

# Assessing Global Response to Rising Sea Levels: Who Needs to Be Involved?

Written by Dominique Grabau

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DOMINIQUE GRABAU, OCT 10 2019

As states globally prepare for the inevitable effects of climate change, those 'developed' countries identified by the United Nations Framework Convention on Climate Change (UNFCCC) continue to undermine their roles as leaders, inevitably to their own detriment. Not everyone will feel the effects of Global Warming-induced climate change in the same way, and many will feel it sooner and more tangibly than others. The World Bank data has determined that South East Asia and the island regions of the Pacific and Indian Oceans are the most severely impacted by global sea level Rise (SLR) (Dasgupta 2018).

SLR has been measured as rising since the turn of the 20<sup>th</sup> Century, pushed by a combination of retreating glaciers and ice sheets and the heat induced expansion of ocean waters (Parliament of Australia 2009). As an island nation, the Maldives are uniquely affected by SLR, with estimates it will be completely inundated in the case of a 1-metre rise by 2085 (Anthoff et al 2010). Indonesia is also placed in dire circumstances, as a topographically varied South East Asian country, it deals with both SLR and the multi-faceted face of global warming. With the combined effects of climate change, the induced natural disaster and SLR, Indonesia is an integral asset in furthering discussions surrounding the mitigation and adaptation of Climate Change.

As the world continues to globalise, it is vital that the governing institutions, such as the United Nations (UN) and their subsidiary the UNFCCC, drive discussion in developing relevant mitigation and adaptation techniques. Whilst these institutions have begun the conversation, fueling debate and grassroots action, much needs to be done in holding stakeholders accountable to their decisions and their potential impact.

Central to the challenges states face by SLR, often Small Island Developing Nations (SIDS), are issues with technology and development, public health and disaster displacement. There is a drive to mitigate and adapt to these challenges, and they're occurring in several fields, such as urban planning. In Indonesia, the densely populated Island of Java is gradually impeded by the rising sea level, and their capital city, Jakarta is being sunk by the weight of itself and the drilling for freshwater (Suroso & Firman 2018). The need for rezoning and relocating is essential to the island's survival. However, studies have shown that adaptive attempts at spatial-planning on Java will prove unresponsive, as resettlement will likely happen in agricultural and protected areas already prone to inundation (Suroso & Firman 2018).

Similar problems are being faced in water scarcity. Global water supplies will be affected by climate change both directly and indirectly, through changes in rainfall patterns to changes in water compartments (groundwater, snow, glaciers) (OECD 2014). Island nations have an abundance of sea water and renewable energy sources, the likely opposite of their continental counterparts, providing an ideal setting to develop new water management technology such as desalination (Liu 2019). At the forefront of this are the Maldives, where there are very few freshwater sources across the archipelago, many of them contaminated by salt water and poor sewage systems, and the majority of the island populations rely on regular rainfall (UN-Water Global Analysis and Assessment of Sanitation and Drinking-water 2015). As a result, water-borne diseases are common here and companies are now looking to these islands in developing their desalination technology that can be driven and implemented by locals using renewable energy (Filtration + Separation 2014).

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These public health issues are transferable to many SID's, as SLR acts in conjunction with storm surges and high tides it adversely affects health through the direct influence of flooding, such as the contamination of water, the destruction of agricultural soil and land leading to food insecurity, and exposure to infectious diseases and mental health issues (Kreuger & Boufides 2018). It is near impossible to mitigate such problems, and the public health systems in place must continuously develop and adapt to the needs of their respective populations. This can be done through strategies such as the Building Resilience against Climate Effects (BRACE) framework, which focuses on ongoing evaluation of the public health situation and the prioritization of tasks (Kreuger & Boufides 2018).

The largest issue felt by those most impacted by SLR is that of disaster displacement. Climate-induced migration has been practiced for centuries. However, the strict enforcement of state boundaries and attendant issues of control of population movement, means this is no longer a straightforward task (McLeman & Smit 2006). Migration is not the first choice. For many, the solution is moving further inland or to their respective capital cities; immigrating from one's state is often a last resort (McLeman & Smit 2006). The problem it presents is that at the turn of the century, many Pacific and Indian Ocean states will be partly or fully inundated, and there are no law-giving titles available to those seeking refuge based on the discontinued existence of their home (Burkett 2011). Kiribati, Tuvalu and The Maldives' governments have already taken up discussion of land purchases in Australia, New Zealand, India and Sri Lanka, however the issue of statelessness is one begrudgingly made, particularly as these island nations have made some of the lowest per capita contributions to climate change (Burkett 2011). Making the adaptation to this situation particularly difficult is the decision to identify a climate refugee and engage in a new legal epoch. It is one that must be made through international cooperation and discussion, a policy intervention that goes beyond the pressures placed by SID's (Burkett 2011). The technological and developmental strategies taking hold across the Indian and Pacific Oceans are global examples of where mitigation and adaptation are today. While some of these examples show a great deal of progress, others are a sign of the necessary work to come.

It is not to say that intergovernmental policy and procedure have done nothing to quell the effects of SLR and the unmitigated damage of historical emissions. The development of the Intergovernmental Panel on Climate Change (IPCC) in 1988 and the UNFCCC in 1992 proved to be a major stepping stone in uniting global efforts, through promoting the empirical evidence and classification of climate change and driving international cooperation, most notably in the form of the Kyoto Protocol and Paris Agreements. By 2015, clean energy attracted twice the amount of investment as fossil fuel industries, and economies continued to grow along with this change. This proved wrong the predictions that emissions and economic progress must rise together (Deese 2017). Coupled with the growing climate activism in rising superpowers India and China and around the world, the Paris Agreement provided a landmark in the climate crisis response (Deese 2017). While past discussion, such as the Copenhagen Climate Conference, had stagnated on whether developed nations be held most accountable for emission reduction, the Paris agreement set the aspirational goal of limiting the Earth's atmospheric temperature rise to 1.5 degrees Celsius, as well as allowing countries to dictate their own methods in reaching this target (Deese 2017). As Deese notes, "2016 was the third year in a row when global emissions did not rise even as the global economy grew" (2017, p.84), and the combined effect of government and grassroots action resulted in this change.

Other fundamental policies, such as the Nansen Initiative, are more directly linked to the effects of SLR and actively respond to the realities of displacement. The initiative seeks to consult and conceptualise the approach to disaster displacement. Integral to this is acknowledging the need for lasting solutions in regard to the current temporary nature of humanitarian aid provided to those displaced by disaster and how this might reflect the longevity of the effect those disasters have on the environment (2015). This is particularly relevant regarding SLR, as the effects are not temporal and will be ongoing throughout history as environmental shocks continue. Integral to this initiative is the promotion of "increased preparedness, solidarity and cooperation" (The Nansen Initiative 2015, p.15) among states and the international community to prevent and respond to disaster, as they seek to identify effective strategies in dealing with climate change-driven migration (The Nansen Initiative 2015). Diplomatically-driven action on climate change is growing, however the issue lies within whether such action is passive or active in the communities that require it most.

What is not being done by global governance in regard to SLR is a different reality. There are concerns with sovereignty, maritime boundaries and delayed shifts to renewables that are being overlooked. As mentioned above,

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displacement is the most pressing issue presented by sea level rise; the submerging of states is underway, and there is yet to be any lawful understanding of how their populations will be compensated (Ganguly 2011). As adaptive strategies such as in-land migration and rebuilding become less accessible, most populations will require clear policy to define and intervene in the situation. Re-envisioning disappearing states will require large scale international legal coordination in order to limit humanitarian crises and economic losses (Burkett 2011).

Maritime boundaries are also changing due to their ambulatory nature, meaning once submerged boundaries may be redrawn (Lusthaus 2010). Historical conflicts due to lack of clear jurisdiction over sources of fish, oil and gas reserves and shipping lanes indicate that today's changing maritime borders due to SLR could have serious repercussions in international trade and economic interests (Lusthaus 2010). The solution to this is inherently legal and could involve major agreements over freezing borders, a difficult decision to orchestrate given the current complexity of border shaping, particularly around Indonesia and South East Asia.

Renewables are becoming an increasingly cheaper and more viable source of energy. However, as recent reports have shown, Australia is still seeing a rise in greenhouse gas emissions due to liquid natural gas (LNG) export, rising diesel consumption and metals manufacturing (ABC 2019). The 2018 global status report by the Renewable Energy Policy Network for the 21st Century (REN21) reveals the increasing addition of renewables into the energy market but also that "overall transition is not advancing with the speed needed" (REN21 2018). This indicates that after three years of holding steady, as of 2017, global emissions had risen again (REN21 2018). As per capita emissions continue to drop in Australia, it is the responsibility of global institutions at the forefront of policy-making and intervention to continue expanding renewables markets and promoting sustainable business.

This failure to set or meet renewable targets and emissions reductions is notably occurring in developed countries such as Australia and the US, who are among the highest per capita global emitters (World Bank 2019). This will not go unnoticed by these states, as SLR mixed with extraneous climate disasters are beginning to have global impacts. In Australia, 85% of the population lives within 50km of the coastal area, along with the transportation and communication networks relied upon by them (CSIRO 2019). Data shows sea levels among those low lying coastal areas are set to rise by up to 1m by the turn of this century, with inland towns situated by river systems, such as Launceston, predicted to be largely inundated and reef and wetland environments to be significantly damaged (CSIRO 2019) (Coastal Risk 2019). The US has experienced increased storm surges around the Gulf of Mexico and Florida Coasts, damaging coastal communities and vast areas of wetland ecosystems. This is only set to worsen with continuing climate change and the subsequent SLR (Balaguru et al 2016). Similar SLR-related damages are also increasing on the US eastern seaboard, which is particularly vulnerable to the melting ice sheets in the northern Atlantic Ocean, with increased storm surges and king tides (Valle-Levinson et al 2017).

Despite significant damage to the environment and ecosystem resources, the lack of direct and short-term threats to persons inhibits these states from taking direct action to adapt and mitigate the effects of climate change, and in turn, SLR.

Island nations of the Indian and Pacific Oceans are facing extinction of their states as global temperatures rise and Oceans expand. Despite significant exploration and development of new technologies and planning methods to deal with such disasters, a lack of global support from powerful stakeholders limits their ability to adapt. Although current rising sea levels are largely the result of emissions from the 20th century, it is within the stakeholders' powers to limit the damage to come at the turn of this century (CSIRO 2019). Addressing the issues presented by the Island regions of the Indian and Pacific Oceans will enable the better development of adaptive capacities and techniques among both developed and developing nations in the long run.

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