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Committee: Economic and Social Council (ECOSOC)
Agenda Item: Environmental and Geopolitical Impacts of Coastal Land Reclamation and Artificial Island Construction
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Introduction

Coastal land reclamation and the construction of artificial islands have surged in recent decades as urban populations and economies grow. In many densely populated regions – from Asia to the

Middle East – countries are creating new land for cities, ports, and tourism facilities. For example, Dubai's Palm Jumeirah archipelago (satellite image below) epitomizes this trend. Such projects promise economic gain (expanded real estate, infrastructure, and ports) but have also raised major environmental and security concerns. Experts warn that while reclaimed land can ease land shortages, it often comes at "significant cost to our ecosystem". (you may look at China's Island Building in the South China Sea: Damage to the Marine Environment, Implications, and International Law, 2016) Many recent disputes (notably in the South China Sea) are directly linked to artificial-island projects, highlighting the urgent need to understand both their ecological footprint and geopolitical fallout. (you may also look at Barnes & Hu island building in the South China Seas, 2016)

Definition of Significant Terms

Land Reclamation

Land reclamation occurs when parts of the sea or coastal areas are filled up by sand, cement or soil. This action is often done due to limited land space to build cities or roads.

Artificial Islands

Artificial pieces of land made in the ocean or the sea are called "Artificial Islands", and they are used most commonly for tourism, industry and housing purposes.

Sea Borders

Just like land borders, the sea also has its own boundaries that show which country has power over certain areas. They are significantly important as they help protect national security and provide control during wars.

Sea Laws

The international rules that show how countries should use and share their oceans are called Sea Laws. These laws are just as important as a country's national laws because they help to manage resource extraction, legality of actions taken within sea borders and validity of artificial islands.

Military Use

A lot of bases, airstrips, and surveillance stations are built onto coasts and artificial islands to increase a country's military presence and influence.

Rising Sea Levels

This is the gradual increase in the oceans water height caused by climate change. This change causes a big risk for reclaimed land as they are often low-lying and easily flooded.

Coast Damage

Coast damage occurs when shorelines are changed and weakened due to human activities. Just like land reclamation interrupting natural sand and water movement and artificial islands causing change in wave movement that leads to shores being damaged.

Ocean Life Damage

This term refers to the damage that happens to marine life due to cloudy water, pollution and construction

Detailed Background of the Issue

Historical and Contemporary Trends

Artificial island projects are not new, but their scale and pace have grown dramatically. Human-made islands date back millennia (e.g., ancient Egyptian "Islands of the Dead" or Aztec chinampa farms). Modern examples span continents: the 1960s Palm Islands of Dubai; the 1990s new Hong Kong airport (built on reclaimed land); Singapore's expanded coastline; and infrastructure projects like the Zuiderzee Polders in the Netherlands. Since the 1980s, hundreds of square kilometers have been added in Asia alone. (you may also look at New Land Around Shanghai, 2017) One survey of 16 global megacities found Shanghai increased its land by over 580 km² in recent decades – more than any other city. (the survey mentioned Sengupta et al., 2018, pp. 229-238) Key contemporary projects include Dubai's resort islands and world-archipelagos, New Caledonia's coastal extensions, Singapore's port expansions, and Indonesia's planned new capital island. In some low-lying nations (e.g., the Maldives, Kiribati), reclamation is also viewed as a form of climate adaptation – though this remains controversial. (You may look at UN Expert: Maldives Stuck Between a Rock and a Hard Place on Climate Change Issue, 2024)

Major Drivers

Rapid urbanization and economic development are the primary motives. Coastal cities face land shortages, so expanding outward is seen as a solution. Tourism and real estate create huge returns on land (as in Dubai or Bahrain). Strategic competition also drives reclamation: for example, rival states in the South China Sea are enlarging features to extend their military reach and maritime claims.

Scale of Construction

Scientists estimate that across major Asian cities alone, over 700 km² of new land was built from 1988 to 2018. Shanghai, Singapore, and Incheon (Korea) together produced nearly 10% of global new coastal land in that period. (You may also look at gaining or losing ground?) Plans remain extensive; one study found that Malaysia's Penang Island could see ~10% of its area reclaimed if all projects proceed, with "inevitable negative effects" on coastal habitats. (You may look at the development of a 3D numerical model to investigate land reclamation impact, Rahman et al., 2020) In short, hundreds of projects worldwide mean that on many coastlines, "we are constructing more islands than ever before". (you may look at Chinese Land Reclamation in the South China Sea: Implications and Policy Options, n.d.)

Environmental Impacts

Land reclamation can profoundly damage marine and coastal ecosystems. Dredging and filling bury seabed habitats, destroy coral reefs, mangroves, and wetlands, and release sediment and pollutants into the water. For example, analyses of projects in Malaysia, Qatar, and elsewhere

document loss of mangrove forests and seagrass beds as reclaimed land expands. (You may read the study Coastal Macroinvertebrate Study in Penang Island, Malaysia, Yin & Kwang, 2016) A global review notes that replacing salt marshes and tidal flats with development "represents a major risk to the sustainability of coastal and marine ecosystems". (You may look at Threats to Marsh Resources and Mitigation, 2015) Observations confirm this: divers in the Maldives describe dredged channels as "like a cemetery" for corals, and scientists report many reefs dying when smothered by reclamation sediments.

Habitat Loss

Important nursery and feeding grounds are lost. For instance, dredging for Dubai's Palm Islands choked local reefs with silt and altered sediment flows. Similarly, China's dredges in the Spratly Islands have literally flattened what were once living coral atolls. Global studies estimate that tens of thousands of hectares of mangroves and tidal wetlands have been lost in Asia alone due to reclamation, along with their biodiversity. (You may look at Southeast Asia's mangroves under threat due to land conversion for cultivation, 2016)

Water Quality and Erosion

Filling operations increase turbidity and change wave patterns. Nearby beaches often suffer accelerated erosion or altered currents. In one case, Hong Kong scientists observed dramatic changes in the coastline after island-building. (Study mentioned Spatial evolution of shorelines in Shenzhen Bay et al., 2025) Fine sediments smother filter-feeders and reduce light penetration, undermining reef health.

Flood and Climate Risks

Ironically, reclaimed land is often more vulnerable to flooding. Reclaimed areas are typically low and may subside (sink) as sediments compact. One study found subsidence rates over 25 cm per year at Korea's Incheon Airport island. (you may also look at InSAR-based investigation of ground Park et al., 2024) Sea-level rise compounds this: reclaimed strips offer no natural buffer to storm surges. The IPCC cautions that "land reclamation" as an adaptation merely delays impacts, warning that only retreat or halting development can truly remove risk. In other words, adding land seaward provides temporary space but creates "virtually certain… ecosystem losses" in the long run. (you may look at Cross-Chapter Paper 2: Cities and Settlements by the Sea | Climate Change 2022: Impacts, Adaptation and Vulnerability, 2022)

Biodiversity and Carbon

Coastal wetlands like mangroves store "blue carbon"; their destruction releases greenhouse gases and reduces nature's ability to sequester carbon. Reclamation thus conflicts with UN goals to conserve marine life (SDG14) and mitigate climate change. Numerous species—from coastal fish to migratory birds—lose habitat. Observers note that repeated reclamation may tip the balance toward ecological collapse in busy coasts, undermining fisheries and water quality. (You

may look at Impact of Artificial Islands and Reefs on Water Quality in Jinmeng Bay, China, 2023)

Geopolitical Implications

Artificial islands have become flashpoints in international politics. The most prominent example is the South China Sea: China has converted several reefs into fully militarized outposts with airstrips, radars, and missile systems. Satellite imagery confirms rapid expansion: in just a few years, China's Spratly Islands grew by millions of square meters of land. (You can see on China's Island Building in the South China Sea: Damage to the Marine Environment, Implications, and International Law, 2016) These land gains attempt to solidify territorial claims, straining relations with the Philippines, Vietnam, Malaysia, and others. International law, however, draws clear lines: under UNCLOS, an island must be "naturally formed" to generate an Exclusive Economic Zone. Artificial islands are legally distinct and do not confer new EEZs. In 2016, a tribunal ruled that China's reclaimed features could not be claimed as sovereign territory – a decision Beijing rejects, leaving a governance gap. (You may look at the reference, Beijing rejects tribunal's ruling in South China Sea case, 2016)

Sovereignty and EEZs

Because they lack natural formation, dredged islands enjoy only territorial sea rights, not whole EEZ or continental shelf claims. This has big stakes: countries could, in theory, expand their maritime boundaries. The Permanent Court of Arbitration (2016) explicitly affirmed that artificial expansion does not alter the legal status of reefs. (You may look at it. Permanent Court of Arbitration Rejects China's Sovereignty Claims in South China Sea (July 12, 2016), 2016). Still, the very act of reclamation can create de facto leverage, prompting neighbors to protest or seek international guarantees for free navigation.

Strategic Competition

Beyond Asia, island projects have a security dimension. For instance, Turkey's proposed Istanbul Canal (artificial sea link) aims to shift the maritime balance in the Bosphorus. (You may look at the Istanbul Canal in the system of international relations, Grytsyshen & Shevchuk, 2025) In the Gulf, Iran and the UAE watch each other's island-building for naval advantage. (You may look at GCC condemns Iranian settlements on occupied UAE islands, 2025) At the same time, some neutral projects (e.g., Denmark's energy islands in the North Sea) are planned for civilian purposes but still require careful diplomatic coordination. (You may look at Denmark's decision to construct the world's first wind energy hub as an artificial island in the North Sea, 2021)

Social and Economic Consequences

Coastal reclamation often involves trade-offs between economic gains and social costs. New land can relieve urban land scarcity – creating neighborhoods, airports, or tourist resorts that generate jobs and investment. For example, reclaimed areas have hosted airports (Hong Kong, Singapore, Dubai) and expanded city centers to accommodate millions. However, benefits are uneven.

Low-income communities often bear the brunt: fishermen lose traditional fishing grounds, and the urban poor may be displaced for reclamation projects. In the Philippines, activists report that massive reclamation (including a planned $15 billion airport in Manila Bay) "destroyed climate-buffering mangroves and uprooted hundreds of families". (You may look around the joint statement on suspension of reclamation projects in Manila Bay, Philippines, 2023) Local advocates warn that "land reclamation activities…were devastating people's livelihoods and the surrounding environment".

Displacement and Conflict:

Dozens of coastal communities have protested projects that threaten their homes and fisheries. In some cases (e.g., Manila Bay, Indonesia's Jakarta Bay), opposition leaders face harassment or violence. The recent abduction of two Filipino environmental advocates highlighted the extreme risks: they were defending Manila Bay fishers against reclamation when they disappeared. (You may look at Abduction of Jonila Castro and Jhed Tamano, 2023) Such incidents underscore how reclamation can inflame local tensions and human rights concerns.

Economic Imperatives and Risks

Developers tout artificial islands as engines for growth, yet projects can run over budget or fail to deliver expected returns. Some reclaimed zones remain underused (so-called "white elephant" projects), especially if environmental issues stall construction. (The marine environmental impacts of artificial island construction in Dubai, Salahuddin, 2006) Moreover, reclaimed cities must pay for costly maintenance: building sea walls, pumping out water, and continually countering subsidence. (you may look at sea level rise and coastal wetlands, Blankespoor et al., 2014) Ultimately, the promised economic gains must be weighed against long-term costs to infrastructure and nature.

Governance, Regulation and Responses

Recognizing these impacts, experts and some governments call for stricter oversight. Environmental Impact Assessments (EIA) are theoretically required for large projects, but quality varies. (You may look at A review of the quality of environmental impact statements with a focus on urban projects from Romania, 2022) Qatar, for instance, conducted a comprehensive EIA for its new *Qetaifan Island North* project, modeling wave patterns and water quality to meet international standards. Many reclamations in practice have gone ahead with minimal oversight, however, leading NGOs and scientists to demand better regulation. (you may look at Environmental impacts of dredging and land reclamation at Abu Qir Bay, Egypt, 2012, pp. 1-15)

At the international level, frameworks like UNCLOS provide legal guidance (see above), but no global body controls reclamation per se. Some UN agencies (e.g., UNEP and UNESCO) highlight the need to protect coastal wetlands and biodiversity, in line with SDG 14 ("Life Below Water"). ECOSOC and related UN forums have on occasion discussed land reclamation under coastal development agendas, emphasizing sustainable use of marine resources. (you may look at SDG 14 | Sustainable Development Goals, n.d.) Nevertheless, enforcement remains weak.

Experts stress integrated coastal zone management (including the maintenance of mangrove forests and natural buffers) and innovative solutions, such as floating structures, as alternatives.

In summary, coastal reclamation is a double-edged sword: it can provide land for development but often at the irreversible expense of ecosystems and regional stability. The balance of these factors is now a core concern for bodies like ECOSOC, as governments seek to harness development while honoring environmental commitments and maritime peace.

Timeline of Key Events

Date	Description of Event
1954-1997	After the 1953 North Sea Flood, Netherlands started the Delta Works by building dams, barriers and reclaimed land in order to protect the country from further floods.
1960's - Present	Singapore started its Land Reclamation Expansion to support economical and population growth. Although very successful economically it caused environmental damage and political tension.
10 December 1982	UNCLOS created international sea laws that define sea borders, and changed how countries legally manage oceans and maritime disputes
1991 - 2010	South Korea led the Saemangeum Reclamation Project and caused wetland used by migratory birds to be destroyed and created a global environmental criticism
2001 - 2006	Dubai Palm Islands were luxurious artificial islands built to attract tourism. While economically successful, they caused coastal erosion, disrupted currents, and damaged marine ecosystems.
2008 - Present	The Eko Atlantic City was built in Nigeria to protect Lagos but increased flood risks for nearby poorer communities.
2013 - Present	Several artificial islands were built on reefs mainly by China. This caused severe coral reef damage, increased geopolitical tensions and military presence in the region.

Major Countries and Organizations Involved

China:

China is one of the leading countries when it comes to artificial island construction. Mainly in the South China Sea, a lot of islands have been constructed and used to strengthen territorial claims and military control over key shipment routes. Although these actions increased China's influence in the region, it caused serious environmental damage, including the destruction of coral reefs and marine habitats, while also raising tension with neighboring countries.

United Arab Emirates (UAE):

The UAE has built a lot of artificial islands such as Palm Islands in order to promote tourism and economic growth. While these projects did improve global visibility and succeeded as an investment, it damaged ecosystems and increased erosion in nearby areas.

Singapore:

Singapore relies on land reclamation to create space for housing and industry due to its limited land area. This has supported strong economic growth and stability but also led to environmental impacts and geopolitical tension with neighboring countries on sand mining and shared marine environments.

Netherlands:

In order to protect the country from flooding after the North Sea Flood happened in 1953, The Netherlands has a long history on land reclamation and coastal engineering. These projects that were implemented saved millions of lives and served as a model for climate adaptation.

South Korea:

Known for construction one of histories biggest land reclamation, South Korea carried out large-scale land reclamation projects, such as Saemangeum, to create land for development and agriculture. While this increased usable land, it caused major wetland loss and harm to biodiversity, drawing international environmental criticism.

Nigeria:

Nigeria has developed Eko Atlantic City in order to protect Lagos from coastal erosion and create a modern economic center. Although the project supported investment, and coastal defense, it led to the increase of flood risks to nearby communities.

Previous Attempts to Solve the Issue

In the past, land reclamation in coastal areas received even less international regulation and monitoring and were mainly dealt with in national authority and control as purely domestic matters. Initial approaches involved purely technical solutions in the way of seawalls, sediment

(Particles in seaside areas) control, and simple environmental impact assessment to ensure that negative effects on the environment were minimized. However, such assessments were sometimes deficient, particularly in subject areas where strategic concerns surpass environmental-issues.

On an international level, efforts such as those found in the United Nations Convention on the Law of the Sea (UNCLOS) were made to govern global actions related to maritime zones by outlining states' rights and responsibilities. Although a general principle was created for protecting the marine environment in relation to this topic in UNCLOS, it did not specifically address the issue of massive artificial island creation.

Some nations, within ecologically sensitive areas, established Marine Protected Areas as an offsetting measure for the recovered land. Generally, the attempt at a former solution has exaggerated the lack of regulative frameworks at the global level and the prominence of geostrategic concerns above the guidelines of sustainability.

Alternative Solutions

For the avoidance of the deficiencies and weaknesses of existing methods, it has been recommended that new measures in the future be more focused on better international cooperation between Member States and legal frameworks. Another solution in this area may be the establishment of international guidance on the matter of coastal land reclamation or the construction of artificial islands.

Another critical solution is to improve regional cooperation mechanisms, especially within maritime regions that are sensitive to geopolitics. Collaboration on environmental observations and data sharing, as well as confidence-building schemes, can help soften tensions between nations and guarantee the joint mitigation of environmental harm.When we consider that this topic is highly sensitive and not related to economical profits, diplomatically and ideologically rivals and opposed countries might be convinced to work together on that specific topic.

Further, the incorporation of nature-based solutions would be a viable alternative to land reclamation on a large scale. This may include, among others, the restoration of wetlands, the use of floats .The government can also think of a strict obligation regime whenever there is damage to the environment. The construction of artificial islands should be restricted to non-sensitive areas.

Eventually, balancing economic development, environmental protection, and geopolitical stability requires a shift from reactive mitigation toward preventive and cooperative governance.

By combining legal clarity, scientific oversight, and diplomatic engagement, states can reduce the environmental and geopolitical risks associated with coastal land reclamation and artificial island construction. So everything is dependent on cooperation between Member States.
This section should outline alternative measures that can be taken to solve the issue.

Useful Links

United Nations - Law of the Sea (UNCLOS)
https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

United Nations Environmental Programme (UNEP)
https://www.unep.org/

List of International Maritime Organization Conventions
https://www.imo.org/en/about/conventions/pages/listofconventions.aspx

Background and Future expectations on UNCLOS
https://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm

UNESCO - Intergovernmental Oceanographic Commision
https://www.ioc.unesco.org/en

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United Nations Convention on the Law of the Sea (UNCLOS)
–https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf
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Artificial Islands and International Law – https://legal.un.org/ilc/summaries/8_1.shtml

Land Reclamation and Coastal Management – World Bank
https://www.worldbank.org/en/topic/environment/brief/coastal-zone-management

Historical background on UNCLOS
https://www.un.org/depts/los/convention_agreements/convention_historical_perspective.htm#Historical%20Perspective

Maritime Education - Ecosystem Damage from Land Reclamation and Artificial Islands: A Scientific and Maritime Perspective
https://maritimeducation.com/ecosystem-damage-from-land-reclamation-and-artificial-islands-a-scientific-and-maritime-perspective/