

UPSC CURRENT AFFAIRS NOTES 10-03-2024

Gold Nanoparticles

Experts recently said that Gold nanoparticles used in medicines and beauty products may not only protect the skin from external infestations but can also help arrest the effects of ageing.



About Gold Nanoparticles

Gold nanoparticles (AuNPs) are small gold particles with a diameter of 1 to 100 nm.

Once dispersed in water, AuNPs are also known as colloidal gold.

These are also called as 'gold bhasma,'

Properties

Spherical AuNPs possess useful attributes such as size- and shape-related optoelectronic properties, large surface-to-volume ratio, excellent biocompatibility, and low toxicity.

Important physical properties of AuNPs include surface plasmon resonance (SPR) and the ability to quench fluorescence.

Spherical AuNPs exhibit a range of colors (e.g., brown, orange, red and purple) in aqueous solution as the core size increases from 1 to 100 nm.



These are not – toxic, not phototoxic, not genotoxic, non-irritant and non-sensitizing

Applications

Electronics: Gold nanoparticles are designed for use as conductors from printable inks to electronic chips. Nanoscale gold nanoparticles are being used to connect resistors, conductors, and other elements of an electronic chip.

Photodynamic Therapy: Near-IR absorbing gold nanoparticles produce heat when excited by light at wavelengths from 700 to 800 nm. This enables these nanoparticles to eradicate targeted tumors.

Therapeutic Agent Delivery: Therapeutic agents can also be coated onto the surface of gold nanoparticles. The large surface area-to-volume ratio of gold nanoparticles enables their surface to be coated with hundreds of molecules

Sensors – These are used in a variety of sensors. For example, a colorimetric sensor based on gold nanoparticles can identify if foods are suitable for consumption.

Diagnostics: These are also used to detect biomarkers in the diagnosis of heart diseases, cancers, and infectious agents.

IRIS AI Robot

A groundbreaking development in education has emerged from Kerala's Thiruvananthapuram, where a school has introduced India's first AI teacher robot, Iris.



It is powered by Robotics and Generative AI technologies, Iris boasts a dedicated Intel processor and coprocessor for seamless performance.

Its Android App interface allows users to control and interact with the robot, ensuring a personalized learning experience.

It is not just a passive presence in the classroom but a dynamic voice assistant and interactive learning tool.

It acts as an AI voice-controlled assistant, responding to user queries, providing explanations, and delivering educational content.

It engages users in interactive learning experiences through personalized content generation, quizzes, and interactive activities.

Equipped with a 4-wheel chassis, Iris can move freely within its environment, facilitating interaction with users and navigating through learning spaces.

Its hands, featuring 5 DoF each, enable Iris to manipulate objects, perform demonstrations, and engage in hands-on learning activities.

The robot can teach subjects from nursery to Class 12.

The robot currently speaks three languages - English, Hindi and Malayalam.

It is created by Maker Labs.

Generative AI refers to deep-learning models that can take raw data and “learn” to generate statistically probable outputs when prompted. Generative AI is powered by foundation models (large AI models) that can multi-task and

perform out-of-the-box tasks, including summarization, Q&A, classification, and more.

BIODIVERSITY BEYOND NATIONAL JURISDICTION (BBNJ)



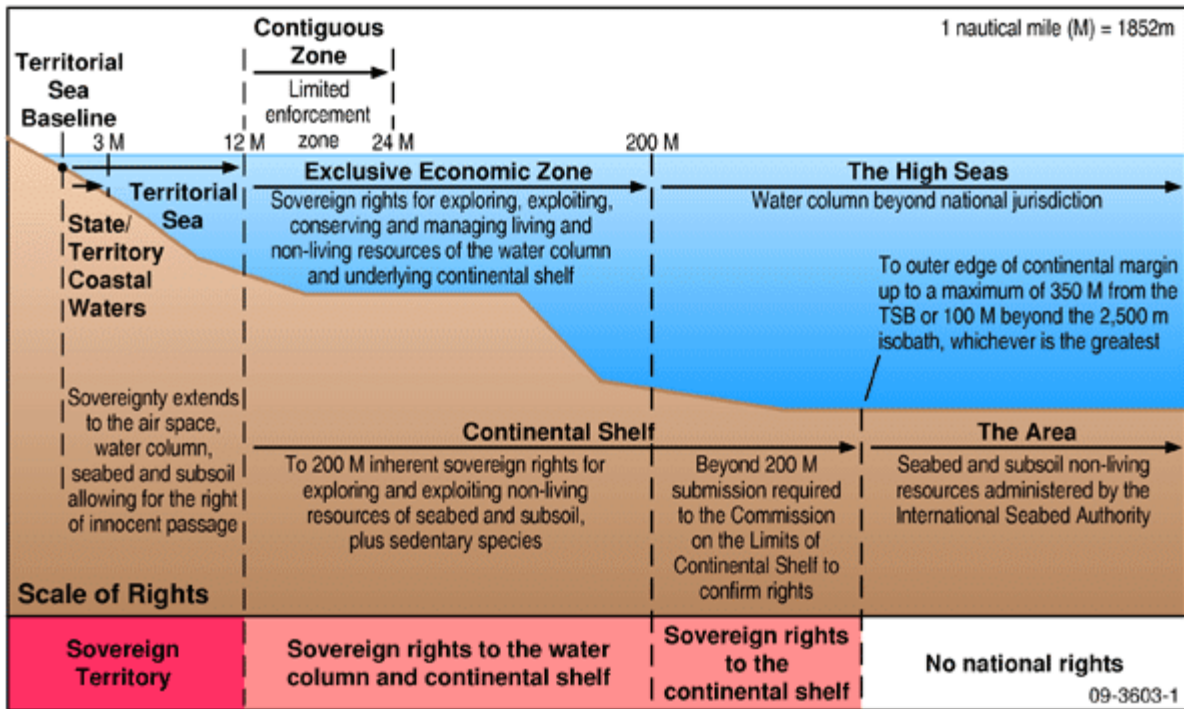
Belgium hosted the Blue Leaders High-Level Event on Biodiversity Beyond National Jurisdiction (BBNJ) to encourage governments to ratify a new convention to safeguard the high seas from pollution, climate change, and overfishing.

Details

On March 7, 2024, the Blue Leaders High-Level Event on Biodiversity Beyond National Jurisdiction (BBNJ) was held in Belgium. The conference attempted to influence nations to sign the BBNJ Treaty, which addresses issues like pollution, climate change, and overfishing on the high seas.

In March 2023, nations signed the BBNJ Treaty, which **aims to conserve and sustainably use marine biological diversity outside national authority**. The treaty focuses on challenges that extend **beyond 200 nautical miles from coastal countries**.

Participants at the Blue Leaders Event supported using the United Nations Ocean Conference in 2025 to bring the BBNJ Treaty into action.



About BBNJ Treaty

The BBNJ Treaty, or Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction, is a significant international agreement which was **adopted in March 2023**.

It bridges a major gap in international law by **establishing a legal framework for nations to collaborate on the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction, which cover more than two-thirds of the world's oceans.**

The treaty seeks to address increasing threats to the ecosystems of the high seas, such as pollution, climate change, and overfishing.

By establishing a framework for international collaboration, the BBNJ Treaty has the potential to significantly enhance human activity at sea and ensure the long-term health of marine ecosystems.

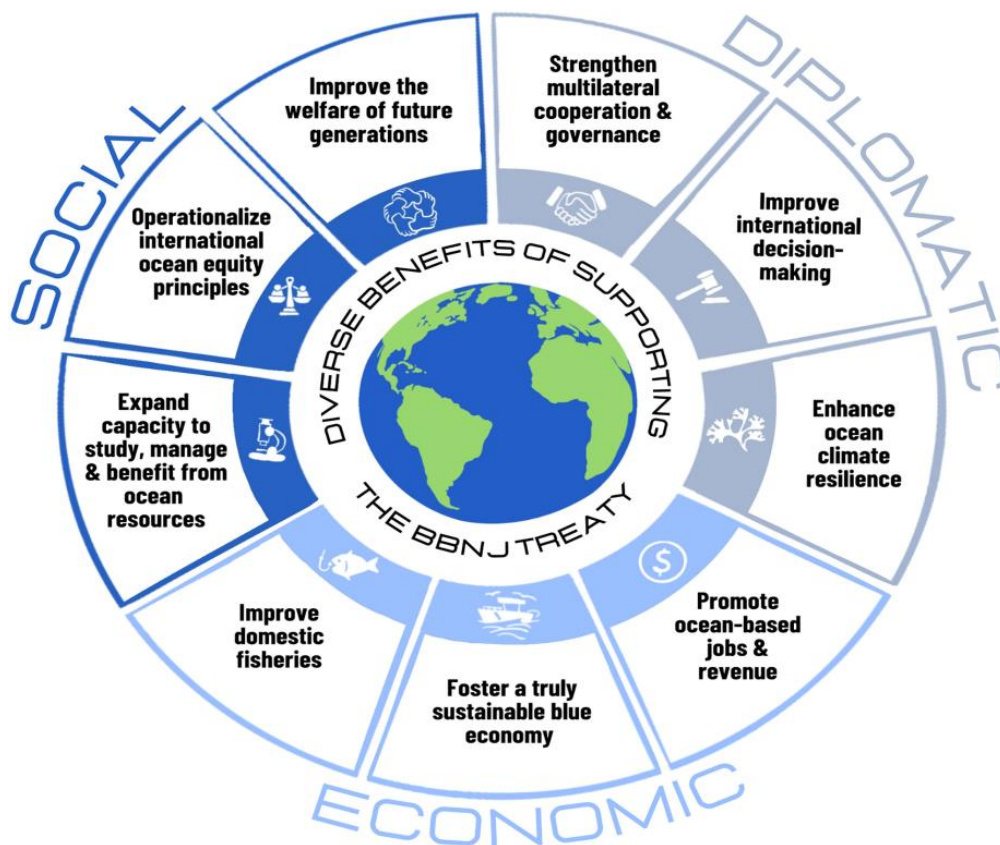
To enter into force and become legally binding, the BBNJ Treaty must be ratified by 60 countries. As of March 2024, **88 countries have signed the treaty, but only two have ratified it (Chile and Palau).** There are concerns that it will take a long time to get the 60 ratifications required for the treaty to officially come into effect.

Goals of the BBNJ Treaty

To increase protected areas on the high seas (now only 1.44%). This is important for maintaining healthy marine ecosystems and the biodiversity they support. Marine protected areas (MPAs) can help recover fish stocks, protect endangered species, and conserve vital habitats.

To promote a fair distribution of income from marine genetic resources (MGRs). Marine genetic resources (MGRs) are any genetic material obtained from the marine environment with potential applications in medicine, industry, and agriculture. The Treaty seeks to ensure that profits from the use of MGRs are shared fairly and equitably among all countries.

To develop guidelines for environmental impact assessments (EIAs) for activities such as deep-sea mining. EIAs are critical for ensuring that human activities at sea are done sustainably. The Treaty will require governments to conduct EIAs before approving activities that may harm the maritime environment.



Key Challenges

- The treaty must be ratified by 60 countries before it may enter into force. This may take time because **some countries are hesitant to agree to the treaty's obligations.**
- Even after ratification, **governments must figure out how the treaty will operate in practice.** This includes developing a decision-making process, forming a scientific body to provide recommendations, and securing funds to support the treaty's implementation.
- The current level of protection for marine regions on the high seas is far too low. The BBNJ Treaty provides a framework for establishing additional marine protected areas, but **broad international collaboration is required to meet the ambitious objective of safeguarding 30% of the world's oceans by 2030.**
- To ensure the effectiveness of EIAs, **significant scientific support is required, which may need the use of additional resources.** Effective EIAs are built on a solid scientific foundation. However, the **BBNJ Treaty does not currently provide for direct funding of scientific research to support EIA processes.** This could be a possible gap that must be filled to ensure the effectiveness of EIAs.

India's Stand on the BBNJ Treaty

- **India has not yet ratified the treaty but has advocated for its implementation at the G20 meeting in 2023.** This approach indicates that India recognizes the significance of the BBNJ Treaty and the objectives it seeks to achieve.
- India's huge coastline and rising maritime interests make its involvement critical for the BBNJ Treaty to achieve widespread international support and effectively implement its provisions.
- If India signs the treaty, it will send a powerful signal to other countries in the region and around the world, encouraging them to do the same. This has the potential to significantly accelerate the ratification process and bring the treaty into force sooner.
- India's expertise in marine science and technology could be useful in creating and implementing BBNJ Treaty regulations and best practices.
- The BBNJ Treaty is an important step in protecting the high seas, but more effort needs to be made to ensure its effectiveness and immediate implementation. Through strong international cooperation, the BBNJ Treaty



has the potential to make a significant contribution to the ocean's health and sustainability.

Tweaks in Prime Minister's Rooftop Solar 'free electricity' scheme

PM-Surya Ghar Muft Bijli Yojna Update: Key Points

The scheme, initially planned to fully subsidize 1-3 KW solar systems for 1 crore households, will now only contribute up to 60% of the costs.

Interested households will have to pay the balance amount, with a minimum of ₹20,000, depending on the system's capacity. This can be offset by a low-interest, collateral-free loan.

Eligibility requires a suitable roof and an existing grid connection, and consumers must pay for all net power consumed via the grid.

The scheme aims to reduce electricity bills, with a payback period of 3-7 years. Excess solar power can be fed back into the grid through net-metering, potentially leading to reduced bills or even earnings.

Public sector units will reach out to eligible households, install rooftop solar systems for free, and repay the installation cost from the electricity savings.

The scheme aims to generate up to 300 units of free electricity per month, translating to ₹15,000-18,000 in annual benefits for households.

Focus has shifted towards individuals taking loans and getting installations, aiming for greater ownership and freedom of choice.

The subsidy on rooftop solar has doubled, and service delivery is expected to improve, with a convenient online application process.

12 public sector banks will offer collateral-free loans at 1% above the prevailing RBI repo rate for viable roof and grid-connected installations.

The target is to install rooftop solar systems in 1 crore houses in three years, with Gujarat already underway in installations.

This initiative is expected to boost domestic manufacturing capacity as only Indian-made solar panels are eligible for the subsidy.

Livestock and Livestock Products (Importation and Exportation) Bill, 2023



THE CENTRE has withdrawn the draft Livestock and Livestock Products (Importation and Exportation) Bill, 2023, which aimed at regulating import and export of animals, including dogs and cats, and proposed to treat livestock as a “commodity”, following criticism from animal welfare activists.

Introduction of the Draft Bill:

The draft Livestock and Livestock Products (Importation & Exportation) Bill, 2023, was placed before the public for feedback on June 7. It aimed to withdraw the Live-stock Importation Act 1898, which had become outdated and needed a widening of scope.

Objectives:

The Bill intended to frame measures for the regulation of importation, promotion, and development of exports of livestock and live-stock products. It also aimed to frame sanitary measures for livestock and livestock products susceptible to transboundary and exotic infectious or contagious diseases affecting animals and/or human health.

Broad Provisions:

Livestock Classification: The Bill classified livestock as a "commodity" subject to regulation. It included equines, bovines, caprines, ovines, swines, canines, felines, avian, laboratory animals, and aquatic animals.

Empowerment: The Bill empowered the Centre to restrict or prohibit the import of any livestock or related products that could transmit diseases. It also



empowered the Centre to promote and develop the export of livestock and livestock products.

Differences with Existing Law:

Scope of Livestock: The Bill significantly widened the scope of livestock that can be traded, including cats and dogs, which was not allowed under the existing law.

State Regulation: The Bill clipped the power of states to regulate some areas in the livestock trade ecosystem, transferring these powers to the Union government.

Criticism and Repeal:

Criticism: The Bill faced criticism for its perceived commodification of animals for export, potential abuse of animals, and negative impacts on animal welfare and biodiversity.

Repeal: Due to widespread criticism and concerns expressed by various groups, including animal rights activists and Jain outfits, the government decided to withdraw the Bill.

Section 319 of the CrPC

The Supreme Court clarified that the test for allowing an application under Section 319 of the CrPC is higher than establishing a prima facie case but falls short of evidence that, if unchallenged, would result in a conviction.

Section 319

Section 319 grants the court the power to summon, detain, or arrest a person, other than the accused, if it appears from the evidence that they have committed the offense.

Nature and Scope

The Supreme Court, as the Federal Court of India, upholds the constitutional separation of powers between the center and state governments.

It has primary jurisdiction over disputes between the Union and states or between states, ensuring legal rights are upheld and disputes resolved effectively.

Dispute Resolution



The section deals with the power of the court to proceed against other persons appearing to be guilty of an offense for which the accused is prosecuted.

Additional Prosecution

It allows the court to try a person together with the accused if evidence suggests their involvement in the offense.

This ensures justice and considers the convenience of both parties by joining the newly added accused in the same case.

Objective

Section 319 ensures that the guilty are not spared from justice while protecting the rights of the innocent, aligning with the principle of double jeopardy.

Nature of Power

The power under Section 319 is extraordinary and must be exercised judiciously, only when strong and cogent evidence is available against a person.

Essentials

The court must be satisfied by the evidence that a person other than the accused has committed the offense.

Such person must be tried together with the accused, and the proceedings against him must start de novo.

Exercise of Power

The power can be exercised by the court suo moto or upon application by any person, including the accused, at any stage of the trial or inquiry.

Limitations

The power cannot be exercised if the case is at the stage of Section 207 to Section 209 of the CrPC.

A person who has been discharged cannot be summoned under Section 319, except under certain circumstances.

Case Laws

The Supreme Court has laid down guidelines regarding the exercise of powers under Section 319, emphasizing the need for strong evidence against the newly accused.



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Section 319 of the CrPC is a crucial tool in ensuring that justice is served by allowing the court to include additional accused in a trial based on compelling evidence, thus maintaining a balance between the rights of the accused and the interests of justice.