FORUM: United Nations Office for Disaster Risk Reduction (UNDRR)
QUESTION OF: Establishing international measures for the protection of Sinking States in the Pacific
STUDENT OFFICER: Nephelie Stavrou
POSITION: Deputy President

INTRODUCTION

The United Nations Office for Disaster Risk Reduction (UNDRR) works for a world where disaster risks no longer threaten the well-being of people and the future of the planet, while promoting the strengthening of resilience through multi-hazard disaster risk management. Sea-level change is a change to the height of sea level, both globally and locally at seasonal, annual, or longer time scales due to: a change in ocean volume as a result of a change in the mass of water in the ocean (melt of glaciers and ice sheets), to changes in ocean volume as a result of changes in ocean water density (expansion under warmer conditions), to changes in the shape of the ocean basins and to local subsidence or uplift of the land. Sea-level rise and climate change have devastating impacts on small island sinking states and low-lying islands which are at risk of submergence of the entirety of their territory. Oceans are the planet's largest carbon sink, which means they absorb around 90% of the heat generated by greenhouse gases and 30% of the carbon emissions, the latter is known as blue carbon. It therefore constitutes a fact that climate change and global warming exacerbates the situation; the impact is manifold. Lots of countries are affected by the concern, since not only directly threatened states face the consequences. Apart from the environment, the economy, the relations of states, the undermining of the principles of the sovereign equality of states and the right to self-determination, the exacerbation of humanitarian crises, migration as well as the disruption of the international legal order and the fundamental human rights are also affected to a great extent. The issue of the sinking state constitutes one of the most pressing global issues, since sea level rise has reached a point of irreversible melting, yet little can be done to effectively tackle the issue.

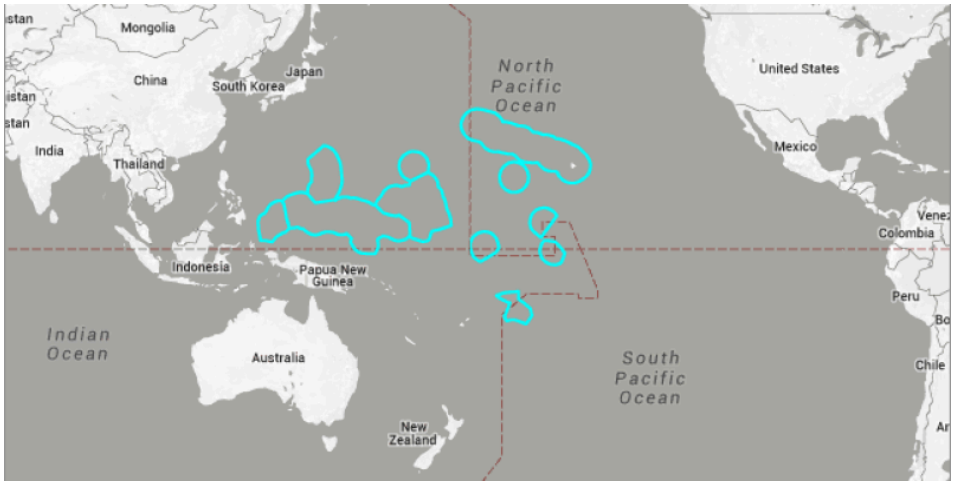

Figure 1 - Sinking states in the pacific[1]

DEFINITION OF KEY TERMS

National territory

All the surface area, subsurface, waters and atmosphere comprising the territory of the country and its exclusive economic zone.[2]

Sinking state

Low-lying island states that are at risk of the submergence of the entirety of their territory due to sea level rise.[3]

Sea level rise

[1] Parsons, C. (2023, November 3). The Pacific Islands: The front line in the battle against climate change. *NSF - National Science Foundation*. https://new.nsf.gov/science-matters/pacific-islands-front-line-battle-against-climate

[2] *National Territory Definition | Law Insider*. (n.d.). Law Insider. https://www.lawinsider.com/dictionary/national-territory#:~:text=National%20Territory%20means%20with%20respect,with%20internal%20and%20international%20law.

[3] Stewart, M. (2023). Cascading consequences of sinking states. *SSRN Electronic Journal*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4321214#:~:text=The%20cascading%20consequences%20of%20sinking%20states%20include%20undermining%20of%20the,humanitarian%20crises%20related%20to%20climate

A combination of meltwater from glaciers and ice sheets and thermal expansion of seawater as it warms.[4]

Submergence

Sinking until covered completely with water.[5]

High tides

The time when the sea or a river reaches its highest level and comes furthest up the beach or the bank.[6]

''No-Wake'' Zone

An area within which vessels are required to travel at idling speed – slow speed that creates no appreciable wake.[7]

Shorelines

The region where the water bodies such as lakes, seas, and oceans meet the land.[8]

Maritime rights

Maritime rights constitute the legal rights of sunken states. They refer to the sovereignty over the wreck even in foreign waters and have the authority to manage or authorise salvage operations, ensuring that the wreck is treated according to its laws and international conventions.

Inundation

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[4] *Climate change: global Sea level*. (2022, April 19). NOAA Climate.gov. http://www.climate.gov/news-features/understanding-climate/highlights-state-climate-2022#:~:text=Global%20mean%20sea%20level%20was,the%20ocean%20from%201993%2D2022.

[5] "Submergence." *Vocabulary.com Dictionary,* Vocabulary.com, Accessed 15 Aug. 2024. https://www.vocabulary.com/dictionary/submergence#:~:text=Definitions%20of%20submergence,types%3A%20dip

[6] *high tide*. (2024 https://dictionary.cambridge.org/dictionary/english/high-tide#

[7] *No wake Zones | NC Wildlife*. (n.d.). https://www.ncwildlife.org/boating/laws-safety/no-wake-zones#:~:text=A%20%E2%80%9CNo%20Wake%20Zone%E2%80%9D%20is,that%20creates%20no%20appreciable%20wake.

[8] *No wake Zones | NC Wildlife*. (n.d.). https://www.ncwildlife.org/boating/laws-safety/no-wake-zones#:~:text=A%20%E2%80%9CNo%20Wake%20Zone%E2%80%9D%20is,that%20creates%20no%20appreciable%20wake.

Inundation is a synonym of flooding.

Subsidence

Sinking of the ground because of underground material movement.[9]

Levees

Levees are naturally occurring ridge structures that form next to the bank of a river or be an artificially constructed fill or wall that regulates water

BACKGROUND INFORMATION

International response

The international community has taken up adaptation techniques to anticipate climate risk to sunken states. Flood barriers were built to protect infrastructure, including levees, dikes, and seawalls. Another strategy is relocating facilities to higher elevations, which would reduce risks from coastal flooding and exposure as a result of coastal erosion or wetland loss. Another international measure adopted is the repair of the retrofits and facilities. Implement saltwater intrusion barriers and aquifer recharge. Sea level rise causes saltwater to intrude into coastal aquifers, resulting in substantially higher treatment costs. The injection of fresh water into aquifers can help to act as a barrier, while intrusion recharges groundwater resources. Other global strategies examples are the preservation of the ecosystem and the biodiversity as well as the maintenance of water quality and availability.

Maritime rights of sunken states

States threatened with inundation are at risk of losing their claim to their maritime zones and associated legal rights. We consider whether the international climate change regime has provisions that address this threat and briefly look at the limited opportunities

[9] *What is subsidence?* (n.d.). https://oceanservice.noaa.gov/facts/subsidence.html#:~:text=Subsidence%20%2D%20sinking%20of%20the%20ground,%2C%20fracking%2C%20or%20mining%20activities.

for recourse under the present system and suggest an amendment to the United Nations Convention on the Law of the Sea (UNCLOS) may be necessary to guarantee the rights of States threatened with the terrifying prospect of inundation. There is the case of recognition by other States that confers legitimacy to statehood, which constitutes a political choice. The sovereignty of sinking states depends on whether other States continue to recognize them. Also, the question of how long a State can be maintained as well as recognised when it has no defined territory, no permanent population, and its population may be dispersed across different States is unknown. In terms of international law, we are when it comes to threats of this magnitude, in unchartered territory.

Environmental causes of Sinking States

Global sea level rise is one of the most crucial environmental factors that causes states to sink. This factor is caused primarily by two factors related to global warming: the added water from melting ice sheets and glaciers, and the expansion of seawater as it warms. As a result, the water in the seas is dilating and the volume of the oceans is swelling. Sea levels are now rising by more than 2.5 centimetres each ten years, while ocean acidification is increasing at the same time. Groundwater extraction exacerbates the risks associated with subsidence of low-lying states.

Consequences of sinking states

The consequences of sinking states are extensive and far-reaching; they are not only environmental, but also socio-economic, cultural and humanitarian. They furthermore affect the health system, the well-being of people and communities and question the political sovereignty of sunken states, while creating statehood conflicts.

Environmental impact

Rising sea levels encourage the infiltration of salt water into freshwater sources. Both surface water and groundwater deteriorate in quantity and quality. This has a direct disastrous impact on the human and animal populations of these regions. The disruption of the main marine currents is influencing and changing the migration of marine species such as whales and sea turtles. This has devastating impacts on both fishery and aquaculture, since

many species might end up losing their breeding ground. Finally, climate degradation causes coastal erosion and displacement of land.

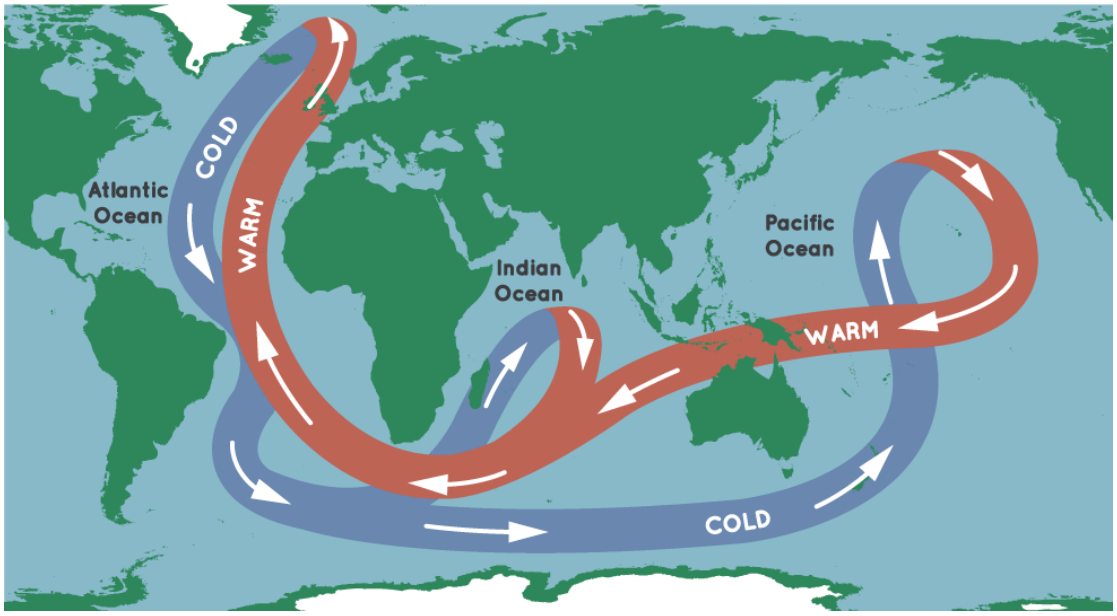

Figure 2 - The way climate change and sea level rise affects the currents of the ocean.[10]

Economic impact

The death of coral reefs and rich biodiversity have a direct impact on the human population of the sunken states, whose economy depends directly and almost exclusively on the oceans. Global warming is increasing the frequency of extreme meteorological phenomena: typhoons, cyclones, heavy rainfall, often lead to the destruction of roads, communications infrastructure, thus causing economic disaster. States therefore confront an acute economic crisis. Homes, businesses and properties are on the verge of being lost or severely damaged. The island states become economically unviable and encounter investment and development crises. The loss of fertile land by environmental disasters like flooding, which lead to loss of marshes and wetlands, make it difficult to cultivate agriculturally resulting in food insecurity. Ultimately, when food isn't reliably available to

[10] how does climate change affect the ocean? (n.d.). NASA Climate Kids. https://www.jpl.nasa.gov/edu/learn/video/nasas-earth-minute-sea-level-rise/#:~:text=Climate%20change%20is%20causing%20our,another%201%20to%204%20feet.&text=Climate%20change%20%E2%80%A2%20Climate%20change,in%20temperatures%20and%20weather%20patterns.

families, it can have long-term effects on the broader economy. Not only does food insecurity stunt physical development; it also shrinks productivity, wastes money, and harms educational outcomes, therefore reducing overall lifetime earnings for those who experience it.

Humanitarian impact: Human rights and migration

Figure 3 - When states sink[11]

The sinking of a state has cascading consequences on humanitarian law, including the undermining of the principles of the sovereign equality of states and the right to self-determination. What's more, statehood is redended in a manner that may unjustly exclude other similarly situated nations and peoples. As a result, an exacerbation of humanitarian crises related to climate change and the undermining of the international legal order takes place. Homes, livelihoods and ultimately lives are under threat from rising sea levels. By 2100, up to 410 million people could be at risk from coastal flooding as the climate crisis causes sea levels to rise even higher. The governments of the sinking states are trying to take measures to enable the population to leave the islands as soon as possible. Climate change induced migration raises many questions for the international legal framework. There is yet to be an adequate definition of a "climate refugees"; unlike victims of sudden natural disasters, people not being able to economically sustain themselves anymore after their lands have become infertile for agricultural production can hardly claim persecution or prove that their situation is a direct consequence of global warming. Furthermore, it is not yet clear

[11] Malin, B. a. J. D. J. T. a. S. (2022, February 24). *How to save a sinking island nation*. https://www.bbc.com/future/article/20190813-how-to-save-a-sinking-island-nation

which citizenship people fleeing from sinking states will receive or be allowed to retain once their homeland has disappeared or become uninhabitable.[12] When it comes to sinking states, not only the physical territory is threatened but in the meantime the cultural identity, historical heritage, archeological sites and traditional knowledge and practices are menaced to be lost.

Figure 3 - Tuvalu's foreign Minister Simon Kofe's speech aiming to alarm the global community about climate change and sea level rise[13]

[12] *Redirect Notice.*(n.d.). https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.bbc.com%2Ffuture%2Farticle%2F20190813-how-to-save-a-sinking-island-nation&psig=AOvVaw20pvZ201i5XrRndPfhphRC&ust=1725011091250000&source=images&cd=vfe&opi=89978449&ved=0CBQQjRxqFwoTCJiBrqD1mYgDFQAAAAAdAAAAABAR

[13] Prete, G., & Prete, G. (2024, January 29). *Tuvalu: Why is the small island nation sinking? | Earth.Org*. Earth.Org. https://earth.org/tuvalus-sinking-reality-how-climate-change-is-threatening-a-small-island-nation/https://climateandhealthalliance.org/article/how-rising-sea-levels-are-threatening-the-food-security-and-health-of-coastal-communities/#:~:text=One%20study%20estimated%20that%20there,disease%20and%20poor%20foetal%20development.

Health

Sea level rise may lead to contamination of water and land from untreated wastewater or other toxins in inundated coastal areas, which will increase exposure to contaminants or waterborne pathogens, causing disease and illness. Coastal communities that depend on groundwater may face reduced water quality and water security with the increasing salinization of drinking water sources. Global warming and the increase in air temperature provokes a spread of disease and infection among animal species and humans. Sea level rise will exacerbate the effects of coastal flooding, resulting in the occurrence of mould in homes and public buildings, undermining air quality. Plastic pollution has been found on the coasts of the states. [14]One study estimated that there are around 24.4 trillion fragments of microplastics in the upper regions of the world's oceans. Microplastics contain harmful chemicals linked to health problems, including cancer, heart disease and poor foetal development.

MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

Tuvalu

Tuvalu, is an island country in the Polynesian subregion of Oceania in the Pacific Ocean. Climate change, sea level rise, global warming and the subsequent melting of polar ice caps and glaciers all contribute to the sinking of the island. Severe weather events such as cyclones and storm surges worsen the situation. In 2021, Tuvalu's foreign Minister Simon Kofe delivered a speech addressing the United Nations climate conference from the water to urge the global community to take effective and decisive measures. While some countries took immediate action to collaboratively reduce carbon emission and tackle climate degradation, some others intervened indifferently. International Agreements such as but not limited to the Paris Agreement contributed positively to the reduction of global warming and sea level rise. The Falepili Union, namely the Australia - Tuvalu Climate and Migration Agreement conducted in 2023 offered 280 Tuvaluans residency in Australia, ensuring

[14] Ostyx. (2023, December 29). *How rising sea levels are threatening the food security and health of coastal communities - The Global Climate and Health Alliance*. The Global Climate and Health Alliance. https://climateandhealthalliance.org/article/how-rising-sea-levels-are-threatening-the-food-security-and-health-of-coastal-communities/#:~:text=One%20study%20estimated%20that%20there,disease%20and%20poor%20foetal%20development.

security, mobility and assistance. Reinforced by the Australian government as well as the government of Tuvalu and the Green Climate Fund, the Tuvalu Coastal Adaptation Project (2017) strengthened the resilience of one of the world's most susceptible nations to climate change and sea level rise. Building on existing initiatives, and using a range of measures for coastal protection - including ecosystem initiatives, beach nourishment, concrete and rock revetments, and sea walls - the project focuses on building coastal resilience in three of Tuvalu's nine inhabited islands. Tuvaluan Minister Simon Kofe announced that Tuvalu will become the First Digital Nation: that it would digitally recreate its land, archive its rich history and culture, and move all governmental functions into a digital space.

Marshall Islands

The Marshall Islands, are a chain of coral atolls in the central Pacific Ocean threatened by sea level rise and climate change, while facing existential crisis. According to the Climate Change Adaptation Portal (UNDP), The Marshall Islands' potential to adapt to the consequences of climate change and rising sea levels will primarily depend on its ability to resolve persistent environmental, social, and economic issues. The Marshall Islands urged MEDC's to rapidly eliminate the use of fossil fuels and prevent further warming. On top of that the state invested in climate-resilient infrastructure and sustainable practices, namely the strengthening of infrastructure and healthcare, so as to confront diseases and health issues caused by sea level rise.

Australia

Rates of sea level rise since 1993 have been above the global average over much of the western Pacific, including most of the Australian coastline, and below the global average in the eastern Pacific. In some regions, particularly in northern Australia, the rate of post-1993 sea level rise has been up to 5 mm/yr. Australia offers refuge to residents (Tuvaluans) affected by the rise of sea level in the Pacific archipelago. In Australia, refugees from Tuvalu will have access to healthcare, education, as well as family and financial support. Plus, Australia provides financial and technical support to the states directly affected by sea

level rise. Australia supports the protection of coral reefs through the International Coral Reef Initiative and its Global Coral Reef Monitoring Network.

United States of America (USA)

The USA is actively involved in confronting sea level rise in the threatened islands of the pacific ocean. The USA plays a key role in measuring the rise of the sea level, which is measured by two main methods: tide gauges and satellite altimeters. Tide gauge stations from around the world have measured the daily high and low tides for more than a century, using a variety of manual and automatic sensors. Using data from scores of stations around the world, scientists can calculate a global average and adjust it for seasonal differences. The USA believes that sea-level rise driven by human-induced climate change should not diminish the maritime zones on which island States and other coastal States rely, including for food and livelihoods. The USA encourages the Pacific Island States' initiative to take steps now to determine, memorialise, and publish their coastal baselines in accordance with the international law of the sea as set out in the United Nations Convention on the Law of the Sea.

International Displacement Monitoring Center (IDMC)

The Internal Displacement Monitoring Centre (IDMC) is the world's leading source of data and analysis on internal displacement.

The Framework for Resilient Development in the Pacific, constitutes an integrated Approach to Address Climate Change and Disaster Risk Management was developed through an inclusive engagement process on a regional, national and international level, with the aim of providing high level strategic guidance on how to enhance resilience to climate change and disasters. One of the priority actions is to strengthen the capacity of national and sub-national authorities via training programs offered to authorities so as to equip them with knowledge needed to tackle crises, while promoting resilience and adaptation. In this way individuals and communities that are vulnerable to environmental degradation, disaster displacement and migration are protected. The framework includes mitigation measures and sustainable relocation policies from high-risk areas so as to achieve successful adaptation and prioritise human rights.

Organisation of African, Caribbean and Pacific States (OACPS)

The organisation aims to strengthen support for partner countries in climate negotiations, enhance national and regional climate change strategies and scale up climate degradation resilience. It is also expected to strengthen networks, provide funding and technical support and engage the private sector to address climate change with the aid of the European Union (EU). OACPS's "Innovative and Sustainable Solutions for Managing Coastal Erosion" project seeks to develop nature-based, hybrid, sustainable technology that can be used by island communities to remediate and protect their coastline and foreshore against inundation and erosion caused by climate-change induced sea level rise, storm surges and/or king tide and severe inundation events.

TIMELINE OF EVENTS

Date	**Description of an event**
December 11, 1997	Kyoto Protocol
June 25, 2013	The Federated States of Micronesia (FSM) Nationwide Climate Change and Disaster Risk Management Policy 2013
December 12, 2015	Paris Agreement
November 15, 2022	Tuvalu Announces Plan for a "Digital Nation"
November 10, 2023	the Australian Government announced that it would be introducing a new special category of visa for Tuvalu citizens, providing up to 280 Tuvaluans access to permanent residency in Australia each year

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Kyoto Protocol 1997

The Kyoto Protocol was adopted on 11 December 1997, with 192 Parties involved. The Protocol operationalizes the United Nations Framework Convention on Climate Change by committing industrialised countries and economies in transition to limit and reduce greenhouse gas emissions in accordance with agreed individual targets. The Convention itself only asks those countries to adopt policies and measures on mitigation and to report periodically. The Kyoto Protocol is based on the principles and provisions of the Convention and follows its annex-based structure. It only binds developed countries, and places a heavier burden on them under the principle of common but differentiated responsibility and respective capabilities, because it recognizes that they are largely responsible for the current high levels of greenhouse gases emissions in the atmosphere. However, the Kyoto Protocol has failed to stem the flow of global emissions, due to limited participation especially from MEDCs, ineffective compliance mechanisms and politico-economic challenges. Still further, it failed to equate emissions reductions with economic opportunity and some countries viewed mitigation as a costly punishment.

The Federated States of Micronesia (FSM) Nationwide Climate Change and Disaster Risk Management Policy 2013

This is an internally generated policy based on extensive consultations within the Federated States of Micronesia, which addresses the threats posed by environmental degradation and climate disasters, namely sea-level rise, extreme weather conditions, and other environmental changes that threaten island states' infrastructures and livelihoods. The policy aims at reducing the risk associated with climate change and developing sustainability and resilience building. It furthermore requires funding mechanisms, commitment and international engagement. The government and people of FSM were committed to achieving the above strategy outcomes through this policy. The latter aimed at the use of existing and new policy and planning instruments, resources and capacities to reduce, or eliminate, the risks associated with the adverse effects of hazards through activities and measures for preparedness and reconstruction. The policy adopted development and economic

techniques to gradual changes in average temperature, sea level, ocean acidification and precipitation. Moreover the prevention of environmental migration through adaptation strategies, while addressing human mobility associated with natural disasters and climate change through durable solutions was one of the primary policy's objectives.

Paris Agreement 2015

The 2015 Paris Agreement is a legally binding international treaty on climate change. To tackle climate change and its negative impacts, world leaders at the UN Climate Change Conference (COP21) in Paris reached a breakthrough on 12 December 2015: the historic Paris Agreement. Their aim was to strengthen the global response to the threat of climate change by keeping the global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. The project strives to periodically assess the collective progress towards achieving the purpose of this agreement and its long-term goal. On top of that, the states engaged in the agreement provide financing to developing countries to mitigate climate change, strengthen resilience and enhance abilities to adapt to climate impact. In contrast with the Kyoto Protocol, the Paris Agreement has proven to be effective in addressing climate change, since it constitutes a comprehensive and effective piece of legislation that urges countries to make a significant difference in combating the effects of climate change.

POSSIBLE SOLUTIONS

Environmental perspective

When it comes to resolving the issue of sinking states and confronting the devastating consequences, we should first consider limiting climate change and the effects it has on low-lying islands. It is essential to reduce greenhouse gases, control the exploitation of resources, sustainably manage land and water, while developing climate change resilience and adaptation to reduce global sea level rise and avoid extreme weather events.

Coastal protection and resilience

The waves in the coastal region are generated by the wind that continuously hits the rocks in the coastal areas and causes changes in the shoreline. There are multiple ways to protect shorelines. Walls can be built along shorelines to prevent or minimise damage to the coastal areas from the heavy force of the ocean waves. Another way of protecting shorelines and avoiding environmental degradation and damage is the building of breakwater structures. Their purpose is to protect the shore area and harbour from strong waves.

International law

It is furthermore imperative to impose a legal framework so as to effectively obey ‘’no-wake’’ zones. Ignoring such zones can lead to dangerous situations and damage property, the environment and natural habitats. It is deemed imperative to engage international cooperation and raise awareness of the issue of sinking states on a global scale in order to mobilise communities to act. To build longer-term debt sustainability and prevent states from becoming completely submerged, the international community is required to impose debt alleviation, future protection, longer-term resilience investments as well as advisor support and legal aid. It is crucial to recognise that for this holistic and sustainable solution to take shape, global financing and cooperation are needed.

Technological and engineering solutions

On the other hand, taking into account that climate change and sea level rise has reached a point in which little can be done, since in some cases the damage is irreversible, the international community needs to consider engineering solutions. Artificial islands seem to be an alternative solution. In 1997, the government of Maldives launched the titanic construction of a new island, the Hulhumalé, which is an artificial floating island, built two metres above the sea. The island hosts 90,000 inhabitants, resolving the issue of forced displacement due to environmental disaster. Officials and state engineers consider elevation also an efficient way to mediate the impacts of sea level rise. A $6.8 billion Project is betting that raising residences by an average of three to five feet and nonresidential buildings by three to six, coupled with extensive work to restore coastal boundary lands, will keep the endangered communities, their local economy and industry running.

Negative effects of technology's involvement

At the same time, some environmental experts worry that this may be too rosy an outlook, with time and nature conspiring against lasting success. Such projects have an extremely high ecological cost and can lead to the destruction of coral reefs and seagrass beds and change the currents.

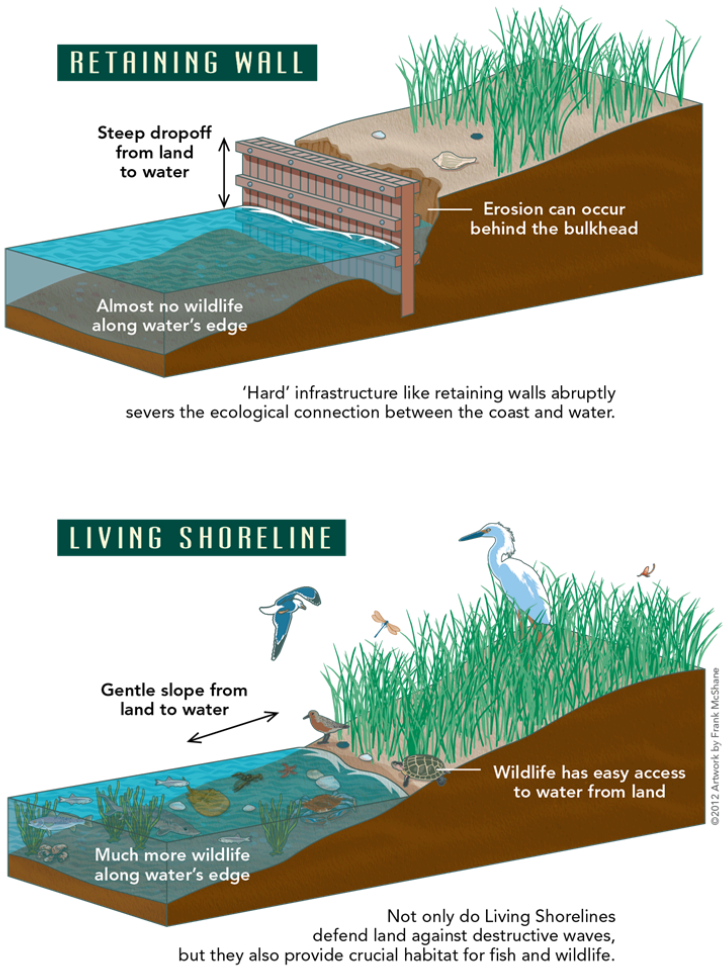

Figure 4 - Example of how a retaining wall works to save a shoreline[15]

[15] About Living Shorelines — Delaware Living Shorelines. (n.d.). Delaware Living Shorelines. https://dnrec.delaware.gov/watershed-stewardship/wetlands/living-shorelines/#:~:text=A%20living%20shoreline%20mimics%20natural,%2C%20fish%2C%20birds%20and%20plants.

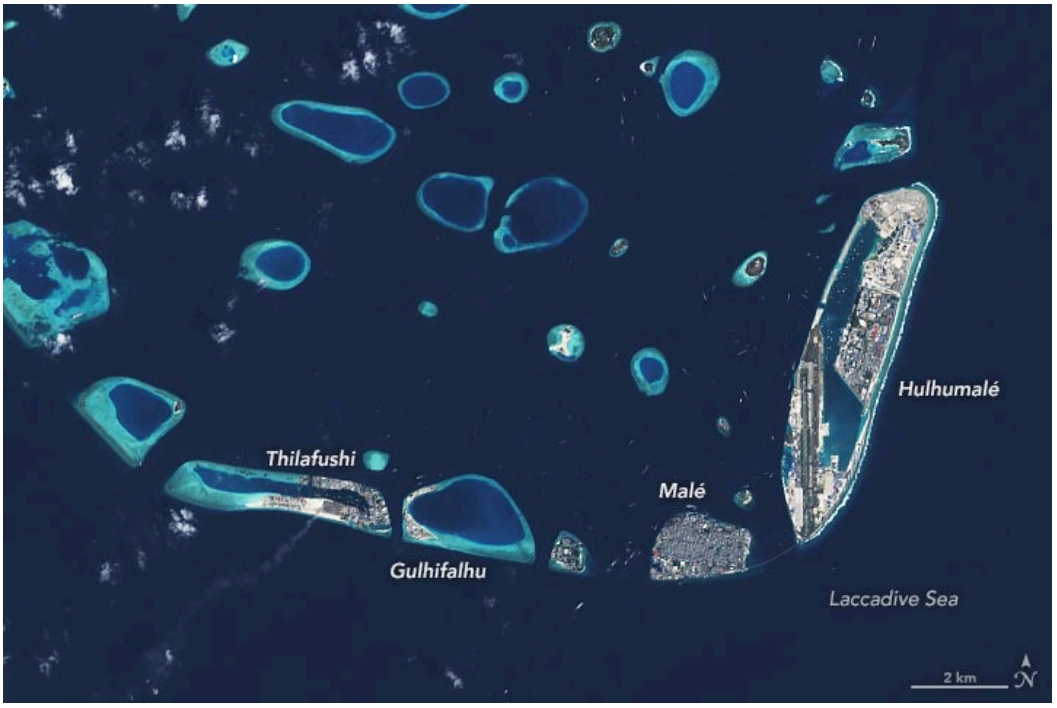

Figure 5 - Artificial island Hulhumalé launched by the Maldives [16]

BIBLIOGRAPHY

Accueil | Ministère de la Transition écologique et de la Cohésion des territoires. (n.d.-a). Ministère De La Transition Écologique Et De La Cohésion Des Territoires. https://www.ecologie.gouv.fr/

[16]Redirect notice. (n.d.-b).

Accueil | Ministère de la Transition écologique et de la Cohésion des territoires. (n.d.-b). Ministère De La Transition Écologique Et De La Cohésion Des Territoires. https://www.ecologie.gouv.fr/

ADB in the Pacific. (n.d.). Asian Development Bank.

Admin. (2020, December 4). *5 different types of shoreline protection*. Gateway Structure. https://gssb.com.my/different-types-shoreline-protection

Australia offers refuge to Tuvaluans as rising sea levels threaten Pacific archipelago. (n.d.). France 24.

https://www.france24.com/en/asia-pacific/20231111-australia-offers-refuge-to-tuvaluans-as-rising-sea-levels-threaten-pacific-archipelago

Bassetti, F. (2023, January 20). *Success or failure? The Kyoto Protocol's troubled legacy*. Foresight. https://www.climateforesight.eu/articles/success-or-failure-the-kyoto-protocols-troubled-legacy/#:~:text=The%20Kyoto%20Protocol%20had%20failed,mitigation%20as%20a%20costly%20punishment.

Bharadwaj, R. (2023, October 5). *Sinking islands, rising debts: urgent need for new financial compact for Small Island Developing States*. PreventionWeb. https://www.preventionweb.net/publication/sinking-islands-rising-debts-urgent-need-new-financial-compact-small-island-developing

Bloomberg - Are you a robot? (n.d.). https://sponsored.bloomberg.com/article/zurich/threat-to-infrastructure-means-business%20sses-must-prepare-to-navigate-rising-seas

Climate change: global Sea level. (2023a, August 22). NOAA Climate.gov. https://www.climate.gov/news-features/understanding-climate/climate-change-glob

al-sea-level#:~:text=The%20rising%20water%20level%20is,record%20(1993%2Dpresent).

Climate change: global Sea level. (2023b, August 22). NOAA Climate.gov. https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level

Environment, U. (n.d.). *Climate action*. UNEP - UN Environment Programme. https://www.unep.org/topics/climate-action

FEDERATED STATES OF MICRONESIA NATION WIDE INTEGRATED DISASTER RISK MANAGEMENT AND CLIMATE CHANGE POLICY. (2013, June). https://fsm-data.sprep.org/system/files/Climate%20Change%20Disaster%20Risk%20Reduction%20Policy%5B824%5D.pdf

Gordon, F. (2015, February). *Climate Change Policies after the 2015 Paris Agreement*. L'Europe En Formation. https://www.cairn.info/revue-l-europe-en-formation-2016-2-page-13.htm

GVI. (2022, September 28). Climate change and rising sea levels: 5 Pacific Islands that no longer exist | GVI. *GVI*. https://www.gvi.ie/blog/disappearing-land-5-pacific-islands/#:~:text=Known%20as%20the%20Solomon%20Islands,to%20record%2Dbreaking%20new%20heights.

Hassan, M., & Gillaspy, R. (n.d.). *Shoreline Definition, Features & Parts*. Study.com.

high tide. (2024). https://dictionary.cambridge.org/dictionary/english/high-tide#

How do we stop cities from sinking? (n.d.). COWI. https://www.cowi.com/insights/how-do-we-stop-cities-from-sinking/#:~:text=Protecting%20sh%20orelines%20of%20coastal%20sinking,a%20consequence%20of%20heavy%20loading.

HUTTERER, M. (n.d.). WHEN STATES SINK. In *W004_Environment-Climate_062-067.pdf*.

IDMC. (2024, March). *Contribution of the Internal Displacement Monitoring Centre (IDMC) to the Special Rapporteur on the Human Rights of Internally Displaced Persons' HRC56 Thematic Report on Climate Change and Internal Displacement*.

Kiribati, the first country rising sea levels will swallow up as a result of climate change. (n.d.). Iberdrola.

Living Lab 'Innovative and Sustainable Solutions for Managing Coastal Erosion' - ACP. (2023, December 6). ACP. https://oacps-ri.eu/en/projects/living-lab-innovative-and-sustainable-solutions-for-managing-coastal-erosion/

Marine Environment - United States Department of State. (2023, December 11). United States Department of State. https://www.state.gov/marine-environment/#:~:text=U.S.%20Policy%20on%20Sea%2Dlevel%20Rise%20and%20Maritime%20Zones&text=The%20United%20States%20believes%20that,including%20for%20food%20and%20livelihood .

Menga, M. (2024, February 22). *"We will not go silently to our watery graves": How to save a nation from drowning*. Foresight. https://www.climateforesight.eu/articles/we-will-not-go-silently-to-our-watery-graves-how-to-save-a-nation-from-drowning/#:~:text=The%20Marshall%20Islands%2C%20a%20nation,charting%20a%20path%20for%20survival

Mkadmin. (2023, November 22). *Australia and Tuvalu announce new pathway for permanent residency*. Macpherson Kelley. https://mk.com.au/new-category-of-visa-announced-for-tuvalu-citizens/

Mollenkamp, D. T. (2024, March 19). *Food insecurity and its impact on the economy*. Investopedia. https://www.investopedia.com/food-insecurity-impacts-economy-8303222

myclimate – Protection climatique durable. (n.d.). Myclimate. https://www.myclimate.org/fr-ch

Nahm, J. (2023, August 9). Failures and successes of the Paris Agreement | ACE. *ACE*. https://ace-usa.org/blog/research/research-foreignpolicy/failures-and-successes-of-the-paris-agreement/#:~:text=Despite%20facing%20setbacks%20and%20failures,historical%20context%20and%20political%20perspectives.

National Territory Definition | Law Insider. (n.d.). Law Insider. https://www.lawinsider.com/dictionary/national-territory#:~:text=National%20Territory%20means%20all%20the,and%20its%20exclusive%20economic%20zone.

New Zealand contributes US$3.57 million to IFAD to enhance resilience of Pacific Island communities through climate smart agriculture. (2023, July 13). IFAD. https://www.ifad.org/en/web/latest/-/new-zealand-contributes-to-ifad-to-enhance-resilience-of-pacific-island-communities-through-climate-smart-agriculture#:~:text=New%20Zealand%20contributes%20US%243.57,communities%20through%20climate%20smart%20agriculture

Newcomb, T. (2024, January 24). The East Coast is rapidly sinking year by year. Every inch is an alarm, scientists say. *Popular Mechanics*. https://www.popularmechanics.com/science/a46276249/why-is-the-east-coast-sinkin%20g/

No wake Zones | NC Wildlife. (n.d.). https://www.ncwildlife.org/boating/laws-safety/no-wake-zones#:~:text=A%20%E2%80%9CNo%20Wake%20Zone%E2%80%9D%20is,that%20creates%20no%20appreciable%20wake.

Ostyx. (2023, December 29). *How rising sea levels are threatening the food security and health of coastal communities - The Global Climate and Health Alliance*. The Global Climate and Health Alliance. https://climateandhealthalliance.org/article/how-rising-sea-levels-are-threatening-the-food-security-and-health-of-coastal-communities/

Our work. (2023, March 9). https://www.undrr.org/our-work#:~:text=A%20world%20where%20disaster%20risks,the%20future%20of%20the%20planet.&text=UNDRR%20works%20globally%20towards%20the,multi%2Dhazard%20disaster%20risk%20management.

Pacific Response to Disaster Displacement Project. (n.d.). IDMC - Internal Displacement Monitoring Centre. https://www.internal-displacement.org/project-spotlights/pacific-disasters/

Parsons, C. (2023, November 3). The Pacific Islands: The front line in the battle against climate change. *NSF - National Science Foundation*. https://new.nsf.gov/science-matters/pacific-islands-front-line-battle-against-climate

Peters, X. (2024, April 24). How to stop a state from sinking. *MIT Technology Review*. https://www.technologyreview.com/2024/04/15/1090733/louisiana-sinking-climate-change-flooding/

Polemics. (2023, July 5). *Climate-Induced Migration: sinking states and unclear definitions*. Polemics. https://www.polemics-magazine.com/tech-env/climate-induced-migration-sinking-states-and-unclear-definitions

Prete, G., & Prete, G. (2024, August 27). *Tuvalu: Why is the small island nation sinking? | Earth.Org*. Earth.Org. https://earth.org/tuvalus-sinking-reality-how-climate-change-is-threatening-a-small-island-nation/#:~:text=Why%20Tuvalu%20is%20Sinking,polar%20ice%20caps%20and%20glaciers.

Sea level. (2021). Australia State of the Environment.

Sea level rise. (n.d.). Environmental Resilience Institute. https://eri.iu.edu/erit/strategies/sea-level-rise.html#:~:text=Construct%20New%20In

frastructure&text=Flood%20barriers%20to%20protect%20critical,waterproof%20containers%20or%20foundation%20systems.

Sea level rise. (2023, June 7). UNDRR. https://www.undrr.org/understanding-disaster-risk/terminology/hips/en0023

Sloan, K. C. a. J. (n.d.). *Submerged States and the legal rights at risk*. https://www.sas.com.fj/ocean-law-bulletins/submerged-states-and-the-legal-rights-at-risk

Small Island Developing States: Harnessing the potential of migration for resilience and prosperity. (2024, May 27). International Organization for Migration. https://www.iom.int/news/small-island-developing-states-harnessing-potential-migration-resilience-and-prosperity

Solomon Islands | UNDP Climate Change Adaptation. (n.d.). https://www.adaptation-undp.org/explore/asia-and-pacific/solomon-islands#:~:text=Current%20activities%20include%3A%20community%20initiatives,introduction%20of%20salt%20tolerant%20and

Stewart, M. (2023a). Cascading consequences of sinking states. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4321214

Stewart, M. (2023b). Cascading consequences of sinking states. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4321214

Stewart, M. (2023c). Cascading consequences of sinking states. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4321214

Sustainability - the great dilemma. (n.d.). Sustainability-yes. https://www.sustainability-yes.ch/en

Texas State University. (n.d.). *Sea-Level rise*. https://www.meadowscenter.txst.edu/climatechange/climatedashboard/sealevelrise

.html#:~:t%20ext=Since%201900%2C%20the%20global%20sea,decade%20since%20
19907%2C11

The Paris Agreement (By United Nations). (n.d.). United Nations Climate Change. https://www.un.org/en/climatechange/paris-agreement

This is what the Maldives Floating City of the future will look like. (2023, April 3). Tomorrow.City - the Biggest Platform About Urban Innovation. https://www.tomorrow.city/floating-city-maldives/

Tuvalu Coastal Adaptation Project. (2024, July 9). Tuvalu Coastal Adaptation Project. https://tcap.tv/

Tuvalu Coastal Adaptation Project | UNDP Climate Change Adaptation. (n.d.). https://adaptation-undp.org/projects/tuvalu-coastal-adaptation-project

Tuvalu: the Digital Nation State Programme | Global Forum on Migration and Development. (2024, March 25). https://www.gfmd.org/pfp/ppd/19211#:~:text=Summary%3A,functions%20into%20a%20digital%20space.

United Nations. (n.d.-a). *Global Issues | United Nations*. https://www.un.org/en/global-issues

United Nations. (n.d.-b). *The Paris Agreement | United Nations*. https://www.un.org/en/climatechange/paris-agreement

United Nations Environmental Programme. (2021). International Law Commission request for information relating to the study on the topic of "Sea- level rise in relation to international law," including the subtopics of sea-level rise in relation to statehood, and the protection of persons affected by sea-level ris. In *https://legal.un.org/ilc/sessions/73/pdfs/english/slr_unep.pdf*. https://legal.un.org/ilc/sessions/73/pdfs/english/slr_unep.pdf

Wade, T., RPP, MCIP for CLIMAtlantic Inc, & National Collaborating Centre for Environmental Health. (2022, November). *Health risks associated with sea level rise*.

https://ncceh.ca/sites/default/files/Final%20Draft%20-%20Health%20impacts%20of%20SLR_EN%20Dec%207_1.pdf

Welle, D. (2023, November 17). Sinking Islands - Kiribati and climate change. *dw.com*. https://www.dw.com/en/sinking-islands-kiribati-and-climate-change/a-67454358#:~:text=Kiribati%20could%20soon%20become%20uninhabitable,themselves%20from%20rising%20sea%20levels.&text=In%20Kiribati%2C%20residents%20are%20building,well%20for%20a%20long%20time.

What is subsidence? (n.d.). https://oceanservice.noaa.gov/facts/subsidence.html#:~:text=Subsidence%20%2D%20sinking%20of%20the%20ground,%2C%20fracking%2C%20or%20mining%20activities.

Würth, K., Unsplash, & United Nations Climate Change. (n.d.). *What is the Kyoto Protocol?* unfccc.int.

https://unfccc.int/kyoto_protocol#:~:text=In%20short%2C%20the%20Kyoto%20Protocol,accordance%20with%20agreed%20individual%20targets.

PICTURE BIBLIOGRAPHY

About Living Shorelines — Delaware Living Shorelines. (n.d.). Delaware Living Shorelines. https://dnrec.delaware.gov/watershed-stewardship/wetlands/living-shorelines/#:~:text=A%20living%20shoreline%20mimics%20natural,%2C%20fish%2C%20birds%20and%20plants.

How does climate change affect the ocean? (n.d.). NASA Climate Kids. https://www.jpl.nasa.gov/edu/learn/video/nasas-earth-minute-sea-level-rise/#:~:text=Climate%20change%20is%20causing%20our,another%201%20to%204%20feet.&text=Climate%20c

Malin, B., & J. D., J. T., & S. (2022, February 24). How to save a sinking island nation. BBC Future. Link

https://www.bbc.com/future/article/20190813-how-to-save-a-sinking-island-nation

Parsons, C. (2023, November 3). The Pacific Islands: The front line in the battle against climate change. NSF - National Science Foundation. https://new.nsf.gov/science-matters/pacific-islands-front-line-battle-against-climate

Prete, G., & Prete, G. (2024, January 29). Tuvalu: Why is the small island nation sinking? Earth.Org. https://earth.org/tuvalus-sinking-reality-how-climate-change-is-threatening-a-small-island-nation/