TE MANA O TE MOANA

THE STATE OF THE CLIMATE IN THE PACIFIC 2021

GREENPEACE

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Cover image: Majuro atoll and city in Marshall islands will be increasingly affected by climate change if rapid action isn't taken to address emissions.

Risu Kalotiti visits one of the reefs near her home in Vanuatu. Together with other young surfer girls from her village, Risu has been working to ensure rehabilitation and reservation of the local reefs and marine ecology.

Acknowledgements

Greenpeace Australia Pacific acknowledges the Traditional Owners of Country throughout Australia and recognises their continuing connection to land, waters, and culture. We pay our respects to their Elders past, present and emerging.

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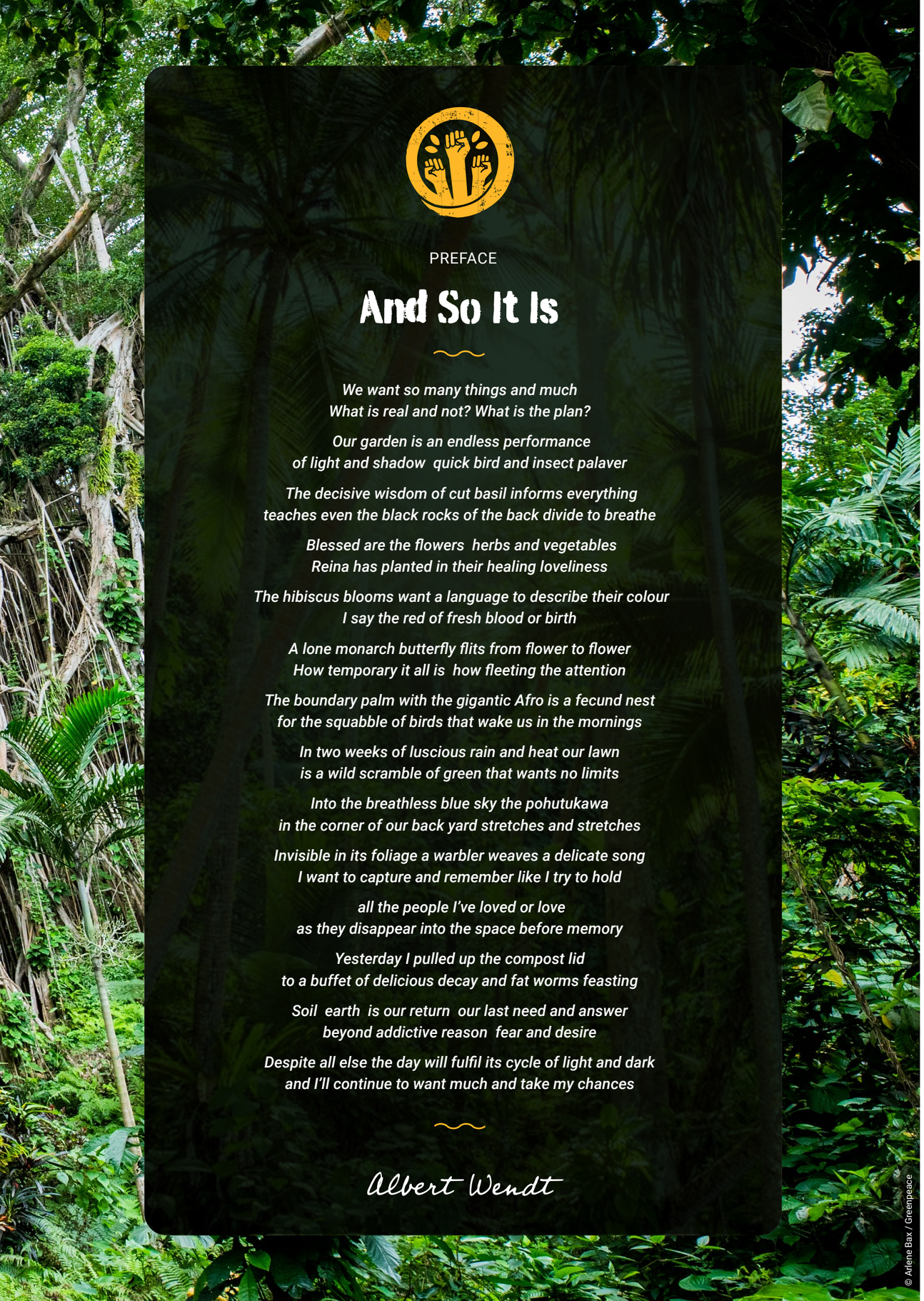
We thank Albert Wendt for generously granting Greenpeace permission to use his poem, And so it is, for the preface to this report.

And we would especially like to thank the Pacific elders, leaders and communities who lent their voices and wisdom to this project. We honour your stories and the resilience you have shown throughout this process.



PREFACE

And So It Is

We want so many things and much
What is real and not? What is the plan?

Our garden is an endless performance
of light and shadow quick bird and insect palaver

The decisive wisdom of cut basil informs everything
teaches even the black rocks of the back divide to breathe

Blessed are the flowers herbs and vegetables
Reina has planted in their healing loveliness

The hibiscus blooms want a language to describe their colour
I say the red of fresh blood or birth

A lone monarch butterfly flits from flower to flower
How temporary it all is how fleeting the attention

The boundary palm with the gigantic Afro is a fecund nest
for the squabble of birds that wake us in the mornings

In two weeks of luscious rain and heat our lawn
is a wild scramble of green that wants no limits

Into the breathless blue sky the pohutukawa
in the corner of our back yard stretches and stretches

Invisible in its foliage a warbler weaves a delicate song
I want to capture and remember like I try to hold

all the people I've loved or love
as they disappear into the space before memory

Yesterday I pulled up the compost lid
to a buffet of delicious decay and fat worms feasting

Soil earth is our return our last need and answer
beyond addictive reason fear and desire

Despite all else the day will fulfil its cycle of light and dark
and I'll continue to want much and take my chances

Albert Wendt

Foreword

Rt. Hon. Enele Sopoaga

Talofa,

At the outset I would like to congratulate Greenpeace Australia Pacific on a landmark report, detailing with great care the Pacific's plight and fight. For nearly 50 years, Greenpeace has been synonymous with the struggles our region has faced: from facing down nuclear bombs for which it paid the ultimate price to protecting our fishing grounds and supporting our climate advocacy work. Today, our very existence now depends on the continued success of our collective efforts. From the days of nuclear protest to today's march for climate justice, the work of all our civil society partners and fellow Pacific Governments and communities have lifted the voices of those of us who must now contend with the consequences of environmental degradation. And while we here in the Pacific are on the very frontlines of this crisis, we remain steadfast at the very forefront of the fight against it. The launch of this report today is another arrow in our quiver.

For many years, our grand coalition of Pacific leaders and civil society organisations have had to carry a huge burden and responsibility. As the Prime Minister of Tuvalu, I bore the weight of this responsibility, to ensure that there will be a future for Tuvalu. Like my fellow leaders in the region, it kept me awake at night. No national leader in the history of humanity has ever faced this question: will we survive or will we disappear under the sea? I ask you all to think about what it is like to be in my shoes. If you were faced with the threat of the disappearance of your nation, what would you do? I ask you to pause and ask yourself, what would you do? We have said many times over: Climate change is the single greatest threat to the prosperity and security of Pacific nations. It is threatening the livelihood, security and wellbeing of the entire Pacific - including my nation of Tuvalu. The plight of the Pacific is clear: we must fight this crisis with all the political courage, scientific and technological innovation we can muster. We cannot falter.

The great Italian poet Dante once wrote: "The darkest places in hell are reserved for those who maintain their neutrality in times of moral crisis". These words are no less relevant today. Political leaders must summon what character, wisdom and courage they have to make the right choice - not just for today but for the long-term advancement of humanity. We are all facing the biggest moral crisis of humanity, where there is no place for neutrality or denial. There must be no quarter given to proponents of the same, stale ideologies that place short-term profits of the few over the long-term prosperity of the people. If the fossil fuel industry refuses to prioritize people over profit, then let us relegate these fossil billionaires to the waste-heap of history, and continue moving forward. I ask you all to think for a moment about the term, fossil fuel. It is very apt. The fossil fuels we are burning today are made from extinct plants and animals. Fossil fuels signify extinction. We must not condemn ourselves to extinction by riding on the back of the extinct. We must strive for renewal. We must dramatically change our future to renewable energy, renewable jobs and a renewed sense of stewardship over the earth.

I am heartened by the recent announcements made by China and the restoration of sense in the United States. But let us not rest on false hope. We must continue to move forward faster, building back better, moving towards that sustainable world our children and grandchildren deserve to inherit. It is for them that we engage in the struggle today.

I ask everyone who reads this report to take time to reflect carefully on the data and the science. And then to look into the eyes of the first child they see. Climate change is more than just reports and data - it is first and foremost a question about our humanity. We in the Pacific are more than just sinking islands, broken seawalls and cyclones - we are your brothers and sisters. I want everyone to look into the child's eyes and imagine what those eyes will see in ten or twenty years. Will they see Dantes' hell or will they see a sustainable planet?

I offer my congratulations to Auimatagi Joe and the team at Greenpeace for their continued solidarity with us in this struggle and for this landmark report which I encourage all to read, study and share. Let us continue working together as a grand coalition of Governments, civil society and communities to build the world our children deserve. Let us look into the eyes of our children and say, yes we have a real future for you. And let us all do our utmost to save this planet that God has gifted to us all. Tuvalu and the entire Pacific depends on what you choose to do today.

For if we save Tuvalu, we save the world.

TUVALU MO TE ATUA.

Rt. Hon. Enele Sopoaga is the former Prime Minister of Tuvalu (2013-2019), the current opposition leader and one of the principal architects of the Paris Agreement.

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Executive Summary

The world is in an unprecedented climate crisis, caused by human-made greenhouse gas emissions. The environmental impacts of burning coal, oil, and gas are well documented. They include more intense extreme weather events, such as floods, droughts, bushfires and cyclones, rising sea levels, ocean acidification, biodiversity loss, more extreme heat, and the resulting damage to the natural and built systems required to sustain all life on our planet.

The Pacific region, and the Pacific island communities who depend on it for their livelihoods and culture, are facing some of the most severe climate impacts anywhere on earth. As inhabitants of predominantly low-lying islands, the people of the Pacific have seen rising sea levels and higher king tides flood coastal communities, eroding coastlines, raising water table salinity, and reducing crop yields and supplies of freshwater. Some communities have been forced to relocate due to rising sea levels, such as the Fijian village of Vunidogoloa, whose inhabitants had to move 2km inland in 2014. A further 830 vulnerable communities are listed for relocation in Fiji alone.

Pacific Islands People are deeply connected to their ancestral lands that have shaped their cultural heritage and ways of sustainable living for generations. The increasing displacement of these coastal communities from their homes, villages and communities is threatening their identities, cultural practices and relationships with land, nature and their social environment.

Heating oceans have resulted in more intense tropical hurricanes, devastating low-lying communities most severely. In March 2015, Cyclone Pam affected nearly half of Vanuatu's population and destroyed 95 per cent of crops in affected areas. A year later, Cyclone Winston, the strongest cyclone to make landfall in the southern hemisphere, caused $470 million worth of damage to Fiji, or around 10 per cent of that nation's GDP. In April 2020, Cyclone Harold devastated Solomon Islands, Vanuatu, Fiji and Tonga.

Despite being forced to bear the brunt of the harm caused by global heating, Pacific Island Countries (PICs) are among the nations of the world least responsible for creating the climate crisis. The highest 15 emitting nations together produce 72.21 per cent of global emissions, while Pacific Island Countries (14) produce just 0.23 per cent.

More critically, the current climate action plans of those responsible for this situation are grossly insufficient. Industrialised countries in the Global North are responsible for the vast majority of historic global emissions. These wealthy and powerful nations have developed their economies through the extraction and exploitation of labour and natural resources from the Global South or current day 'developing' countries. The Global South is owed a 'climate debt' for the harm caused by these rich nations. Despite this, none of the top 15 greenhouse gas emitters have pledged emissions reductions, via their Nationally Determined Contributions (NDCs), that are consistent with the Paris Agreement's 1.5 degree heating limit or with the more lenient 2 degree Copenhagen limit, with the exception of India's 2 degree compatible goal.

The rich nations of the world are thereby deliberately avoiding their historical responsibility of making reparations to those who are suffering, and will continue to suffer, the worst impacts of the climate crisis. In the case of Australia, the world's 15th largest emitter, its failure to increase its emissions reduction goals in its updated 2020 NDC is in conflict with the intentions of the Paris Agreement, which requires signatory states to increase their emissions reduction ambition over time.

'Critically insufficient' NDCs, which would lock in over 4 degrees of heating if extrapolated across all nations, comprise 5.37 per cent per cent of annual global emissions, a substantial improvement from the 19.09 per cent in the first edition of this report in 2020. This is overwhelmingly due to the USA's substantially stronger NDC, which sees it move out of the Critically Insufficient category and into the Insufficient one.

'Highly insufficient' NDCs, which would lock in between 3 and 4 degrees of heating if extrapolated across all nations, comprise a further 33.10 per cent of annual global emissions, or slightly more than 2020's 32.87 per cent. 'Insufficient' NDCs, which would lead to between 2 and 3 degrees of heating if extrapolated across all nations, comprise a further 21.46 per cent of annual global emissions, significantly more than 2020's 13.22 per cent. Countries with NDCs that lock in at least 2 degrees of heating are therefore responsible for 66.77 per cent of annual global emissions, a slight increase on 2020's figure of 65.18 per cent.

Unless the world's top emitters quickly move to rectify the inherent injustice in this situation, the outlook for the Pacific is dire. The world in 2021 is 1.1 degrees celsius hotter than the pre-industrialisation average and the extreme impacts of a 1.1 degree rise in temperature are already apparent across the planet. If all current pledges to reduce global greenhouse gas emissions by the world's nations are achieved, the world is still projected to heat by a median estimate of 2.4 degrees by 2100, with a possible range of 1.9 to 3.0 degrees celsius. This would result in alarming extinction of numerous species, a rise in conflict, and the displacement of millions of vulnerable peoples.

As the IPCC's landmark research has recently demonstrated, global heating of even 1.5 or 2 degrees would be catastrophic for Pacific Island Countries.[1] As predominantly low-lying geographies, PICs are especially vulnerable to even small rises in sea level, including the associated loss of freshwater resources. They are highly reliant on healthy marine ecosystems and fisheries for food and economic prosperity, both of which would be severely degraded. Many PICs are also situated at low latitudes, where loss of coastal resources and decline of fisheries and aquaculture is predicted to be especially severe. As small island developing states, PICs will experience some of the highest water stress of any nations. They will also experience the largest projected falls in economic growth globally. Finally, they are among some of the most vulnerable nations to cyclones, which are projected to increase with additional heating.

Despite this, the Pacific story is one of resilience amid crisis. The solutions are being found in both age-old traditions and modern technology, and give cause for hope if we act in time. The nations of the world therefore need to rapidly reduce their emissions and go well beyond their current commitments, with the most-polluting countries, such as China, the USA and Australia leading the way. Australia, as a nation with significant interests in the Pacific and which claims a special friendship with Pacific Island Countries, has a particular responsibility to lead in this arena, if it is to meet its obligations to the communities of the Pacific, and to the world as a whole.

Introduction

Te Mana o te Moana ('The Spirit of the Sea') is the Pacific's challenge to the world in the face of the climate crisis.

It begins by outlining the impacts that the Pacific has already felt from global heating (Chapter 1). It proceeds to establish where responsibility for this situation lies, by analysing the current state of global emissions, and the (in)adequacy of the climate reduction commitments of the largest 15 greenhouse gas emitting nations (Chapter 2). The report explores the projected rises in global temperatures if those commitments are met, along with what temperature rises will take place based on the current policies that are in place alone (Chapter 3.1).

The report then discusses the impacts that are projected to be felt in the Pacific at even 1.5 degrees of warming (Chapter 3.2), focusing on the IPCC's recent landmark study, and concludes with a discussion of necessary emissions commitments and policy changes to prevent this situation becoming a reality, with a particular focus on Australia (Chapter 4).

Case studies of individual Pacific Island people and their communities are interspersed throughout the report, grounding its findings in the lived experience of the region in the face of the climate crisis, and highlighting their demands for change.

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Pacific Island Represent Fiji activists gather to display a banner reading "Survive, Thrive, 1.5" to send a message to world leaders meeting this week at the Climate Vulnerable Forum (CVF), after they conducted a beach clean up activity at Nasese Seawall in Suva, Fiji.

1 The Pacific under threat

1.1 What is the harm that global heating has already caused to the Pacific?

The Pacific region encompasses approximately 165 million square kilometres, covering one-third of the Earth's surface. With over 25,000 islands, many of which are low-lying, Pacific communities are facing an existential threat from global heating-driven impacts such as sea level rise and more intense cyclones. Moreover, Pacific Island Countries (PICs) are only responsible for 0.23 per cent of global emissions and yet are among the most vulnerable to impacts from the climate crisis.[2]

In 2018, the Intergovernmental Panel on Climate Change (IPCC) published a *Special Report on Global Warming of 1.5°C* which showed that human activities have caused global temperatures to rise by around 1.1°C above pre-industrial levels, and are causing devastating climate impacts.[3] Over 9.2 million people have been affected by extreme events in the Pacific over the past 50 years, which have led to approximately 10,000 reported deaths and damages of about $3.2 billion.[4] Tropical cyclones have been the major cause of this loss and damage.[5] The non-economic impacts of climate change receive less attention but are also devastating the social and cultural fabric of Pacific communities and deeply marginalising vulnerable groups such as women, peoples living with disability, children, gender non-binary, and elderly persons.

Along with adaptation challenges, Pacific communities are facing irreversible loss and damage from climate change, which go beyond communities' capacity to adapt. This includes slow onset events such as sea-level rise, warming oceans, ocean acidification, and salinisation, as well as extreme weather events such as cyclones, flooding and drought. While these categories are useful distinctions, it is important to note that both are occurring concurrently: as global heating drives slow onset events, it is exacerbating extreme weather events.

Loss and damage can be categorised into economic (income, infrastructure, property) and non-economic (life, cultural heritage, indigenous knowledge, mental and physical human health) losses. In low- and middle-income countries, damage to power generation and transport infrastructure from extreme weather events are estimated to cost $18 billion per year; additional losses of $390 billion per year are caused by disruptions to households and businesses.[6] The IPCC projects a significant cost difference between heating of 1.5°C and 2°C with $54 and $69 trillion respectively - or roughly between 2.5 and 3.5 times the annual GDP of the United States - compared to 1961-1990.[7] Heavily indebted Pacific governments are in a poor position to provide humanitarian relief for post-disaster recovery, develop climate resilient infrastructure, provide technology and resources or provide climate finance for loss and damage. With each new disaster, the Pacific loses an intrinsic part of its identity and future.

1.1.2 Slow onset events

Global sea-level rise is a critical threat to Pacific Island Countries. Failing to achieve net zero emissions by 2050, and continuing with 'business as usual', will mean at least 0.6m of sea level rise by 2100.[8] Seas are now rising twice as fast as the average in the twentieth century. When once habitable areas are swallowed up by the sea, communities are forced off their land and become internally displaced people, essentially refugees in their own countries.[9] Rising seas also cause inundation, leading to salinisation of agricultural land, making growing crops very difficult or impossible. The IPCC's *Special Report on the Ocean and Cryosphere* highlights the cultural risks caused by climate impacts on marine ecosystems. Through changes in the availability of particular species and reduced access to fishing or hunting areas, climate impacts may cause rapid and irreversible loss of culture and indigenous knowledge, as well as adverse impacts on traditional diets, food security, and marine recreation activities.[10]

Pacific countries are already being affected by sea level rise, which has caused land loss and led to relocation for a number of communities. Research shows sea level rise at a rate of 3-6mm per year for the Pacific, with variations between islands. Islands in the Western Pacific, such as Solomon Islands and Papua New Guinea, have experienced sea-level rise of up to 6mm per year, in contrast to islands further east, such as Samoa and Kiribati, which are impacted less by slow-onset events but are no less vulnerable to extreme weather events.[11] In 2019, the Solomon Islands lost significant amounts of land including five uninhabited islands and sections of land from six other islands have substantially eroded, forcing communities to relocate.[12] These six islands lost 20 per cent of their land between 1947 and 2014. Shoreline erosion in two areas have destroyed villages which have been there since 1935, leading to community relocation, including Nuatambu Island which lost 11 houses and was home to 25 families. Since 2011, Nuatambu has lost half its inhabitable area. Relocated families from Nuatambu are now living on the nearby large island of Choiseul, and what was once a single village is now broken up into five separate communities, harming generations-old relationships and kinship ties.[13]

Saltwater intrusion from coastal flooding disrupts farming and can result in relocation. It is estimated that the cost of saltwater intrusion on Fiji's largest island, Viti Levu, is $52 million per year or 4 per cent of Fiji's GDP. In 2014, the village of Vunidogoloa became the first community in Fiji to relocate because of global heating after several failed attempts to adapt by building sea walls. With rising sea levels causing coastal erosion and inundation, flooding became an increasing threat. The villagers of Vunidogoloa moved two kilometres inland from their original coastal settlement and jointly contributed to the cost of relocating.

Vunidogoloa is the first case of many. The Fijian Government has identified 830 vulnerable communities, with 48 highlighted as priority relocations.[14] These relocations will not only come with economic costs of materials and construction - the Vunidogoloa relocation is estimated to have cost FJD$980,000 (AUD$630,000) of which the government contributed FJD$740,000 (AUD$476,000) and the community provided FJD$240,000 (AUD$154,000) worth of timber as building materials.[15]

The relocation was culturally, emotionally, and spiritually difficult for those affected. It meant moving from their ancestral land and the place they called home - a powerful, culturally important tie to country that is often difficult for a western reader to understand - changing their way of life, and adjusting to a new place of residence. The move inland has meant, for example, that women who usually went fishing as part of their livelihood can no longer take the lengthy absences from their usual care work that this would require.[16]

Globally, the alkalinity of the ocean has decreased compared to pre-industrial levels and acidity has increased by at least 26 per cent as oceans continue to absorb carbon. Ocean acidification leads to coral stress which can have a major impact on marine ecosystems, livelihoods, and food security.[17] Heating oceans cause coral bleaching which eventually leads to coral death. Hotter, more acidic oceans, combined with non-climate pressures such as overfishing, pollution and coastal development, can cause a reduction in live coral, greater algae cover and diseases, and weakened reef structures and devastating marine ecosystems.[18] The longest coral bleaching event on record occurred from 2015 to 2016, causing significant habitat and biodiversity losses around the world

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and in the Pacific, including at Ofu Island in Samoa and reefs around Gau Island and the Vatu-I-ra seascape in Fiji.[19] It was fitting, therefore, that in 2019 Pacific Island leaders came together to declare the state of the Pacific Ocean a climate crisis at the 50th Pacific Islands Forum in Tuvalu.[20]

These impacts make the longer-term economic outlook for the states in question more perilous. As ecosystems become degraded, and coastlines erode, Pacific Island Countries (PICs) are in danger of losing crucial marine resources, such as tuna fisheries, which bring in over $460 million in revenue through licence fees to PICs.

1.1.3 Extreme weather events

Climate change is increasing the intensity of cyclones, leading to devastation across the region. The Pacific was recently hit by two category 5 cyclones in the space of twelve months. The first was Cyclone Pam which struck Vanuatu in March 2015, causing widespread damage across all six provinces, amounting to 64 per cent of the country's GDP, or close to AUD$1 billion. Over half the population, about 166,000 people, were affected and an estimated 95 per cent of crops were destroyed in affected areas.[21] There was also extensive destruction of pandanus leaves which led to the loss of livelihoods for women who rely on pandanus leaves for weaving mats and handicrafts to sell.[22] In February 2016, Cyclone Winston, the strongest cyclone to make landfall in the Southern Hemisphere, caused mass damage with 350,000 people (40 per cent of the population) of Fiji affected, including more than 60,000 people displaced and 40,000 homes damaged. Cyclone Winston caused $1.4 billion worth of damage, equivalent to over 30 per cent of Fiji's GDP.[23]

Similarly intense and damaging cyclones have been seen since. Category 4 Tropical Cyclone Gita devastated Tonga in February 2018: the worst storm the kingdom had experienced in 60 years at the time. Gita caused flooding, displacement, and destruction of significant landmarks including Tonga's Parliament House.[24] During the first week of April 2020, Cyclone Harold devastated communities in Solomon Islands, Vanuatu, Fiji and Tonga. On April 2, Cyclone Harold swept through Solomon Islands. During strong winds and heavy rain across the country, the ferry MV Taimareho encountered rough seas and 27 of the 738 passengers died after being thrown overboard. A few days later, Cyclone Harold hit Vanuatu as a Category 5 cyclone, the strongest to land in Vanuatu since Cyclone Pam in 2015. Due to COVID19 measures, humanitarian relief supplies that arrived had to be quarantined for days, delaying their delivery to communities in need. From 6 April, Fiji faced destruction from Cyclone Harold including whirlwind damage to homes and buildings on Viti Levu. About 1,700 people had to be evacuated to 61 evacuation centres while continuing to practise COVID19 precautionary measures.[25] The climate-driven harm faced in 2020 highlights the dual impact of the climate crisis and COVID19. As Pacific communities build resilience, they must also now take into consideration the challenges of a global pandemic which is acting as a force multiplier.

Penelise Alofa standing next to the sea wall with waves in the community Temwaiku-Tenei, on arawa Island, where the rising ocean is encroaching on their community.

Between 1970 and 2007, there were 41 documented flood events in Fiji, affecting approximately 220,000 people and resulting in 88 deaths.[26] In January 2009, several parts of the country were affected by multiple flooding events. The impact was greatest in Western Viti Levu, including the Nadi and Ba areas. The Fiji Meteorological Service identified this as a one-in-50-year event. The Fijian government requested the Pacific Islands Applied Geoscience Commission (SOPAC) to conduct an assessment of economic losses, which were defined as structural damage, lost assets or possessions, medical impacts, evacuation or relocation of people or goods, and the loss of wages and or business. The assessment concluded that costs totalled approximately FJD$330 million (AUD$212) from families and businesses in the area.[27]

The climate crisis has exacerbated drought conditions in the Pacific, a situation that has been particularly devastating for atoll islands whose freshwater sources are already scarce. In 2011, several countries suffered drought conditions. One of the most severely affected was Tuvalu, whose government declared a state of emergency in the face of a water shortage. Very little rain was seen for months and crops failed across the Tuvalu archipelago. Relief efforts from Australia, New Zealand, Japan and the International Red Cross brought emergency bottled water and desalinisation equipment.[28] The risk of droughts is concerning for the Pacific especially as more than 70 per cent of Pacific populations directly or indirectly rely on agriculture as a source of livelihood and historical trends show movement towards a drier and warmer climate for the southern Pacific.[29]

King tides are extraordinarily high tides that can cause coastal flooding, at times reaching up to 80 per cent higher than the average tide levels. As sea levels continue to rise, king tides feature strongly, increasing damage to coastal communities and territories. In 2014, king tides in the Marshall Islands led the government to declare a state of emergency. 70 homes were damaged in the capital, Majuro, and 940 people were evacuated. Outer islands were also affected with loss of food stock: most of the breadfruit, pandanus and banana trees were destroyed; and water sources were contaminated, with 80 per cent of desalinisation facilities affected.[30] In February 2015, Kiribati experienced king tides that severely affected South Tarawa and flooded Betio Hospital, destroying food crops and contaminating freshwater sources. Kiribati's sea walls were not able to stop the king tides from washing over them: a phenomenon that will happen more frequently as king tides grow worse due to climate change.

As global heating continues to increase, these impacts will grow more serious, causing environmental degradation, loss of livelihoods and land. The right to access basic human rights such as food, water, shelter, education, employment, health and safe environment are under threat. The *IPCC Special Report on Global Warming of 1.5°C* outlines the harm that will result from 1.5°C compared to 2°C, highlighting the fact that climate impact risks are lower for a temperature rise of 1.5°C compared to 2°C, and that half a degree is critically important for the future of the Pacific.[31] In the face of increasingly severe impacts, Pacific Island Countries continue to fight and call for more ambitious action from the world's biggest polluters.

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CASE STUDY

Winnie Tovo

DISABILITY FOCAL POINT, MELE MAAT, VANUATU

Accessibility is a key inspiration for my role as a leader and focal point in my community. I want to ensure that events and community planning take into account the needs and ensure that spaces are accessible to those of us with a disability. There are wheelchairs of different sizes, if there is no ramp or if the door is too small then those of us in a chair cannot gain access.

Climate change has been impacting our community. Many people in Vanuatu are subsistence farmers, growing the food they need to eat. But it is getting harder, with more extreme and unpredictable weather patterns. When we plant, our crops sometimes fail because the ground is too dry and hard. When the crops fail, we have to go to the market to buy food, but for that you need money. In our village climate change affects everyone, but for those of us with a disability the impact is even greater. Because for us, if our crops fail then we don't know where we are going to get our food from. Sometimes families treat those with a disability differently, worse than those without a disability, so we will get less food.

It is also difficult for those of us with a disability when there is a disaster like a cyclone. Those who are blind or deaf, need to have a carer or family member with them, to help guide them. But many families will ignore the needs of those with a disability during a disaster.

I think the big emitters should stop polluting the environment because it is damaging our crops. They should find a way to use solar to run transport and factories in order to cut down on their emissions and help prevent damage to our livelihoods.

There are other young women across the globe who face the same climate change challenges that we face. Some of them even face harder challenges than us. I want to encourage them, in the face of climate change I want every young girl to join together and work together to stop climate change.

CASE STUDY

Esther Ruben

COMMUNITY MOBILISER TANNA ISLAND, VANUATU

Equity is the inspiration for my work as a community mobiliser because currently, in a time of a crisis, I think that there is no equity. That is why I became a leader, to talk out about equity.

Climate change impacts my community in West Tanna, especially during the El Nino periods there is no water. Climate change has exacerbated El Nino and increased its frequency. Now in Tanna those down by the coast have water but those of us who live inland, we do not have any water. Water is health. If you do not have water, you do not have good health and you are faced with sickness. The children need water to wash, and have clean clothes, and to be able to go to school. If we do not have water, it has a huge negative impact on us. It affects us all but it mostly affects the children, the elderly and those with disabilities because they do not have enough strength to go out and find water from other sources.

I think those in the large emitting countries must make a bigger effort to reduce their impact on climate change, they must reduce their emissions for the health and safety of us all.

To the leaders of these countries I would say, before you create something new, or sign off on things, you must think about the impact on other countries, because the things that you do in your country does not only affect your people, it affects those of us in other parts of the world too. You need to think twice before you make decisions, or expand your industries, you need to think about how you can reduce your contribution to climate change.

To all the young women facing the effects of climate change on their daily lives I say, you must stand up strong. Do not look down on yourselves when you face these challenges, you must stand up and use your voices, make yourselves heard. Stand up and project your voices so that your governments and those of other countries too will hear their voices.

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2 Who is responsible?

2.1 Who is causing the climate crisis? Which nations are the biggest greenhouse gas emitters?

Global emissions in 2018 were 48.94 gigatonnes of carbon dioxide equivalent (48.94 Gt CO2e).[32] The biggest emitter was China, with 23.93 per cent of global emissions, followed by the USA, with 11.83 per cent of global emissions. Australia was the 15th largest emitter, with 1.27 per cent of global emissions. Taken together, the 14 Pacific Island Countries (PICs) that have ratified the Paris Agreement comprise just 0.23 per cent of global emissions.

The top 15 greenhouse gas emitting nations or national groupings and those of Pacific Island Countries are shown in the table below.

Rank	Nation	Gt CO2e	% of global total
1	China	11.71	23.93%
2	USA	5.79	11.83%
3	India	3.35	6.85%
4	EU (27)	3.33	6.80%
5	Russia	1.99	4.07%
6	Indonesia	1.70	3.47%
7	Brazil	1.42	2.90%
8	Japan	1.15	2.35%
9	Iran	0.82834	1.69%
10	Canada	0.76344	1.56%
11	Mexico	0.69526	1.42%
12	Democratic Republic of the Congo	0.68167	1.39%
13	South Korea	0.67308	1.38%
14	Saudi Arabia	0.63812	1.30%
15	Australia	0.61926	1.27%
	Top 15 emitters	35.34	72.21%
	Pacific Island Countries (14)	0.113798	0.23%
	World total	48.94	100%

FIGURE 1 Top 15 greenhouse gas emitters, 1990-2018 (line chart)

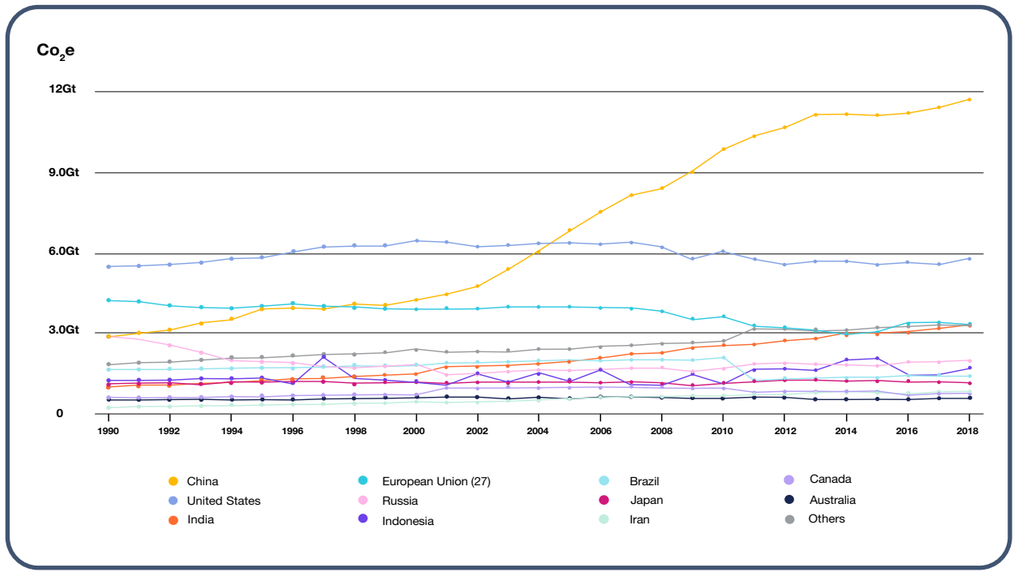
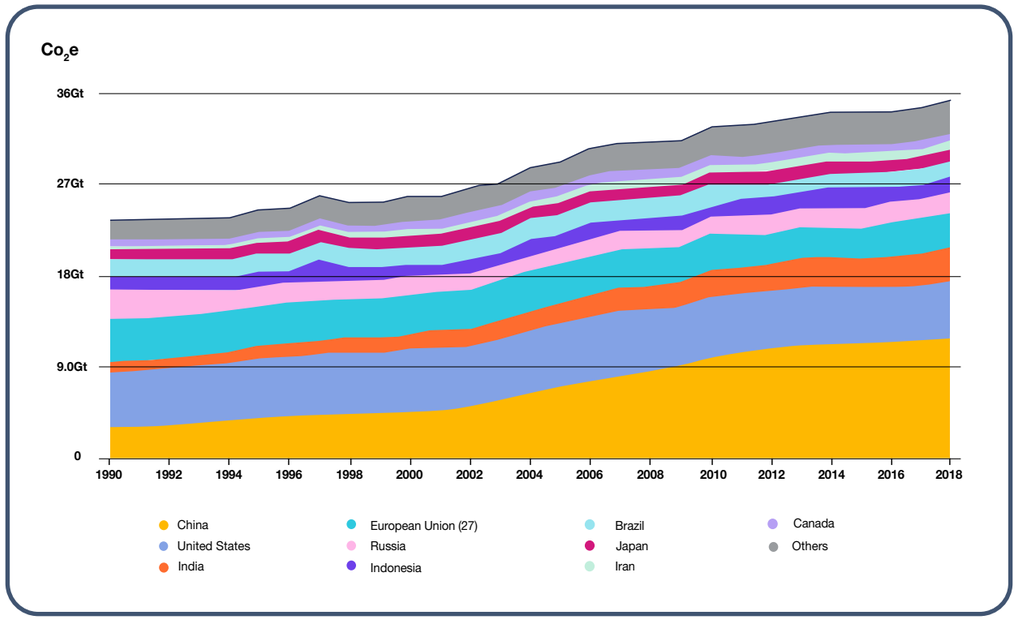


FIGURE 2 Top 15 greenhouse gas emitters, 1990-2018 (stacked area chart)



2.2 What are the Nationally Determined Contributions of the highest emitting nations under the Paris Agreement to 2030?

The NDCs of the top 15 greenhouse gas emitting nations or national groupings under the Paris Agreement are shown in the table below.[33]

The second column of the table represents these nations' NDCs as at the publication of the first edition of this report, in November 2020. Since then, a number of countries have updated their emissions reduction targets, most prominently in a flurry of announcements at the end of 2020 and during US President Joe R. Biden's April 2021 Leaders' Summit on Climate. These new commitments are shown in the third column.

The increased ambition embodied in these new targets - if it is fulfilled through meaningful policy implementation - would result in 0.2 degrees less warming by 2100 than under the targets that were in place in November 2020: an improvement, but still far too small a change to prevent the worst impacts of global heating. [34]

Nation	NDC to 2030 as of November 2020 (2016 NDC)	NDC to 2030 as of July 2021 (2021 NDC)[35]
China	Peak CO_2 emissions by 2030 at latest Non-fossil fuel share: 20% by 2030 Forest stock: +4.5 billion m^3 above 2005 by 2030 Carbon intensity: 60% to 65% below 2005 by 2030 [33-47% above 2010 by 2030 excl. LULUCF for peaking and non-fossil targets] [36-53% above 2010 by 2030 excl. LULUCF for carbon intensity targets] Emissions to be 421-465% higher than 1990 levels [126-139% higher than 2010 levels] Coverage: economy wide	Peak CO_2 emissions before 2030, and making best efforts to peak earlier Non-fossil fuel share: 25% by 2030 Forest stock: +6 billion m^3 above 2005 by 2030 Carbon intensity: over 65% below 2005 by 2030 Increase of installed capacity of wind and solar to 1.2 billion Kilowatts by 2030 Emissions to be 396-441% higher than 1990 levels [118-132% higher than 2010 levels] Coverage: economy wide Long term goals: Carbon neutrality before 2060[36]
USA	26-28% below 2005 by 2030 incl. LULUCF [10-17% below 1990 by 2025 excl. LULUCF 17-24% below 2010 by 2025 excl. LULUCF] Coverage: economy-wide incl. LULUCF Long term goals: Obama Administration mid-century strategy: 80% below 2005 levels by 2050 incl. LULUCF [68-76% below 2005 by 2050 excl. LULUCF] 76% below 1990 incl. LULUCF	50-52% below 2005 by 2030 incl. LULUCF [35-42% below 1990 by 2030 excl. LULUCF 40-47% below 2010 levels by 2030] Coverage: economy-wide incl. LULUCF Long term goals: Net zero emissions by 2050
India	33-35% below 2005 emissions intensity of GDP by 2030 [413-445% above 1990 by 2030 excl. LULUCF] [146%-161% above 2010 by 2030 excl. LULUCF] Non-fossil share of cumulative power generation capacity to be 40% by 2030 LULUCF: additional carbon sink of 2.5-3 $GtCO_2e$ by 2030	Has not updated its NDC.
EU (27)	At least 40% below 1990 emissions by 2030 [29% below 2010 by 2030] Coverage: economy-wide Long term goals: 91-94% reduction below 1990, excl. LULUCF but incl. carbon removal	At least 55% below 1990 emissions by 2030 [49% below 2010 by 2030] Coverage: economy-wide Long term goals: 91-94% reduction below 1990, excl. LULUCF but incl. carbon removal. 'Climate neutral' by 2050
Russia	25-30% below 1990 by 2030 [19-24% below 1990 by 2030 excl. LULUCF] [18-25% below 2010 by 2030 excl. LULUCF] Coverage: economy-wide, incl. LULUCF Long term goals: none	Russia formally submitted a new NDC in late November 2020, but did not increase its ambition.
Indonesia	Unconditional targets: 29% below BAU by 2030 incl. LULUCF [535% above 1990 by 2030 excl. LULUCF] [158% above 2010 by 2030 excl. LULUCF] Conditional targets: Up to 41% below BAU by 2030 incl. LULUCF. [469-502% above 1990 by 2030 excl. LULUCF] [131-145% above 2010 by 2030 excl. LULUCF] Coverage: economy-wide incl. LULUCF Long-term goals: none	Indonesia has not proposed or submitted an updated NDC. Indonesian media reports suggest that Indonesia will maintain its current NDC unchanged.
Brazil	1.3 $GtCO_2e$ by 2025 incll LULUCF [76% above 1990 levels by 2025 excl. LULUCF] 5% above 2010 levels by 2025 excl. LULUCF] 'Indicative': 1.2 $GtCO_2e$ by 2030 incl. LULUCF [58% above 1990 levels by 2030 excl. LULUCF] [6% below 2010 levels by 2030 excl. LULUCF] Coverage: economy-wide incl. LULUCF	Brazil has submitted an updated NDC which maintains the same emissions reduction targets, but with increased base year emissions. This will allow Brazil to increase its emissions in practice, making its updated NDC less ambitious than its 2016 iteration.
Japan	26% below 2013 by 2030 [15% below 1990 by 2030 excl. LULUCF] [17% below 2010 by 2030 excl. LULUCF] Coverage: economy-wide incl. LULUCF and overseas credits for 2030 Long-term goals: Net zero by 2050 (base year not specified) [78% to 80% below 1990 by 2050 excl. LULUCF] [79%-81% below 2010 by 2050 excl. LULUCF]	46% below 2013 by 2030 Coverage: economy-wide incl. LULUCF and overseas credits for 2030 Long-term goals: Net zero by 2050 (base year not specified) [78% to 80% below 1990 by 2050 excl. LULUCF] [79%-81% below 2010 by 2050 excl. LULUCF]

Nation	NDC to 2030 as of November 2020 (2016 NDC)	NDC to 2030 as of July 2021 (2021 NDC)
Iran	Unconditional target: 4% below a BAU scenario by 2030 Conditional target: 8% below the unconditional target (i.e. 12% reduction on BAU by 2030). Coverage: sectors not specified. Long-term goals: none.	Has not updated its NDC
Canada	30% below 2005 by 2030 [13% below 1990 by 2030 excl. LULUCF] [24% below 2010 by 2030 excl. LULUCF] Coverage: economy-wide incl. LULUCF Long-term goals: net zero by 2050. [65% below 2005 levels excl. LULUCF]	40-45% below 2005 by 2030 Coverage: economy-wide incl. LULUCF Long-term goals: net zero by 2050. [65% below
Mexico	Unconditional targets: 22% GHG, 51% black carbon, total 25% below baselines provided in NDC document by 2030 [74% above 1990 by 2030 excl. LULUCF] [18% above 2010 by 2030 excl. LULUCF] Conditional targets: 36% GHG, 70% black carbon, total 40% below baselines provided in NDC document by 2030 [42% above 1990 by 2030 excl. LULUCF] [3% below 2010 by 2030 excl. LULUCF] Coverage: economy-wde, incl. LULUCF Long-term goals: 50% below 2000 by 2050. [27-37% below 1990 by 2050 excl. LULUCF] [50-57% below 2010 by 2050 excl. LULUCF]	Mexico's updated NDC has retained the same emissions reduction targets as its 2016 NDC. However, its BAU emissions projections have been revised upwards, making its NDC an effective reduction in ambition.
Democratic Republic of the Congo	17% below BAU by 2030 [Equivalent to a reduction of 70 MtCO2e incl. LULUCF] Coverage: Energy, Agriculture and LULUCF	The Democratic Republic of the Congo has declared an intention to increase its ambition in an updated NDC, but has not proposed or submitted one yet[37]
South Korea	37% below BAU by 2030 [78% above 1990 by 2030 excl. LULUCF] [20% below 2010 by 2030 excl. LULUCF] Coverage: economy-wide (including international market mechanisms) Long-term goals: net zero by 2050.[38]	South Korea's updated NDC has not changed its effective emissions reduction targets. It includes its net zero by 2050 ambition (announced late last year, but not formally included in South Korea's target infrastructure at the time).
Saudi Arabia	[416-562% above 1990 by 2030 excl. LULUCF]* [62-108% above 2010 by 2030 excl. LULUCF]* Conditional targets: Reduction of up to 130 MtCO2e below BAU by 2030 Coverage: individual measures Long-term goals: none	Has not updated its NDC
Australia	26-28% below 2005 by 2030 [5-10% above 1990 levels by 2030, excl. LULUCF] [14-18% below 2010 levels by 2030, excl. LULUCF] Coverage: economy-wide, incl. LULUCF Long-term goals: none.	Australia's updated NDC has retained its previous emissions reduction target unchanged. Australia's 2021 commitment to 'achieve net zero emissions as soon as possible' is too vague to be considered a substantive update to its long term goal.

2.3 Where does responsibility for emissions reduction lie? How sufficient are the top emitting nations' commitments?

Greenhouse gas emissions are not equally shared by the world's nations. The top 15 emitters together produce 72.21 per cent of global emissions, while Pacific Island Countries (14) collectively produce just 0.23 per cent.

Moreover, historic emissions have been overwhelmingly produced by 'developed' nations in the global North because their economies industrialised earlier than 'developing' countries. Both factors must be taken into account when determining responsibility for the impacts of global heating that are already being felt, as well as those projected to occur.

Nations' NDCs may be classified into 5 categories.[39]

Category	Definition
Critically insufficient (4°C+ world)	NDCs with this rating are well outside a country's 'fair share' range. If all government NDCs were within this range, global heating would exceed 4°C.
Highly insufficient (<4°C world)	NDCs with this rating are outside a country's 'fair share' range, but to a lesser extent than the previous category. If all government NDCs were within this range, global heating would reach 3-4°C.
Insufficient (<3°C world)	NDCs with this rating fall in the least stringent part of a country's 'fair share' range. If all government NDCs were within this range, global heating would reach 2-3°C.
2°C Compatible	NDCs with this rating are consistent with the 2009 Copenhagen 2°C goal. If all government NDCs were within this range, global heating would reach 2°C, still exceeding the Paris Agreement's goal of 1.5°C.
1.5°C Paris Agreement Compatible	NDCs with this rating are consistent with the Paris Agreement's goal of limiting heating to 1.5°C.

The below table outlines the extent to which countries' Nationally Determined Contributions are sufficient to meet their 'fair share' of emissions reduction, and whether their current policies are sufficient to meet their NDC.

Nation	Gt CO2e	% of global total	NDC rating	Will their policies meet their NDC target?[40]
China	11.71	23.93%	Highly insufficient (<4°C world)	YES
USA	5.79	11.83%	Insufficient0 (<3°C world)	NO
India	3.35	6.85%	Compatible with 2°C world	YES
EU (27)	3.33	6.80%	Insufficient (<3°C world)	CLOSE
Russia	1.99	4.07%	Critically insufficient (4°C+ world)	YES
Indonesia	1.70	3.47%	Highly insufficient (<4°C world)	YES
Brazil	1.42	2.90%	Highly insufficient (<4°C world)	NO
Japan	1.15	2.35%	Insufficient (<3°C world)	NO
Iran	0.82834	1.69%	-	-
Canada	0.76344	1.56%	Insufficient (<3°C world)	NO
Mexico	0.69526	1.42%	Highly insufficient (<4°C world)	NO
Democratic Republic of the Congo	0.68167	1.39%	-	-
South Korea	0.67308	1.38%	Highly insufficient (<4°C world)	NO
Saudi Arabia	0.63812	1.30%	Critically insufficient (4°C+ world)	NO
Australia	0.61926	1.27%	Insufficient (<3°C world)	NO
Top 15 emitters	35.33917	72.21%	-	-
World total	48.94	100%	1.9-3.0°C of heating	NO

None of the top 15 greenhouse gas emitters have pledged NDCs that are consistent with the Paris Agreement's 1.5 degree heating limit or with the more lenient 2 degree Copenhagen limit, with the exception of India's 2 degree compatible goal.

'Critically insufficient' NDCs, which would lock in over 4 degrees of heating if extrapolated across all nations, comprise 5.37 per cent per cent of annual global emissions, a substantial improvement from the 19.09 per cent in the first edition of this report in 2020. This improvement is overwhelmingly due to the USA's substantially stronger NDC, which sees it move out of the Critically Insufficient category and into the Insufficient one.

A road is damaged by Cyclone Donna on Efate island. The storm was a category 4 on a scale of 5, and impacted the archipelago despite being out of the usual tropical cyclone season. According to experts, this type of extreme weather phenomena occurs more and more frequently and intensely as a result of climate change.

'Highly insufficient' NDCs, which would lock in between 3 and 4 degrees of heating if extrapolated across all nations, comprise a further 33.10 per cent of annual global emissions, or slightly more than 2020's 32.87 per cent. 'Insufficient' NDCs, which would lead to between 2 and 3 degrees of heating if extrapolated across all nations, comprise a further 21.46 per cent of annual global emissions, significantly more than 2020's 13.22 per cent.

Countries with NDCs that lock in at least 2 degrees of heating are responsible for 66.77 per cent of annual global emissions, a slight increase on 2020's figure of 65.18 per cent.

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CASE STUDY

Dorah Willy

COMMUNITY MOBILISER
EAST SIDE OF EFATE, VANUATU

In my leadership role in the community, I have experienced my own strength. My strength lies in the fact that I put my words into action. The problem is often that we do not believe in our strength, we do not assure ourselves or have the confidence to turn our strength into action. It is easy to talk, to share ideas and wait for others to turn them into action, but that will not happen. In my view, strength is something that gives me power to face anything from the small things to the big ones.

In our community we face many impacts of climate change now. Our fruit trees are not following their seasons anymore. I also live near the saltwater, I see the places where the saltwater never came before, that are now being covered in water in rough weather. I have a small area near my home where the children will come and play when they finish school. There is a hammock and shade, but now if the sea is rough it will come up to the hammock. My husband says it will not always be like this, but I say "No, it will become more regular because this is climate change, this is the impact."

Our community has raised their concern regarding climate change and the rising sea levels, but little changes, so as women in the community we have taken some action ourselves.

I think that all the industries in the whole world must take into consideration their environmental impacts and contribution to climate change. It's not just about money, money, money. Because of money they feel that they have to earn more, build more. But no, they need to think about the welfare of the people, the welfare of everyone, including the environment, even the creatures. If we do not take these into consideration and reduce our current climate change impact then we might end up destroying our whole world.

If you are a youth that is listening, please don't think that you are not important or that you have nothing to contribute, find a friend or join hands with other groups of people that are fighting to reduce the impacts of climate change. When you see them, don't think little of yourself, go and join them! When we join together, we get strength in numbers. Even if you are a youth that knows little about the impacts of climate change, come and join hands, you will learn from me and I will learn from you and we will live happily together.

CASE STUDY

Risu Kalotiti

ENVIRONMENTAL ACTIVIST
VANUATU

Like most islanders, our daily life revolves around the sea. Fish are our main source of protein. We also harvest seaweed and shellfish, and still use traditional fishing methods. Knowledge that has been passed down from generation to generation.

Since I was young, I was told how my grandfathers would play with the waves, bodysurfing and using broken canoes on the reefs. My dad was one of the first stand-up surfers on our island, now all of my siblings and I surf.

Growing up in the ocean, I have seen the reefs around our village changing. We see the effects of climate change, the sea level rising, the corals bleaching and less fish on our reefs.

We live according to the season patterns, planting our crops and fishing. Now the patterns are no longer consistent. It could be dry and sunny in the middle of the rainy season or flooding in the dry season. Vanuatu is known for its cyclone season and we would prepare for it, but now they are coming out of season and they are bigger, category 4 or 5, and they come out of the blue. Some of the cyclones cause damage to the nursery as do sudden changes in the water temp.

The thing I love about Pacific Islanders is our resilience. Because of the changes we are learning how to do things ourselves. We are learning how to adapt, and we are teaching ourselves. And while we adapt, we are looking after the environment and giving back to the elements. My big dream is to create a marine sanctuary in the bay where students can learn about coral, fish and the ocean. The reefs have kept our families and community alive for generations. We need to do the same for them.

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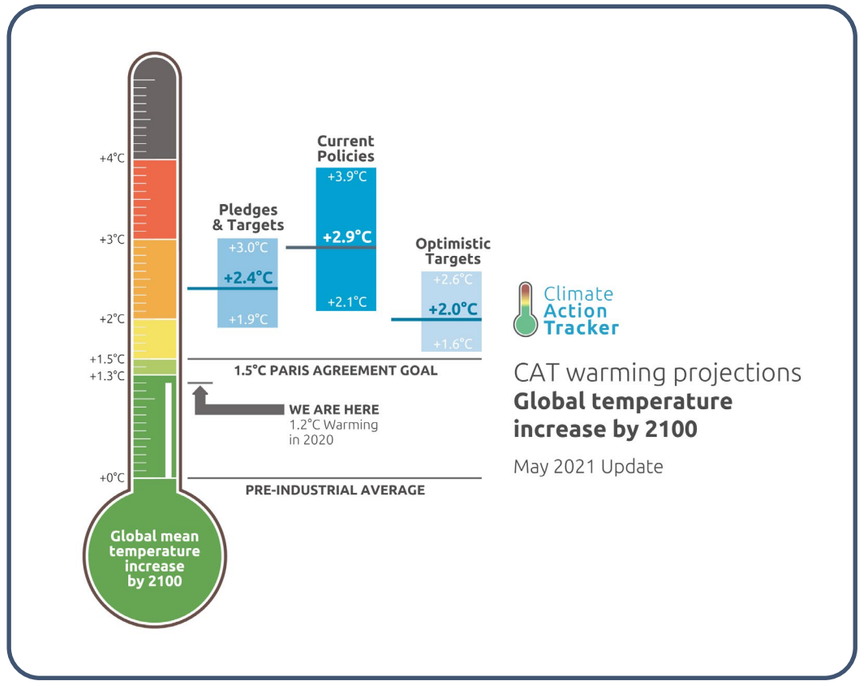
3 What do these commitments mean?

3.1 What amount of heating is likely?

The world in 2021 is 1.1 degrees celsius hotter than the pre-industrial average. If all current pledges to reduce global greenhouse gas emissions by the world's nations are achieved, the world is projected to heat by a median estimate of 2.4 degrees by 2100, with a possible range of 1.9 to 3.0 degrees celsius.[41]

However, many countries do not yet have policies in place that are likely to deliver on their NDC commitments. When taking into account *only the emissions reduction policies currently in place*, the world is projected to heat by a median estimate of 2.9 degrees by 2100, with a possible range of 2.1 to 3.9 degrees celsius.[42]

FIGURE 3 NDC assessment (Climate Action Tracker)[43]



3.2 What is the projected extent of climate-related harm that will be caused to the Pacific under current emission reduction settings?

The global consensus on limiting global heating and the damage it will cause, as embodied in the Paris Agreement, is that signatories must do all they can to prevent heating exceeding 1.5 degrees. This is because, while heating of between 1.1 and 1.5 degrees presents risks, the worst harm is not estimated to take place until temperatures breach the 1.5 degrees threshold.

The most authoritative, up-to-date assessment of the impacts of 1.5 degrees of heating is the IPCC's landmark Special Report: Global Warming of 1.5°C.[44] According to the IPCC:

> 'Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. *(high confidence)*'[45]

Key findings of the *Special Report* include:

- By 2100, sea levels will rise by between 0.26 and 0.77m under 1.5 degrees of heating. Under 2 degrees of heating, sea levels will rise a further 0.1m. This will result in up to 10 million more people being exposed to sea-level rise related risks. Sea level rise will continue beyond 2100 even under 1.5 degrees of heating.
- Sea level rise of 0.40m, which is well within the 1.5 degrees heating scenario, will degrade freshwater resources in Pacific atolls.[46]
- 'Increasing warming amplifies the exposure of small islands, low-lying coastal areas and deltas to the risks associated with sea level rise for many human and ecological systems, including increased saltwater intrusion, flooding and damage to infrastructure (high confidence). Risks associated with sea level rise are higher at 2°C compared to 1.5°C. The slower rate of sea level rise at global warming of 1.5°C reduces these risks, enabling greater opportunities for adaptation including managing and restoring natural coastal ecosystems and infrastructure reinforcement *(medium confidence)*.'[47]
- Extreme weather events, including cyclones, are projected to increase as the planet heats.
- 6 per cent of insects, 8 per cent of plants and 4 per cent of vertebrates are projected to lose over half of their climatically determined geographic range for global heating of 1.5°C. This compares with 18 per cent, 16 per cent and 8 per cent respectively for heating of 2°C.[48] These changes would significantly impact food security in the Pacific, which is already threatened due to overfishing.
- 'Global warming of 1.5°C is projected to shift the ranges of many marine species to higher latitudes as well as increase the amount of damage to many ecosystems. It is also expected to drive the loss of coastal resources and reduce the productivity of fisheries and aquaculture (especially at low latitudes).'[49]
- Coral reefs are projected to decline by a further 70-90 per cent with heating of 1.5°C. At 2°C, coral reef decline is projected to be over 99 per cent. As key bulwarks against king tides and erosion, the decline of coral reefs will act as a force multiplier for these events.
- 'The level of ocean acidification due to increasing CO2 concentrations associated with global warming of 1.5°C is projected to amplify the adverse effects of warming, and even further at 2°C, impacting the growth, development, calcification, survival, and thus abundance of a broad range of species, for example, from algae to fish *(high confidence)*.'[50]
- 'Populations at disproportionately higher risk of adverse consequences with global warming of 1.5°C and beyond include disadvantaged and vulnerable populations, some indigenous peoples, and local communities dependent on agricultural or coastal livelihoods *(high confidence)*.'[51]
- Small island developing states may experience 'higher water stress' - that is, they will struggle to get enough water for their usual needs - due to increasing aridity when global heating is allowed to reach 2°C, as compared to 1.5°C.[52]
- 'Countries in the tropics and Southern Hemisphere subtropics are projected to experience the largest impacts on economic growth due to climate change should global warming increase from 1.5°C to 2°C *(medium confidence)*.'[53]

Global heating of 1.5 or 2 degrees would be catastrophic for Pacific Island Countries. As predominantly low-lying geographies, PICs are especially vulnerable to even small rises in sea level, including the associated loss of freshwater resources. They are highly reliant on healthy marine ecosystems and fisheries for food and economic prosperity. Many PICs are also situated at low latitudes, where loss of coastal resources and decline of fisheries and aquaculture is predicted to be especially severe. As small island developing states, PICs will experience some of the highest water stress of any nations. They will also experience the largest projected falls in economic growth globally, as tropical and Southern Hemisphere subtropical nations. Finally, they are among some of the most vulnerable nations to cyclones, which are projected to increase with additional heating.

However, the *Special Report: Global Warming of 1.5°C* also notes:

> '[T]he cultural resilience of Pacific Island inhabitants is also recognized. In Fiji and Vanuatu, strategies used to prepare for cyclones include building reserve emergency supplies and utilizing farming techniques to ensure adequate crop yield to combat potential losses from a cyclone or drought. Social cohesion and kinship are important in responding and preparing for climate-related hazards, including the role of resource sharing, communal labour, and remittances. There is a concern that indigenous knowledge will weaken, a process driven by westernization and disruptions in established bioclimatic indicators and traditional planning calendars.'[54]

Pacific Island Countries are already bearing the brunt of today's climate impacts. These impacts are projected to be significantly worse under 1.5 and 2 degrees of heating. However, as noted above, even if all current NDCs were to be met, the world would still be on track for between 2.2 and 3.4 degrees of heating by 2100. It is clear, therefore, that the nations of the world must do everything within their power to rapidly reduce their emissions on an equitable basis.

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Greenpeace International activists paint the word 'RISK!' on the starboard side of Normand Energy, a vessel chartered by the Belgian company Global Sea Mineral Resources (GSR).

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CASE STUDY

Janet Iatiknu

TANNA ISLAND, VANUATU

Advocacy is what has inspired my leadership within the community. I became a leader in the community to be a voice for all the women in the community, especially when it comes to dealing with and preparing for disasters.

Previously we did not know the term 'climate change', we hadn't heard it or didn't understand what it meant, but then Cyclone Pam hit and we got a very clear picture of what climate change looks like. Cyclone Pam was a category 5 tropical cyclone that smashed Vanuatu in 2015, causing extensive damage to homes, businesses and gardens and claimed a number of lives. Since then, we are more aware of the effects of climate change. All of us women, the young girls, girls with disabilities, we all see the impact of climate change in our communities.

We are also struggling with an increasing frequency of acid rain. Previously it was rare, but now it is occurring every week. Before we used to get mangos from our trees that we could sell at the market but now we are losing all our fruit trees to the acid rain because it is happening every week. Before it wasn't like this. If we lose the fruit and veggies in our gardens and it has reduced our opportunities to make a living.

I learnt that an increase in acid rain is a part of climate change. I also learned that the emissions from the factories and transport also exacerbate climate change. Here in Vanuatu, we don't contribute too much to climate change. We contribute so little to the cause of climate change, but we suffer the effects of it.

I think the big emitting countries need to take action to reduce their contributions. They need to look for ways to reduce their impact to ensure that they are not affecting us by their actions. The way that we see it, if they contribute a lot of emissions but then other countries bear the impacts of it, that is not fair! They should take action for change.

I would tell the leaders of these big countries to reduce emissions and see how they can help us all, to look at how they can put into action a plan that will benefit their life while at the same time benefiting ours.

To all the young girls facing the impacts of climate change I say, it is good for you to rise up, speak up and give a voice to the issues that you face, especially when you are faced with a climate crisis.

CASE STUDY

Teruabine (Anna) Nuariki (Kiribati)

Anna is working on food and water projects in the outer islands of Kiribati. She has seen the impacts on communities of king tides that have led to flooding, devastation of home gardens, displacement, and salination of water sources. Recently, a flooding event happened at midnight, with waves crashing into homes in the dark.

Communities in the outer islands are building resilience through traditional farming practices to provide for themselves. Anna is also working to strengthen the capacity of women and young people through training to encourage self-awareness, sharing skills and first-hand experiences. Her message for those responsible for this crisis is:

> "Come and see our experiences. You need to put your feet in our shoes so you can experience how devastating and difficult it is for us facing the impacts. Stop polluting the air, stop carbon emissions. This will help future generations. Look at our children as if they're your own children. I believe you want better for them."

4 Climate justice and human rights

Climate change threatens not just human life but all life on Earth. The climate crisis is infringing on the human rights of millions globally, and particularly in the Pacific, where climate impacts are disproportionately affecting lives and livelihoods of vulnerable and marginalized groups including women, girls, LGBTQI+, rural and urban poor, and persons with disabilities. The right to life, safety, environment, food, water, shelter, education, health, employment including civil and political rights are gravely threatened by the rising inequality, discrimination and violence that climate crisis is triggering at an unprecedented scale across the globe.

Rapid and slow onset of climate change is destroying land and marine habitats, degrading the environment, and tipping the scale of irreversible biodiversity loss. Pacific communities are inherently connected to the land, the trees, the forests, rivers and oceans for all facets of their lives and the loss of these resources will destroy the Pacific way of life completely.

Climate Justice in the Pacific must be woven with the strands of identity, diversity, culture, history, language, and strength. There are two crucial strands of collective advocacy which frame the search for climate justice.

The first includes acknowledging the responsibility of major polluters and continuing to hold them accountable. This extends further than simply advocating for the banning of fossil fuels or higher climate ambitions but seeking climate and environmental reparations for the damage that has been caused by major polluters. Countries such as France, the United States, and the United Kingdom, should also be held accountable for the years of nuclear testing in the Pacific region, which has left behind nuclear waste and toxins that continue to affect generations of Pacific people.

The second comprises the agency and resilience of Pacific communities in fighting for our survival. The commitment, power and resilience of Pacific climate movements such as the Pacific Climate Warriors, Pacific Islands Students Fighting for Climate Change and a number of social and feminist movements including unions that have joined the youth leading the fight for climate justice in the region gives hope and courage to stand up against the systems that are perpetuating the neoliberal economic agenda of continued unsustainable development and profit.

The Pacific islands did not cause this crisis, yet they are facing the worst impacts of losses and damages from increasingly intense natural disasters, sea level rise, climate forced displacement and threats to food and water security. The major polluters should take the lead on mitigation and ensuring emissions reductions to keep global temperature rise to 1.5 degrees, and provide climate finance, capacity building, technology and resources to Pacific island countries to support climate adaptation and resilience.

Pacific communities are leading just and equitable climate solutions centred in traditional and indigenous knowledge that are environmentally sustainable and through global leadership, storytelling, campaigns, and intergenerational solidarity paves the way for a habitable future for all.

Pacific island countries have strongly committed to reducing emissions and moving to renewable energy as part of their Paris commitment. In 2020, Fiji, Marshall Islands, Papua New Guinea and Tonga submitted enhanced climate plans and other Pacific island countries stated their intention to do the same. Fiji has committed to reducing energy carbon emissions by 30 per cent by 2030, and to achieve net zero greenhouse gas emissions (GHG) by 2050. Marshall Islands committed

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Kiki plays in the ocean near her home in Vanuatu. With the rising sea levels and increasing water temperatures, the coastal villages in Vanuatu also struggle with erosion, dying reefs and deminishing fish numbers. However the population is resilient and learning new ways to adapt.

to a GHG reduction of at least 45 per cent below 2010 levels by 2030. Papua New Guinea committed to a carbon neutrality target within the energy industries sub-sector by 2030, and a reduction target in annual emission from deforestation and forest degradation compared to 2015 level by 2030. Tonga committed to reduce emissions by 13% by 2030 compared to 2006 in the energy sector through transition to 70 per cent renewable energy as well as energy efficiency measures. Tonga also commits to targets and measures in AFOLU and waste sectors as well as three adaptation targets.[55] This shows a unifying commitment by Pacific countries to contribute to urgent climate action as well as calling for it.

Pacific communities are sharing their stories of impacts and resilience, emphasising the narrative that we are fighting for our survival. Over the years and across multiple platforms, Pacific people have rebuffed victimhood and asserted agency in responding to the climate crisis. At the international level, One of the ways this is being done is through calls for greater global recognition of climate change as a human rights issue through an International Court of Justice Advisory Opinion (ICJAO). Revived as an initiative of Pacific Island Students Fighting Climate Change (PISFCC), this call is now part of a youth-led global movement supported by a number of legal experts.[56] Vanuatu is seeking to build a coalition with supporting countries for a vote on the ICJAO at the UN General Assembly.[57] Building on domestic climate litigation cases, an ICJAO on climate change could integrate human rights and environmental law; support more ambitious action under the Paris Agreement to fulfill existing human rights obligations; cement consensus on the scientific evidence of climate change; and help inform international and domestic climate litigation as a way to seek climate justice.

Further, the call for the appointment of a UN Special Rapporteur on Human Rights and Climate Change is also gathering steam. In 2019, on behalf of the Climate Vulnerable Forum, the Marshall Islands called for the establishment of a Special Rapporteur on Human Rights and Climate Change, joining previous calls from civil society organisations and supported by a number of climate impacted countries. Through their work, the Special Rapporteur could contribute towards solidifying the link between climate change and human rights in global discourse, and the integration of human rights protection in climate action.[58]

In 2020, we found ourselves in the midst of a global pandemic which is exacerbating climate impacts. Climate change has not stopped in the face of COVID-19 and Pacific communities are now facing deepening poverty, hunger, loss of employment, security and increasing health risks. In 2020/2021, Pacific communities have had to face a number of devastating natural disasters while following COVID-safe protocols and measures that added an extra burden towards rebuilding. As the world works to recover, there is an opportunity for fundamental systematic change which puts us on a road to a just and sustainable future. We can apply the lessons learnt from the COVID-19 pandemic response to addressing the climate crisis by redirecting funds towards renewable energy investment and infrastructure; prioritising social and economic initiatives to benefit those most affected; and dismantling power imbalances.

The legacy of climate justice in the Pacific must be a future in which the Pacific Islands survive and thrive, where culture and traditions flourish, and language and history is passed on to those who will come after us.

5 What should happen?

5.1 What is the level of emissions reduction and under what timeline should it occur to ensure the minimum level of harm to the Pacific?

The Paris Agreement, signed by virtually all nations of the world, requires signatories to do all they can to keep global heating to below 1.5 degrees celsius. While each nation's individual circumstances vary, each bears a responsibility to do its fair share to meet this goal. This is especially true for developed nations and for the highest-emitting nations.

As demonstrated in the previous section, none of the top 15 greenhouse gas emitters are currently on track to meet this obligation. The highest priority for each of these 15 nations, therefore, is to submit GHG emissions reduction targets and long-term goals that meet their obligation to keep heating to below 1.5 degrees. This is all the more pressing, considering that the Pacific Island Countries who have ratified the UNFCCC have nominated far more ambitious targets for their 0.23 per cent of global annual emissions than their more polluting counterparts.

The world's biggest emitters have already agreed to the process for increasing their ambition by signing the Paris Agreement.[59] Under the Agreement, signatories accept that NDCs at the time of signing were insufficient to limit heating to acceptable limits. The agreement therefore includes a 'ratchet mechanism' to periodically increase those NDCs through the submission of updated targets.

The deadline for the first round of NDCs was the end of 2020. As of November 2020, none of the top 15 global emitting countries had submitted updated NDCs, while five of the 15 had stated that they would not update their NDC, including the USA, Russia, Indonesia, Japan and Australia.

By July 2021, however, that picture had changed substantially. Six of the world's top 15 highest emitting countries have now proposed or submitted stronger emissions reductions targets, including China, the US and the EU: three of the top 4 emitters. The USA has also rejoined the Paris Agreement, after its exit under President Donald Trump.

The Rainbow Warrior is in the Clarion Clipperton Zone in the Pacific to bear witness to the deep sea mining industry. Part of the ongoing 'Protect the Oceans' campaign.

© Martin Van Dijk

However, a further six top emitting nations have submitted targets that either do not increase their ambition or that decrease it in real terms, namely Russia, Indonesia, Brazil, Mexico, South Korea, and Australia.

The remaining three of the top 15 emitting nations have not yet proposed or submitted an updated NDC.

Nation	Gt CO2e	% of global total	NDC update status
China	11.71	23.93%	Proposed stronger target
USA	5.79	11.83%	Submitted stronger target
India	3.35	6.85%	Not yet updated
EU (27)	3.33	6.80%	Submitted stronger target
Russia	1.99	4.07%	Submitted target that does not increase ambition
Indonesia	1.70	3.47%	Proposed target that does not increase ambition
Brazil	1.42	2.90%	Submitted target that does not increase ambition
Japan	1.15	2.35%	Proposed stronger target
Iran	0.82834	1.69%	Not yet updated
Canada	0.76344	1.56%	Proposed stronger target
Mexico	0.69526	1.42%	Submitted target that does not increase ambition
Democratic Republic of the Congo	0.68167	1.39%	Not yet updated
South Korea	0.67308	1.38	Submitted target that does not increase ambition
Saudi Arabia	0.63812	1.30%	Not yet updated
Australia	0.61926	1.27%	Submitted target that does not increase ambition

The longer that the nations of the world wait to enact significant emissions cuts, the more that emissions will have to fall in each subsequent year, and the more difficult the overall task will become.

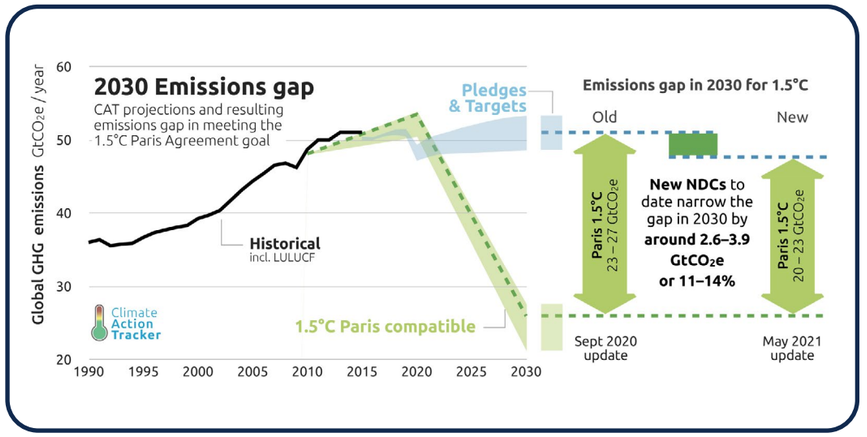
The 'emissions gap' between global emissions produced under the targets in place in November 2020 (the publication of the first edition of this report) and the emissions level required to keep heating under 1.5°C was estimated to be between 23 and 27 GtCO2e by 2030.

The new NDCs and targets announced since then result in a more optimistic outlook, narrowing the gap by 2.6-3.9 GtCO2e to a gap of 20-23 GtCO2e: an 11-14% improvement on 2020.[60]

5.2 Australia as a Pacific neighbour: what it needs to do

Australia's NDC falls within the 'Insufficient' category. This means that were Australia's level of ambition to be extrapolated across all nations, it would lock in between 2 and 3 degrees of heating. What's more,

FIGURE 4 - Emissions Gaps to 2030 (Climate Action Tracker)[61]



the 2021 update of that NDC has not strengthened Australia's emissions reduction target, placing Australia in conflict with the intentions of the Paris Agreement, which requires a ratcheting up of ambition over time . Heating of between two and three degrees would be disastrous for many Pacific Island Countries which are already facing serious climate-driven impacts at the present 1.1 degrees of heating, as outlined in Chapter 1, above. The predictions of harm to Pacific Island Countries under even a 1.5 degrees scenario, as outlined in Section 3.2 above, are harsher still.

As one of the major powers in the Pacific, with strategic interests in the region, it is in Australia's interest to do all it can to reduce its national emissions in line with the Paris Agreement's 1.5 degrees pathway. This would require a serious engagement with the Paris Agreement's ratchet mechanism, through the submission of increasingly stringent reduction targets that would deliver the following emissions reduction outcomes:

- 60-80 percent reduction by 2030 from 2000 levels, including a full decarbonisation of the electricity sector
- Net zero emissions by 2035

These targets should be accompanied by clear policies on how they will be met, including a moratorium on new coal-burning power stations and coal mines, and commitment to the Green Climate Fund. Australia should also commit to not block international litigation that seeks to further consensus on the scientific evidence of climate change.

Australia's proposed use of Kyoto 'carry-over credits' was widely condemned by the international community for representing a form of double counting that undermines the intent of the Paris Agreement.[62] While Australia has now backed away from this proposal, its current emissions trajectory nevertheless means that it cannot meet even its already-weak NDC without similar accounting tricks, underlining the need for meaningful emissions reduction policies.

Finally, as an influential 'middle power', Australia also has potential to act as a fair broker at international climate summits and leverage its diplomatic influence with its allies to achieve more ambitious emissions reduction agreement outcomes, and a fairer result for Pacific Island Countries. This is all the more pressing, as runaway global heating will force Australia to bear the cost of resulting regional instability, including a new category of climate refugees.

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CASE STUDY

Leiwia Poki Yavions

COMMUNITY MOBILISER
ERROMANGO, VANUATU

Gender equality is the inspiration for my leadership because I see that there is not yet equal participation in decision making in the community. I want all the women to know their rights and that they too can participate in decision making.

Climate change has made an impact on my village. We are situated on the side of a river near the coast. Before the river was small and a long way from the village, but now the river is big and has moved closer to the village. It is eating away the ground from the village and destroying the access road. I see it as a result of climate change. I also feel that we are not safe because we live near the ocean. Before, if there was a cyclone or the ocean was rough the water would just come up to the stones, but now if there is a cyclone or rough seas the water comes all the way to the village. I am scared. We have started talking about relocating the village to higher ground.

In my village I see that climate change has impacted the whole community. When there is a disaster, like a cyclone or tsunami warning, we need to move to higher ground. At such a time it is hard especially for those that are sick or have a disability.

I think that it is good if the big countries, those that contribute a lot to climate change, cut down their emissions. These big countries need to cut down their negative contributing factors so that the climate related risks that we face here in Vanuatu can be reduced.

I want to say to the leaders of the world, please use your voices, your positions of power, to assist in stopping emissions and other activities that contribute to climate change. We are facing the effects of climate change every day, in every place in the world, but especially here in the Pacific.

To all the sisters across the Pacific, and those of you in other countries across the world. We are facing the impacts of a changing climate. We should not stay quiet. We need to stand up and use our voices. You too can use your voice to help our countries. What you have to say is valuable, if people hear it, they can start making the changes we are after.

CASE STUDY

Alphonse Yemen

VILLAGE ENVIRONMENT CHIEF AND CONSERVATIONIST
AT YEMEN TURTLE SANCTUARY, BANKS ISLANDS, VANUATU

Gender equality is the inspiration for my leadership because I see that there is not yet equal participation in decision making in the community. I want all the women to know their rights and that they too can participate in decision making.

Climate change has made an impact on my village. We are situated on the side of a river near the coast. Before the river was small and a long way from the village, but now the river is big and has moved closer to the village. It is eating away the ground from the village and destroying the access road. I see it as a result of climate change. I also feel that we are not safe because we live near the ocean. Before, if there was a cyclone or the ocean was rough the water would just come up to the stones, but now if there is a cyclone or rough seas the water comes all the way to the village. I am scared. We have started talking about relocating the village to higher ground.

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6 Conclusions

It is not too late for the Pacific to recover in the face of global heating, and to prosper for generations to come.

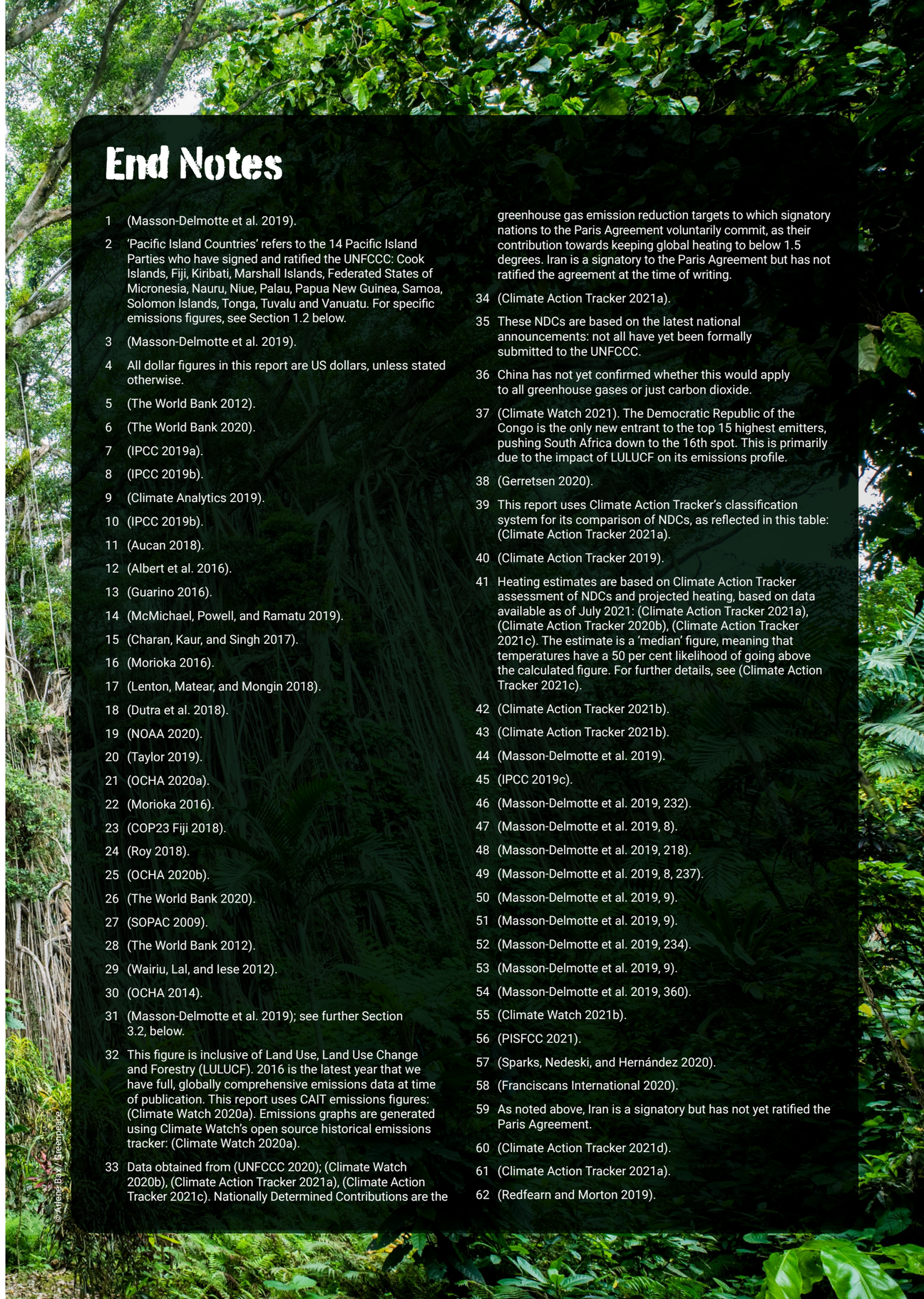
For this vision to move from ambition to reality requires first recognising the uniquely critical danger that Pacific Island Countries find themselves in.

It requires acknowledging that global emissions are unjustly shared, with the Pacific's people being the least responsible for the current climate crisis, and especially compared to the world's biggest 15 emitters.

It demands that the world's biggest polluters therefore accept that they bear the greatest responsibility to change course and agree to rapidly reduce their greenhouse gas emissions through increased commitments, backed by concrete policies to achieve them.

While the show of global cooperation, in late 2020 and early 2021, that led to several major emitting nations increasing their NDC ambitions is cause for optimism, fulfilling those promises will continue to require stronger efforts in this regard.

THE TIME IS NOW



End Notes

1 (Masson-Delmotte et al. 2019).

2 'Pacific Island Countries' refers to the 14 Pacific Island Parties who have signed and ratified the UNFCCC: Cook Islands, Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. For specific emissions figures, see Section 1.2 below.

3 (Masson-Delmotte et al. 2019).

4 All dollar figures in this report are US dollars, unless stated otherwise.

5 (The World Bank 2012).

6 (The World Bank 2020).

7 (IPCC 2019a).

8 (IPCC 2019b).

9 (Climate Analytics 2019).

10 (IPCC 2019b).

11 (Aucan 2018).

12 (Albert et al. 2016).

13 (Guarino 2016).

14 (McMichael, Powell, and Ramatu 2019).

15 (Charan, Kaur, and Singh 2017).

16 (Morioka 2016).

17 (Lenton, Matear, and Mongin 2018).

18 (Dutra et al. 2018).

19 (NOAA 2020).

20 (Taylor 2019).

21 (OCHA 2020a).

22 (Morioka 2016).

23 (COP23 Fiji 2018).

24 (Roy 2018).

25 (OCHA 2020b).

26 (The World Bank 2020).

27 (SOPAC 2009).

28 (The World Bank 2012).

29 (Wairiu, Lal, and Iese 2012).

30 (OCHA 2014).

31 (Masson-Delmotte et al. 2019); see further Section 3.2, below.

32 This figure is inclusive of Land Use, Land Use Change and Forestry (LULUCF). 2016 is the latest year that we have full, globally comprehensive emissions data at time of publication. This report uses CAIT emissions figures: (Climate Watch 2020a). Emissions graphs are generated using Climate Watch's open source historical emissions tracker: (Climate Watch 2020a).

33 Data obtained from (UNFCCC 2020); (Climate Watch 2020b), (Climate Action Tracker 2021a), (Climate Action Tracker 2021c). Nationally Determined Contributions are the greenhouse gas emission reduction targets to which signatory nations to the Paris Agreement voluntarily commit, as their contribution towards keeping global heating to below 1.5 degrees. Iran is a signatory to the Paris Agreement but has not ratified the agreement at the time of writing.

34 (Climate Action Tracker 2021a).

35 These NDCs are based on the latest national announcements: not all have yet been formally submitted to the UNFCCC.

36 China has not yet confirmed whether this would apply to all greenhouse gases or just carbon dioxide.

37 (Climate Watch 2021). The Democratic Republic of the Congo is the only new entrant to the top 15 highest emitters, pushing South Africa down to the 16th spot. This is primarily due to the impact of LULUCF on its emissions profile.

38 (Gerretsen 2020).

39 This report uses Climate Action Tracker's classification system for its comparison of NDCs, as reflected in this table: (Climate Action Tracker 2021a).

40 (Climate Action Tracker 2019).

41 Heating estimates are based on Climate Action Tracker assessment of NDCs and projected heating, based on data available as of July 2021: (Climate Action Tracker 2021a), (Climate Action Tracker 2020b), (Climate Action Tracker 2021c). The estimate is a 'median' figure, meaning that temperatures have a 50 per cent likelihood of going above the calculated figure. For further details, see (Climate Action Tracker 2021c).

42 (Climate Action Tracker 2021b).

43 (Climate Action Tracker 2021b).

44 (Masson-Delmotte et al. 2019).

45 (IPCC 2019c).

46 (Masson-Delmotte et al. 2019, 232).

47 (Masson-Delmotte et al. 2019, 8).

48 (Masson-Delmotte et al. 2019, 218).

49 (Masson-Delmotte et al. 2019, 8, 237).

50 (Masson-Delmotte et al. 2019, 9).

51 (Masson-Delmotte et al. 2019, 9).

52 (Masson-Delmotte et al. 2019, 234).

53 (Masson-Delmotte et al. 2019, 9).

54 (Masson-Delmotte et al. 2019, 360).

55 (Climate Watch 2021b).

56 (PISFCC 2021).

57 (Sparks, Nedeski, and Hernández 2020).

58 (Franciscans International 2020).

59 As noted above, Iran is a signatory but has not yet ratified the Paris Agreement.

60 (Climate Action Tracker 2021d).

61 (Climate Action Tracker 2021a).

62 (Redfearn and Morton 2019).

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