

?

Dead Algae Decompose

?

Dissolved Oxygen Declines



Hypoxia, Fish Stress and Biodiversity Loss

Main Causes

- ✓Agricultural fertiliser runoff.
- ✓Livestock and nutrient-rich waste.
- ✓Insufficiently treated municipal wastewater.
- ✓Atmospheric nitrogen deposition.
- ✓Historical nutrient accumulation in seabed sediments.

7. Hypoxia, Anoxia and Marine Dead Zones

Term	Explanation
Hypoxia	Very low dissolved oxygen levels that stress or exclude oxygen-dependent organisms.
Anoxia	Absence of dissolved oxygen.
Dead Zone	Area of severe oxygen depletion in which many forms of marine life cannot survive normally.
Stratification	Stable layering of water with different densities, limiting vertical mixing.

The Baltic Sea's restricted exchange and salinity-driven stratification can intensify oxygen depletion.

Low oxygen harms bottom-dwelling species and can affect fish reproduction, habitat quality and food-web stability.

Some sediments can release stored phosphorus under low-oxygen conditions, which may reinforce future algal growth.

8. Economic and Strategic Importance

Maritime Trade

The Baltic Sea is a major European shipping corridor, connecting ports such as Stockholm, Helsinki, Riga, Gdańsk and Saint Petersburg.

Fisheries

Commercially important fish populations include cod, herring and sprat. Their sustainability is closely linked to water quality, food webs and fisheries management.

Historical Trade

The Baltic region played a major role in the Hanseatic League, the historical network of northern European trading towns.

Geopolitical Importance

The sea connects several European states and Russia. Its shipping routes, ports and energy infrastructure contribute to its strategic significance.

9. HELCOM and the Baltic Sea Action Plan

HELCOM, formally the Baltic Marine Environment Protection Commission, coordinates efforts to protect the marine environment under the Helsinki Convention.

Its Baltic Sea Action Plan was adopted in 2007 and updated in 2021.

The updated plan contains measures intended to improve the sea's environmental condition by 2030.

Major Focus of BSAP	Objective
Biodiversity	Healthy, resilient marine ecosystems.
Eutrophication	Reduce nutrient pollution and excessive algal growth.
Hazardous Substances and Litter	Limit pollutants and marine waste.
Sea-Based Activities	Encourage environmentally sustainable maritime activity.

Key distinction: The Nordic Council is a regional political cooperation institution. HELCOM is the specialised Baltic marine environmental protection framework. They are not the same organisation.

10. Policy Challenges and the Way Forward

- Reduce Nutrient Runoff**

Improve fertiliser management, buffer vegetation and agricultural watershed practices.
- Improve Wastewater Treatment**

Expand effective nitrogen and phosphorus removal from municipal discharges.

Restore Ecosystems

Protect coastal wetlands, marine habitats and sustainable fish populations.

Strengthen Cooperation

Use shared monitoring, nutrient targets and regional maritime governance.

The Baltic Sea experience offers lessons for polluted coastal waters elsewhere, including the importance of regulating land-based pollution before it reaches the sea.

11. UPSC Prelims 2027: Quick Revision Facts

Topic	Key Fact
Location	Northern Europe
Sea Type	Semi-enclosed brackish sea
Ocean Connection	North Sea via Danish Straits
Coastal Countries	Nine
Baltic States	Estonia, Latvia and Lithuania
Major Gulfs	Bothnia, Finland and Riga
Major Pollution Issue	Eutrophication
Important Nutrients	Nitrogen and phosphorus
Oxygen Depletion	Hypoxia and anoxia
Marine Protection Body	HELCOM
Helsinki Convention	1992 convention currently governing regional protection
BSAP Adopted	2007
BSAP Updated	2021
Updated Plan Horizon	2030

12. UPSC Prelims Practice MCQs

Question 1

Which of the following countries border the Baltic Sea?

1. Poland
 2. Finland
 3. Norway
 4. Latvia
- (a) 1 and 2 only
(b) 1, 2 and 4 only
(c) 2, 3 and 4 only
(d) All four

Show answer

Answer: (b). Norway is not a Baltic Sea coastal country.

Question 2

The Baltic Sea connects with the North Sea through:

- (a) Strait of Hormuz
(b) Danish Straits
(c) Bosphorus
(d) Strait of Malacca

Show answer

Answer: (b) Danish Straits.

Question 3

Consider the following statements:

1. The Baltic Sea has brackish water.
 2. Restricted seawater exchange contributes to low salinity.
 3. The Baltic Sea opens directly into the Indian Ocean.
- (a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only

(d) All three

Show answer

Answer: (b). The Baltic Sea connects to the North Sea, not the Indian Ocean.

Question 4

Eutrophication is most directly associated with:

- (a) Excess nitrogen and phosphorus
- (b) Reduced solar radiation alone
- (c) Tectonic movement
- (d) Ocean-floor volcanism

Show answer

Answer: (a). Excess nutrient loading promotes algal growth.

Question 5

Which of the following statements are correct?

1. HELCOM is associated with marine environmental protection.
2. The Baltic Sea Action Plan was updated in 2021.
3. HELCOM is the legislative parliament of the European Union.

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) All three

Show answer

Answer: (b). HELCOM is not the European Parliament.

13. UPSC Mains GS-III: Model Answer

Practice Question — 15 Marks

"The environmental degradation of the Baltic Sea demonstrates that marine pollution is fundamentally a transboundary governance challenge." Discuss the causes, consequences and policy responses to marine eutrophication.

Word limit: 250 words

Model Answer

Introduction: The Baltic Sea is a semi-enclosed brackish sea in Northern Europe. In October 2026, the Nordic Council highlighted ongoing eutrophication, oxygen-depleted seabeds and declining fish stocks.

Causes: Agricultural fertiliser runoff, municipal wastewater and other nutrient sources increase nitrogen and phosphorus levels. Restricted water exchange and salinity stratification limit oxygen renewal. Historical nutrient accumulation can prolong ecological damage.

Consequences: Excessive algal blooms reduce water clarity and, following decomposition, consume dissolved oxygen. Hypoxia affects bottom habitats, biodiversity and fish stocks, harming coastal livelihoods and ecosystem services.

Governance response: The HELCOM Baltic Sea Action Plan provides a cooperative framework for nutrient reduction, marine conservation and pollution control. Countries must strengthen wastewater treatment, sustainable agricultural practices, marine monitoring and ecosystem-based fisheries management.

Conclusion: Marine ecosystem recovery requires long-term cooperation across the entire drainage basin. The Baltic Sea provides a valuable example of integrating land-use regulation with international marine governance.

14. Frequently Asked Questions

Q1. How many countries border the Baltic Sea?

Nine countries.

Q2. Which are the three Baltic states?

Estonia, Latvia and Lithuania.

Q3. What makes the Baltic Sea brackish?

High freshwater inputs and limited exchange with saline North Sea water.

Q4. What is a marine dead zone?

A region with very low oxygen where many marine organisms cannot survive normally.

Q5. What is the Baltic Sea Action Plan?

HELCOM's regional programme to improve Baltic marine environmental conditions.

Q6. Which GS papers cover the topic?

GS-I World Geography and GS-III Environment, with supplementary relevance to GS-II International Cooperation.

15. Conclusion

The Baltic Sea combines distinctive physical geography with serious environmental challenges. Its low salinity, restricted exchange and water stratification increase vulnerability to nutrient pollution and oxygen depletion.

The Nordic Council's October 2026 initiative reinforces the importance of long-term cooperation among countries sharing marine resources.

For UPSC aspirants, the key takeaway is to connect map-based facts with ecological processes and international environmental governance.

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Educational Disclaimer: These are independently prepared Civil Service Gurukul study notes for UPSC and State PCS preparation, using publicly available information up to 21 October 2026. The policy analysis is educational and not a statement of a completed implementation of every proposed marine conservation initiative.

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