



IN SEARCH OF JUSTICE

How the climate crisis
is driving inequality and
eroding human rights.

A report by the Environmental Justice Foundation



Protecting People and Planet



Protecting People and Planet

The Environmental Justice Foundation Charitable Trust is a UK registered charity that believes we all share a basic human right to a secure natural environment.

EJF has teams based in Belgium, France, Germany, Ghana, Indonesia, Japan, Liberia, Senegal, Sierra Leone, South Korea, Taiwan, Thailand and the UK. Our investigators, researchers, filmmakers and campaigners work with grassroots partners and environmental defenders across the globe.

Our work to secure environmental justice aims to protect our global climate, ocean, forests and wildlife and defend basic human rights.

Special thanks to all interviewees for their contribution to this report. All views expressed are those of EJF alone, and interviewees do not necessarily share the expressed views and interpretations.

Publication date: June 2022

All images copyright EJF unless stated otherwise.

Printed on 100% recycled paper.

Unit 417, Exmouth House 3/11 Pine Street,
London, EC1R 0JH, UK
info@ejfoundation.org
ejfoundation.org

Registered charity no. 1088128

CONTENTS

EXECUTIVE SUMMARY	4
INTRODUCTION	6
For a safe and just future for all, keep 1.5°C alive	8
The climate crisis is here	10
Climate impacts 2020/2021	12
Unequal climate impacts	16
Case Study: Marginalised, flooded, evicted: the climate vulnerability of the urban poor in India	17
Intertwined inequities	19
Case Study: Smoke in their lungs: California’s undocumented immigrant community on the frontlines of the climate crisis	22
Case Study: Drought in southern Madagascar	24
A human rights crisis	25
Case Study: Nowhere to stay? The displacement risk in Bangladesh	29
Case Study: A threatened culture: Sami people	31
Unequal emissions, unequal impacts	33
Case Study: China: which path will the climate superpower take?	36
Towards human rights consistent climate action	38
RECOMMENDATIONS	40

Abbreviations

CANSA	Climate Action Network South Asia	IPCC	Intergovernmental Panel on Climate Change
CAUSE	Central Coast Alliance United for a Sustainable Economy	LDC	Least Developed Country
COP26	2021 United Nations Climate Change Conference	NDCs	Nationally Determined Contributions
FAO	Food and Agriculture Organization of the United Nations	OCHCR	Office of the United Nations High Commissioner for Human Rights
GHG	Greenhouse gases	SDGs	Sustainable Development Goals
IDMC	Internal Displacement Monitoring Centre	SIDS	Small Island Developing States
IOM	International Organization for Migration	UNFCCC	United Nations Framework Convention on Climate Change
IRCDUC	Information and Resource Centre for Deprived Urban Communities	UNICEF	United Nations Children’s Fund
		WHO	World Health Organization



EXECUTIVE SUMMARY

The impacts of the climate crisis are deepening already existing vulnerabilities and inequalities within and across generations, communities and countries worldwide. Low-income, marginalised, discriminated and disenfranchised groups are disproportionately affected. Climate hazards, shocks and stresses are becoming more frequent and severe as global heating accelerates.¹ Current measures and commitments are insufficient to limit global warming to 1.5°C, the limit needed to avert the worst climate disasters. Earth's global surface temperature is already 1.1°C higher than the pre-industrialisation average.² Currently, the world is set for a 2.7°C increase in temperature by the end of this century.³

Even within the same region, not everyone will experience climate-related impacts in the same way. Certain populations are first and worst affected by the climate crisis. These include, but are not exclusive to, Indigenous peoples, children, women, migrants and displaced persons, persons with disabilities, ethnic minorities, persons with low income and LGBTQI+ persons.⁴ Intersecting forms of discrimination and marginalisation based on factors such as gender, age, income or social status significantly increase exposure and susceptibility, and undermine the ability to cope with and recover from climate effects. Inequalities are both cause and effect of climate vulnerability. This report examines the disproportionate impacts of the climate crisis on population groups in some of the major emitter countries as well as in those countries that have contributed least to the crisis.⁵

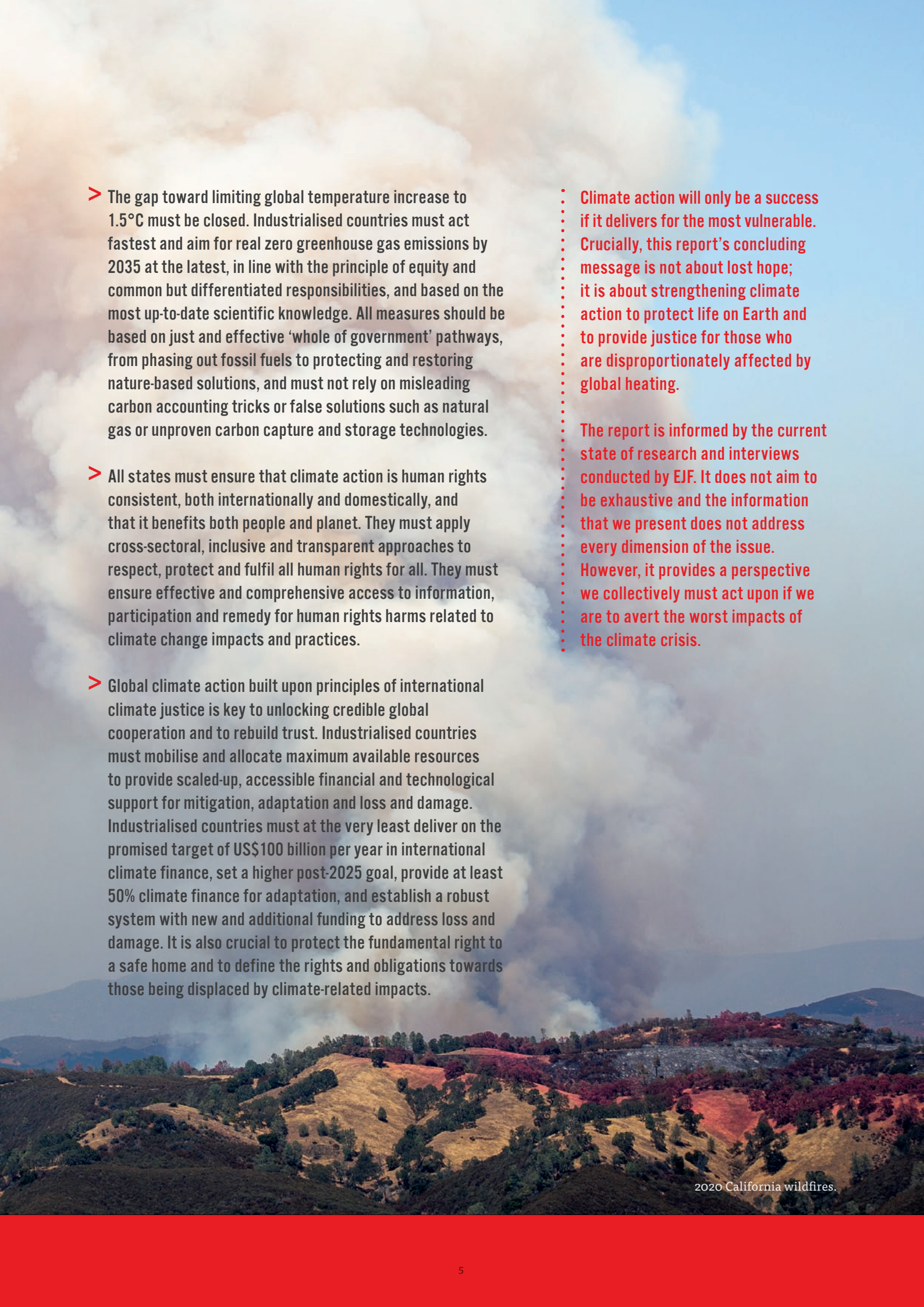
The consequences of global heating are felt across the globe, and they are worsening: one billion children are currently at extremely high risk of climate impacts.⁶ In 2020, 928 million people worldwide were severely food insecure.⁷ Weather and natural disasters triggered 30.7 million new internal displacements in 2020.⁸ Up to 132 million additional people are at risk of extreme poverty by 2030 because of the climate crisis.⁹ Global heating threatens the full range of human rights. Among the affected rights are the right to life, health, food, adequate housing and cultural rights. Often various human rights are affected simultaneously as impacts unfold.

Centering human rights is key for effectively mitigating and adapting to the climate crisis. Conversely, mitigating and adapting to global heating, including meaningful frameworks for Loss & Damage, and biodiversity restoration are critical components to achieving the Sustainable Development Goals (SDGs) and enabling climate resilient development.¹⁰ Climate, biodiversity and human rights policy are fundamentally interlinked, and one cannot succeed without the others.

Industrialised, wealthy countries in particular do not live up to their historical and current responsibilities. Insufficient, unjust and inadequate climate action disproportionately threatens vulnerable communities within and across their territories. The responsibility for the climate crisis is unevenly distributed. Emissions are unequal both between and within countries.¹¹ Approximately 60% of greenhouse gas emissions (GHG) are produced by ten countries, whereas less than 3% come from the 100 least-emitting countries.¹² The richest 10% of the global population generated 52% of the cumulative carbon emissions from 1990 to 2015, the poorest half only 7%.¹³ Yet, it is often the countries and the populations with the least historical responsibility for GHG emissions who are being impacted first and worst by the climate crisis. Climate action must urgently increase in speed and ambition, and it must take place within a framework of climate justice.

"Vulnerability of ecosystems and people to climate change differs substantially among and within regions, driven by patterns of intersecting socio-economic development, unsustainable ocean and land use, inequity, marginalization, historical and ongoing patterns of inequity such as colonialism, and governance."

IPCC Working Group II, Contribution to the AR6 Report.

- 
- > The gap toward limiting global temperature increase to 1.5°C must be closed. Industrialised countries must act fastest and aim for real zero greenhouse gas emissions by 2035 at the latest, in line with the principle of equity and common but differentiated responsibilities, and based on the most up-to-date scientific knowledge. All measures should be based on just and effective ‘whole of government’ pathways, from phasing out fossil fuels to protecting and restoring nature-based solutions, and must not rely on misleading carbon accounting tricks or false solutions such as natural gas or unproven carbon capture and storage technologies.
 - > All states must ensure that climate action is human rights consistent, both internationally and domestically, and that it benefits both people and planet. They must apply cross-sectoral, inclusive and transparent approaches to respect, protect and fulfil all human rights for all. They must ensure effective and comprehensive access to information, participation and remedy for human rights harms related to climate change impacts and practices.
 - > Global climate action built upon principles of international climate justice is key to unlocking credible global cooperation and to rebuild trust. Industrialised countries must mobilise and allocate maximum available resources to provide scaled-up, accessible financial and technological support for mitigation, adaptation and loss and damage. Industrialised countries must at the very least deliver on the promised target of US\$100 billion per year in international climate finance, set a higher post-2025 goal, provide at least 50% climate finance for adaptation, and establish a robust system with new and additional funding to address loss and damage. It is also crucial to protect the fundamental right to a safe home and to define the rights and obligations towards those being displaced by climate-related impacts.

Climate action will only be a success if it delivers for the most vulnerable. Crucially, this report’s concluding message is not about lost hope; it is about strengthening climate action to protect life on Earth and to provide justice for those who are disproportionately affected by global heating.

The report is informed by the current state of research and interviews conducted by EIJ. It does not aim to be exhaustive and the information that we present does not address every dimension of the issue. However, it provides a perspective we collectively must act upon if we are to avert the worst impacts of the climate crisis.

2020 California wildfires.



INTRODUCTION

The climate crisis is affecting every region across the globe.¹⁴ 2021 is the proof: heatwaves and wildfires from Europe to north-western America; floods from China to Sudan; and extreme storms from Central America to Mozambique. As such changes and extremes will unequivocally become more intense and frequent,¹⁵ they are increasingly threatening and violating the full range of human rights of millions of people today and in the future, such as the right to food, to health and the right to life.

“There is absolutely no doubt that the global climate crisis is a human rights emergency. You can look at the impacts of climate disruption on the right to life, the right to health, the right to food, the right to water, the right for a safe, clean, healthy and sustainable environment. The climate crisis is magnifying pre-existing threats to all of these human rights.”

David R. Boyd, UN Special Rapporteur on human rights and the environment¹⁶

While the breakdown of our climate will affect us all, not everyone will be affected in the same way. Growing and disproportionate impacts on low-income, marginalised, remote and disenfranchised communities around the world are deepening already existing vulnerabilities and inequalities: from the disproportionate vulnerability of Black, Indigenous and people of colour in the USA rooted in systemic racism;¹⁷ to the limited opportunities of India’s slum dwellers to cope with the effects of disasters;¹⁸ to small-scale farmers in southern Madagascar whose food security and livelihoods are threatened by the most severe drought in decades.¹⁹ Global heating and unjust or insufficient climate action are aggravating intersecting forms of marginalisation and discrimination against members of our societies. Voices of the most vulnerable have been ignored and disregarded for too long. It is time that their needs and demands be met.²⁰ **The inherently trans-boundary nature of the global climate crisis means that our ability or failure to act decisively will affect us all, our futures are bound together.**

Yet, climate change is not being addressed as a crisis of justice and human rights. In 2020, greenhouse gas levels in the atmosphere reached a new record – despite the pandemic – and the trend continued in 2021.²¹ As sea levels rise and the frequency and severity of floods and droughts increase, we are approaching apocalypse territory.²² **Those countries and communities that have contributed the least to global heating are in most cases disproportionately adversely affected.**²³ For years, the less privileged, and the first and worst affected have called on industrialised states and major emitters to take responsibility for their failure to act with the urgency or ambition commensurate to the scale of the crisis and their historic responsibilities.²⁴ There has never been a better understanding of the climate crisis and the science is clear: **there is no alternative to a rapid, large-scale and sustained elimination of human-induced greenhouse gas emissions led by equitable action. Every tenth of a degree, every month, every measure counts.**²⁵

Those countries and communities that have contributed the least to global heating are in most cases disproportionately affected.

Action to protect human rights, fight the climate crisis and conserve our environment is intrinsically linked: we will only succeed if we address them together. Respecting, protecting and fulfilling human rights can strengthen climate policies and action, bringing lasting wellbeing, prosperity and justice for all.²⁶ An ambitious climate policy can pave the way towards a just and sustainable world.²⁷ Climate action presents a valuable opportunity as it could protect our health, create millions of new jobs and could reduce extreme poverty.²⁸ Industrialised countries and major emitters have the responsibility to deliver the resources needed. Climate action is about international social and economic justice, redressing the balance of power and combating human rights abuses. States must adopt ambitious ‘whole of government, society and economy’ approaches which integrate just climate action into every political portfolio.²⁹ The international community must deliver on commitments made and make progress on centring people and areas who are most threatened by the climate crisis.



Impacts of hurricanes Eta and Iota in Central America: a boy outside a destroyed house in flood water. Credit: EU Civil Protection and Humanitarian Aid, 2020 / D. Membreño. (CC BY-ND 2.0)

For a safe and just future for all, keep 1.5°C alive

The 26th United Nations Climate Change Conference of the Parties (COP26) has not met the needs of people and planet, and least of all, those of the most affected people already losing their livelihoods and lives to the climate crisis. The world is still off track to meet the goal to hold the increase of global average temperature below 1.5°C above pre-industrial levels. Current policies, excluding proposals, are projected to result in about 2.7°C of warming.³⁰ Models estimate that global temperatures will rise to a disastrous 2.4°C above pre-industrial levels by 2100 based on countries' 2030 targets (premised that they are met and not considering long-term pledges).³¹ No single country that was analysed by Climate Action Tracker has sufficient short-term policies in place that are consistent with its real zero target.³² There remains a significant gap between commitments and real world action.³³

The Glasgow Climate Pact³⁴ adopted at COP26 contains numerous important resolutions, but also countless loopholes. The Glasgow Climate Pact included strong language on the scientific facts and recognises that the consequences of global heating are much less at a temperature increase of 1.5°C than at 2°C.³⁵ Countries also agreed to “phase down” coal-fired power and to start to eliminate “inefficient” subsidies on other fossil fuels. The mention of fossil fuels is unprecedented, but language was nonetheless weakened at the

last minute. There is no chance of limiting global heating to 1.5°C or even 2°C without phasing out coal globally.³⁶ While the recognition of fossil fuels in a COP decision was historic, it was only historic because of the weak precedent in previous decisions: without setting legally binding timebound rules for completely phasing out coal and other fossil fuels, and fossil fuel subsidies, keeping 1.5°C alive will be almost impossible. Still, the Glasgow Climate Pact calls on countries to review emissions reduction targets by end of 2022 prior to the next UN climate summit in Egypt, leaving open a door for civil society to hold governments accountable for more ambitious action.

The Glasgow Climate Pact also agrees to double the proportion of climate finance going to adaptation from 2019 levels by 2025 – but mitigation and adaptation funding are still not balanced to the 50:50 split called for by campaigners and vulnerable countries. The 12-year-old pledge of providing US\$100 billion annually in climate finance will likely be reached three years late in 2023 according to the latest pledges –³⁷ yet, even the US\$100 billion target is not sufficient to meet the needs of the first and worst affected countries and communities. Further, although the Glasgow Climate Pact recognises the importance of action on loss and damage, wealthy countries blocked a funding facility to provide new and additional loss and damage finance for the most

The world is still off track to meet the goal to hold the increase of global average temperature below 1.5°C above pre-industrial levels. Current policies, excluding proposals, are projected to result in about 2.7°C.





Dominik Vanyi / Unsplash

vulnerable and first and worst affected communities.³⁸ In a small advance, the Santiago Network, which coordinates measures in the event of loss and damage, received funds to finance the planning of reconstruction measures.³⁹

Additionally, several multi-nation initiatives were launched during the 2021 summit – including the Glasgow Leaders' Declaration on Forests and Land Use, the Global Methane Pledge, the Statement on International Public Support for the Clean Energy Transition, and the Global Coal to Clean Power Transition Statement.⁴⁰ But they are not binding, lack transparent mechanisms and detail, and their real-world impacts remain questionable until commitments are reflected in ambitious, sustainable and just actions on the ground. Beyond that, the pledges must go beyond existing national targets and stimulate additional action.⁴¹

Despite progress made in Glasgow, the pledges do not close the gap to 1.5°C, and the climate summit did not deliver on rights or climate justice – although the UN Human Rights Council resolution recognising the right to a clean, healthy and sustainable environment.⁴² In the end, world leaders did not decisively call for the phasing out of all fossil fuels and fossil fuel subsidies.

Furthermore, some of the decisions taken may directly jeopardise rights of vulnerable communities, such as mechanisms for the expansion of the global carbon market which lack strong enough safeguards to protect Indigenous and local communities. Despite some language around the advancement of gender equality, youth inclusion and intergenerational

justice, progress towards real climate justice in Glasgow was far from sufficient given the scale and urgency of the crisis.

What is more, mechanisms for the expansion of a regulated global carbon market lack strong enough safeguards to protect human rights of local and Indigenous communities, to prevent environmental destruction, and to ensure real emission reductions.⁴³ And despite advancement of gender equality, and mentioning youth inclusion and intergenerational justice, progress is far from sufficient given the scale of the crisis and its unequal impacts.

The 1.5°C goal is not optional and incremental progress is not sufficient. A single climate conference cannot solve the crisis: we need radical new climate policies by the largest emitters grounded in the principle of common but differentiated responsibility. Strong human rights safeguards must be the very foundation of climate-related decisions to ensure a just transition and to protect the human rights of all, with the full participation of the most affected groups. Critically, all commitments must be translated into effective measures over this next decade. The scale of the twin crises of climate and biodiversity breakdown is a threat to human rights around the world.

Those responsible for the climate crisis must work hard to regain trust and immediately close the action and commitment gap. The CO₂ budget is shrinking every year, every month, every week.⁴⁴ There is significantly more momentum for climate action worldwide than ever before. World leaders need to harness this momentum to advance fair systemic changes and to keep 1.5°C alive.

The climate crisis is here

In the first part of its Sixth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) warns that chances to limit global warming to 1.5°C are decreasing. Earth's global surface temperature has already increased by around 1.1°C compared with the average between 1850 to 1900.⁴⁵ 2020 was the hottest year on record,⁴⁶ and it is likely to be topped within the next few years.⁴⁷ As the planet heats, some regions are becoming uninhabitable,⁴⁸ and scientists predict that we could reach tipping points when certain climate impacts cannot be stopped.⁴⁹ For example, the unstable West Antarctic ice sheet is in danger of collapse and could significantly amplify global sea level rise.⁵⁰

The IPCC affirms an almost linear relation between cumulative anthropogenic CO₂ emissions and global heating.⁵¹ Human activities have warmed the atmosphere, ocean and land. They drive glacier retreats and global sea level rise. Human influence significantly drives global ocean warming and the frequency and intensity of hot extremes. Further, it affects many weather and climate extremes worldwide, such as heavy precipitation events and droughts.⁵² Many climatic and environmental changes overlap and will become more frequent and intense. Some impacts will be irreversible due to past and future emissions.⁵³ **But all hope is not lost – we can still limit the severity of the climate crisis. However, the only solution will be a transformational change of our economies and a large-scale and sustained reduction of human-induced greenhouse gas emissions.**⁵⁴

In that regard, it is essential that governments' real zero targets do not rely on unrealistic, unjust and scientifically unproven industrial carbon removal schemes.⁵⁵ Achieving real zero and securing a liveable future on our planet will depend on real emissions reductions and robust biodiversity protection and restoration, not misleading carbon accounting tricks.

The IPCC Sixth Assessment Report presents **five illustrative emissions scenarios** based on varying levels of GHG emissions – these are some of its projections.⁵⁶

- **Global surface temperature will continue to increase until at least 2050 under all emissions scenarios. 1.5°C of warming is expected to be reached or exceeded within the next two decades compared to 1850-1900 global surface average temperature.**
- **Under the very low or low GHG emissions scenarios, rapid and sustained effects to limit anthropogenic global heating would be achieved. It is more likely than not that global surface temperature would decline back to below 1.5°C towards the end of the 21st century under the very low GHG emissions scenario.**
- **Under the intermediate GHG emissions scenario, global surface temperature averaged over 2081-2100 is very likely to increase by 2.1°C-3.5°C in the intermediate scenario, and by 3.3°C-5.7°C under the very high emissions scenario.**
- **The intensity and frequency of extremes become discernibly larger with every additional increase of global heating – from droughts to heavy precipitation. For example, drought events that occurred once in ten years on average across drying regions without anthropogenic global heating would occur twice in ten years with 1.5°C, 2.4 times with 2°C and 4.1 times with 4°C future global warming levels.**
- **Compared to 1995-2014, global mean sea level would rise by 0.28-0.55 m under the very low GHG emissions scenario, and by 0.63-1.01 m under the very high GHG emissions scenario by the end of the century.**




“I’ve travelled to places as far-flung as the tropical paradise of Fiji; I’ve been to visit the Sami people in northern Norway; I’ve spent time with pastoralists in Kenya and this climate crisis is just like a hammer to the poorest and most vulnerable people in all parts of the world.”

David R. Boyd, UN Special Rapporteur on human rights and the environment

Drought in Kenya: pastoralists living in the Ewaso Ngiro river basin in central Kenya are forced to dig for water. Credit: Denis Onyodi/KRCS (CC BY-NC 2.0)

SCIENCE IS CLEAR: global heating must be limited to 1.5°C. Compared with 2°C, this would result in:⁵⁷

- About 14% of the world’s population will be hit by severe heatwaves once every five years instead of approximately 37% at 2°C;
- Up to half the number of people affected by climate-caused water stress (with high variability between regions);
- Up to 10.4 million fewer people exposed to the impacts of sea level rise in 2100 (globally, based on 2010 global population and assuming no adaptation);
- Reduced risk of coastal flooding of Small Island Developing States by 20-80%;
- One sea-ice-free Arctic summer every 100 years instead of every 10 years.



“People have been reporting more of the fires, but people are failing to connect what is actually going on. [...] they don’t speak of climate change, of land-use change, of political inaction. People don’t speak of any of the roots of the problem. They just document it as if it was totally disconnected from human activity.”

Luciana Leite, conservation biologist and volunteer firefighter, about the 2020 fires in the Pantanal, the world’s largest tropical wetland⁵⁸

Credit: Chalana Esperança

Climate impacts 2020/2021

Every day brings new damning stories from every corner of the world. It is these types of events that the IPCC warns are increasing and intensifying – from more persistent and frequent weather extremes to slow-onset environmental degradation and change.⁵⁹

NORTH AMERICA

In 2021, the north-western areas of the USA and Canada experienced a megadrought with temperatures reaching far above 40°C in multiple places –⁶⁰ an event practically impossible without global heating.⁶¹ A 'heat dome' sustained the heatwave, which caused illness and more than 600 deaths.⁶² The village of Lytton, British Columbia, was largely destroyed by a wildfire.⁶³ Costs for the 2021 events are still being estimated. In 2020, the drought and heatwave in the western and central USA caused estimated costs of US\$4.7 billion, and the western wildfires more than US\$17 billion.⁶⁴

CHINA

In July 2021, Henan province experienced record-breaking rainfall (640 mm in three days) and flooding. 200,000 people were evacuated, and at least 300

people died. It affected at least 13.9 million people and displaced 1.47 million.⁶⁵ The total economic cost of flooding was estimated at nearly US\$25 billion.⁶⁶

RUSSIA

For the second consecutive July, Siberia’s taiga forests and the Russian Far East were affected by extreme wildfires resulting from record-breaking heat and drought. January-June 2020 was the warmest period since records began and the prolonged Siberian heat would have been virtually impossible without man-made climate change.⁶⁷ 18.13 million hectares of forest has burnt down in Russia between January 1 and September 16, 2021.⁶⁸ Wildfires in Russia as a whole released around 970 megatonnes of CO₂ from June to August 2021 –⁶⁹ more than the annual CO₂ emissions of Germany.⁷⁰

SYRIA & IRAQ

In 2021, Syria was hit by the worst drought in 70 years and Iraq by record low rainfall, which threatens more than 12 million people who face limited access to water and food.⁷¹

FIJI

The severe Tropical Cyclone Ana, one of three tropical cyclones at the end of January 2021, hit Fiji. More than 10,000 people sought shelter in evacuation centres.⁷² In December 2020, Tropical Cyclone Yasa affected more than 130,000 people. The economic loss was estimated at US\$250 million.⁷³

GERMANY

In mid-July 2021, the Rhine basin in western Germany experienced precipitation records and a hundred-year flood which killed more than 180 people. It caused at least €7 billion of damage to insured property.⁷⁴

INDONESIA

In early April 2021, Cyclone Seroja killed at least 160 people and displaced more than 8,400 people in East Nusa Tenggara province. It caused more than US\$400 million of economic loss in Indonesia and Timor-Leste.⁷⁵ And between 1 to 23 January 2021, 197 flood disasters were recorded which injured 2,700 people.⁷⁶

GREECE, ITALY, TURKEY & LEBANON

In August 2021, wildfires devastated the island of Evia and the Peloponnese region (Greece) after one of the most severe heatwaves since the 1980s.⁷⁷ More than 110,000 hectares have burned in Greece in 2021. Western and southern Turkey counted more than 200 wildfires.⁷⁸ At the end of July 2021, Lebanon's north faced rapidly spreading wildfires.⁷⁹ Italy counted more than 44,000 wildfires since 15 June.⁸⁰



Wildfires in Antalya: a burnt building in Sevinçköy, Turkey.

MADAGASCAR

In 2021 Madagascar's southern region faces the worst drought in four decades. Seasonal rainfall was around 40-60% below average. More than 1.14 million people become food insecure.⁸¹ Losses in crop and livestock production are estimated to reach up to 60% in the most populous provinces.⁸²

SUDAN

More than 16,000 Ethiopian refugees in Sudan's eastern refugee settlements have been impacted after several weeks of storms throughout May to June. Thousands of family tents have been demolished.⁸³

MICRONESIA, PALAU & PHILIPPINES

In April 2021, Typhoon Surigae was the strongest Northern Hemisphere typhoon in terms of maximum wind speed ever recorded globally to form before May.⁸⁴ The economic loss is estimated to exceed US\$10 million in the Philippines.⁸⁵

MOZAMBIQUE

Tropical Cyclone Eloise affected more than 175,000 people and over 8,000 homes were destroyed or damaged in January 2021.⁸⁶ It caused tens of millions of US dollars in economic loss.⁸⁷

MALAYSIA

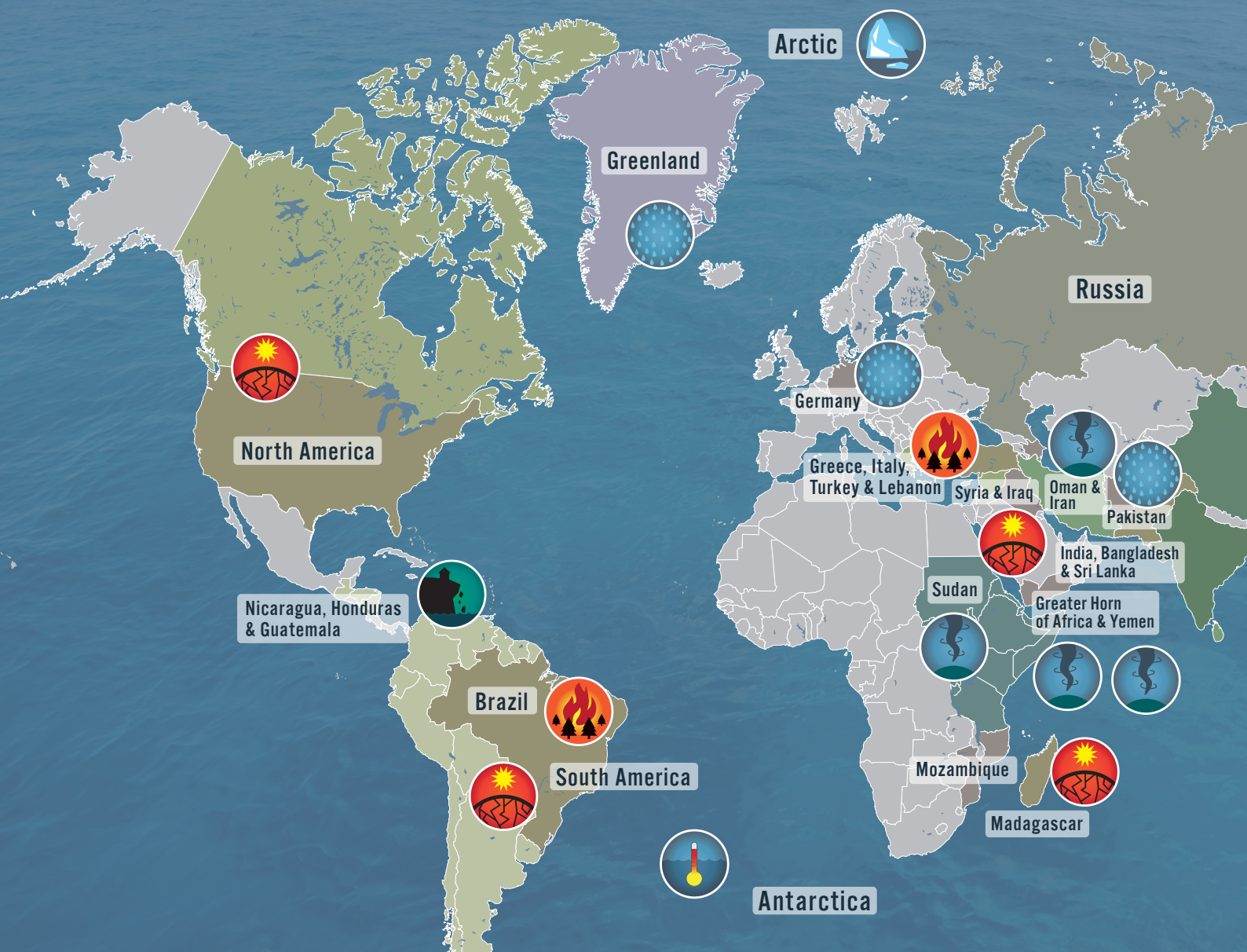
In January 2021 heavy rainfall caused severe flooding. 50,000 people were evacuated.⁸⁸

BRAZIL

The worst drought in 91 years hits several regions of Brazil in 2021.⁸⁹ Water levels on the Paraná River are more than eight meters below average in the Brazil and Paraguay border region.⁹⁰ The economic loss is estimated at more than US\$3 billion.⁹¹



Forest fires in Brazil. Credit: Chalana Esperança



GREENLAND

In August 2021, Greenland experienced record-breaking rain. It also rained at the highest point of Greenland for the first time in recorded history.⁹² The world's second largest ice sheet is losing mass faster than any other time in the past 12,000 years.⁹³

OMAN & IRAN

In October 2021, Tropical Cyclone Shaheen killed at least 13 people and flooded streets. 5,000 people had to be evacuated in Oman.⁹⁴ In Oman, total economic losses were estimated to be in the hundreds of millions.⁹⁵

NICARAGUA, HONDURAS & GUATEMALA

2020 was the most active Atlantic hurricane season on record fuelled by a warming ocean.⁹⁶ Hurricanes Eta and Iota affected more than 7.5 million people. In Nicaragua landslides and floods displaced thousands of people. More than one million people were evacuated in Honduras.⁹⁷ In Central America alone, Eta and Iota caused more than US\$8 billion in economic loss.⁹⁸

AUSTRALIA

Early 2020, the Great Barrier Reef experienced its hottest February as well as the most widespread bleaching event on record, with 60% of reefs affected.⁹⁹ The same year, Australia's south-eastern region suffered bushfires which killed almost three billion wild animals.¹⁰⁰ The economic loss of the bushfires between November 2019-January 2020 is estimated at US\$5 billion and the insured loss at US\$1.1 billion.¹⁰¹

ANTARCTICA

On 6 February 2020, a new record high temperature of 18.3°C was observed at the Esperanza station, Argentina.¹⁰²

INDIA, BANGLADESH AND SRI LANKA

In 2020 Cyclone Amphan was one of the strongest storms on record in the Bay of Bengal. The economic loss in South Asia amounted to US\$15 billion, making it the costliest tropical cyclone of the year.¹⁰³ It affected 10 million people in Bangladesh.¹⁰⁴

Unequal climate impacts

The consequences of global heating are experienced worldwide, but to different extents within and across countries due to varying exposure, susceptibility and ability to cope with and recover from effects.¹¹⁸ Global heating is a universal threat, but evidence is clear that the climate crisis disproportionately affects low-income, marginalised, discriminated and disenfranchised people around the globe.¹¹⁹

In most countries the underlying issues of inequity, marginalisation and discrimination will mean that not everyone will experience climate effects in the same way.¹²⁰ For example, people in the bottom half of income distribution in Mexico are 80% more likely to die because of temperature shocks.¹²¹ Globally, at least one billion workers experience high heat episodes,¹²² and heat stress particularly affects low-income populations who are less able to adapt and who represent a high proportion of those working outdoors or in manual work.¹²³

In many cases, the most vulnerable have fewer opportunities and choices to adapt and recover from climate effects.¹²⁴ Vulnerable populations might live in low-lying coastal areas or in deltas,¹²⁵ with houses that cannot withstand extreme weather, or they might have less money to spend on recovery and adaptation.¹²⁶ Moreover, they often lack access to fundamental services, from healthcare to social protection.¹²⁷ Beyond that, in the aftermath of climate-related hazards, marginalised communities often do not receive the support they urgently need.¹²⁸

For example, the increasing intensity of extreme weather events disproportionately affects HIV-positive women and children.¹²⁹ In 2019, Cyclone Idai caused heavy rains and storms in eastern Zimbabwe and flash floods affected over 270,000 people.¹³⁰ At least 14,000 children and 10,000 pregnant or breastfeeding women living with HIV who are reliant on permanent health services resided in the affected districts.¹³¹ Destroyed infrastructure or displacement prevented many from receiving necessary antiretroviral treatment in time.¹³² The likelihood and magnitude of harm, loss and disruption and the effects of climate action are strongly shaped by country contexts, including governance, finance and conflict.¹³³

Moreover, geography is a key factor shaping the exposure to stressors affected and caused by climate change.¹³⁴ For example, Pacific Island states are among the most climate vulnerable states worldwide as they suffer acutely from extreme weather events, rising sea levels, ocean acidification and heat,¹³⁵ although their share in global emissions is vanishingly small.¹³⁶ Furthermore, eight of the ten countries that were most affected by extreme weather events in 2019 are low- to lower-middle-income countries and half of them are LDCs.¹³⁷ Between 1995 and 2014, 89% of all storm-related deaths occurred in lower-middle-income countries.¹³⁸ In 2020, most new displacements caused by weather disasters, including tropical cyclones, monsoon rains and floods, were recorded within East and South Asia and the Pacific.¹³⁹



Marginalised, flooded, evicted: the climate vulnerability of the urban poor in India

Cities in Asia face severe risks from global heating. According to a risk assessment conducted by business risk analyst Verisk Maplecroft, 80% of the world's 100 cities most vulnerable to environmental hazards are in India or China. It ranks 13 of India's cities among the world's 20 cities most at risk from environmental hazards, particularly pollution, extreme heat and water stress.¹⁴⁰ More than 460 million Indians live in urban areas.¹⁴¹ Population growth in combination with poor governance, poverty, pollution, decreasing water supplies, heatwaves, natural disasters and poor infrastructure significantly increases disaster risks.¹⁴² Marginalised and low-income communities are disproportionately at risk as they depend on outdoor work or live in settlements lacking in risk-reducing infrastructure.¹⁴³

“Due to rising temperature and uncertainty in agriculture, there is more pressure on urban centres and people are moving into cities in search of livelihood, but the cities are not prepared in terms of infrastructure.”

*Climate Action Network South Asia (CANSAs) secretariat*¹⁴⁴

In India, around 35% of the urban population lives in so-called slums and at least 1.7 million people are homeless.¹⁴⁵ Scheduled Castes and Scheduled Tribes, who are historically among the most marginalised groups, constitute a disproportionate share of deprived households.¹⁴⁶ Most slum households face multiple housing deprivations including hindered access to basic facilities, from water to durable housing. This exacerbates vulnerability to heat waves, water shortages, shifts in monsoon and rainfall patterns and floods. India is one of the most unequal countries globally.¹⁴⁷ Research suggests that more resource-efficient, low-carbon development, for example ending public support for coal or committing to a date when it would hit peak coal, could significantly contribute to benefits such as increased economic diversification and creation of new jobs, poverty reduction and decreased air pollution and thus also reduce inequalities.¹⁴⁸ India's per capita carbon footprint is lower than the world's average,¹⁴⁹ but the size of its population means that the country has a significant influence over the global climate. At COP26, India pledged to cut emissions to real zero by 2070, reduce carbon emissions by one billion tonnes by 2030, and to secure 50% of energy from renewable resources by 2030.¹⁵⁰

Tamil Nadu is among the most urbanised states in India.¹⁵¹ The civil society organisation Information and Resource Centre for Deprived Urban Communities (IRCDUC)¹⁵² reports that many communities within informal and low-income settlements face caste-based and class-based discrimination and stigmatisation.¹⁵³

“Most of the deprived urban communities across the country live in precarious conditions because of the historical process of marginalisation. You'll find the poor and deprived often living near water bodies [...]. Despite being in that area for a long time and having a social network, all of this is not recognised, and they are termed encroachers.”

*Vanessa Peter, founder of IRCDUC*¹⁵⁴

Verisk Maplecroft rates Chennai, capital of the southern state Tamil Nadu, as the third highest risk city globally with regard to its exposure to environmental and climate-related threats.¹⁵⁵ Projections for 2075 show that changes in surface temperature and moisture convergence are likely to increase in future climate conditions. This would result in a rise in atmospheric instability, the intensity and frequency of extreme rainfall, and severe floods.¹⁵⁶ It is estimated that by 2050, 36 million people in India could be affected by projected sea level rise which would push average annual floods above land.¹⁵⁷

At the end of 2015, Chennai was impacted by severe floods after the heaviest rains in more than a century. The disaster was mainly caused by a single day of extreme precipitation. Its impacts, particularly on the majority of urban poor living along riverbanks,¹⁵⁸ were magnified by failures to adequately and proactively regulate the city's reservoirs and mitigate the floods.¹⁵⁹ Although research indicates that this particular one-day event cannot be attributed to anthropogenic climate change,¹⁶⁰ it illustrates the risks the city faces and the nature of its vulnerability to climatic events.¹⁶¹ It is crucial to understand these vulnerabilities as they will be exacerbated by changing rain patterns and more frequent extreme events such as heatwaves, storms and floods.¹⁶²

In the aftermath of the 2015 disaster, the then Chief Minister of Tamil Nadu announced resettlements to sites located on the outskirts of Chennai. Consequently, the Government of Tamil Nadu carried out massive evictions and resettlements of flood-affected inhabitants of informal settlements and slums near the banks of Cooum and Adyar Rivers.¹⁶³ This process illustrates how development policies do not address the vulnerabilities of the urban poor. Officially, they served ecological restoration, rehabilitation and climate adaptation. In reality, they manifested existing structural marginalisation and added new risks.¹⁶⁴ IRCDUC reports that families have been resettled to sites which are also located in lowland, ecologically sensitive areas and lack basic infrastructure. The resilience of resettled communities to climatic extremes as well as their livelihoods were therefore not improved. Policies do not appropriately address the heterogeneous vulnerability of poor communities and harm basic human rights.¹⁶⁵ Studies confirm that vulnerable groups are in most cases not consulted, institutional issues not addressed and that long-term planning for the well-being of resettled families is deficient.¹⁶⁶

“Regarding communities which are affected by climate change, including floods and droughts, we find that interventions often do not value the communities’ dignities. Relief is often viewed as a charity and not as a right of the communities. [...] People are not being given the legal opportunity to be heard.”

Vanessa Peter (IRCDUC)

The violation of legal safeguards, inadequate resettlement processes and absent due processes can deprive communities of their livelihoods, which are often location-dependent and attached to long established social networks.¹⁶⁷ Thus, affected communities are at risk of further marginalisation – for example, due to loss of work or dropping out of school after relocation.¹⁶⁸ Among the vulnerable groups, many women already face discrimination, for instance over access to basic resources or gender-based violence. Low-caste women especially often lack access to adequate housing.¹⁶⁹ In some Indian slums, women's groups and community organisations have started to hold the government accountable for ensuring their most basic rights and providing access to basic services.¹⁷⁰ Homeless people are also highly vulnerable as they are often first affected during disasters and extreme weather periods.¹⁷¹

“The entire issue of vulnerable communities is heterogeneous, however the interventions are not heterogeneous. [...] Unless there is a comprehensive approach, vulnerabilities will not be addressed. [...] What you do for coastal villages is not what you do for the urban homeless. What you do for the urban homeless is not what you do for slum dwellers.”

Vanessa Peter (IRCDUC)

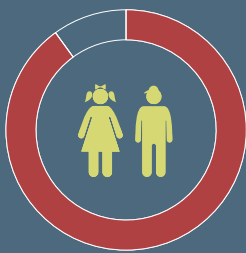


Bangladesh is on the frontlines of climate change.

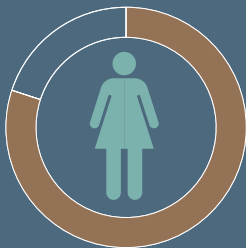
Intertwined inequities

Inequality is both the cause and effect of vulnerability. Climate effects can increase vulnerabilities to other stressors such as poverty as they erode social, physical and economic assets.¹⁷² The climate crisis aggravates already existing inequalities, marginalisation and exclusion, and further increases vulnerabilities.¹⁷³

Those who face multiple, intersecting forms of inequalities, discrimination or marginalisation are likely to be disproportionately affected by climate hazards, shocks and stresses.¹⁷⁴ Such processes include, among others, discrimination on the basis of gender, age, income, education, ethnic affiliation, social status, language proficiency, migration status, culture, religion, sexuality or health.¹⁷⁵ For example, almost 90% of the global burden of climate change-related disease is borne by children under the age of five.¹⁷⁶ The UN estimates that 80% of people displaced by global heating are female.¹⁷⁷ And census tracts across the USA that were majority Black, Hispanic or Native American experience about 50% greater vulnerability to wildfires compared to other census tracts.¹⁷⁸



Almost **90%** of the global burden of **climate change-related disease** is borne by children under the age of five.



80% of people displaced by global heating are female.

Such inequalities are rooted in and reinforced by social, cultural, economic, historical and political contexts, relations and practices.¹⁷⁹ They shape the distribution of resources and power, as well as the access to public and private utilities, and social safety nets.¹⁸⁰

“Every person matters in this world. It doesn't matter if you are rich, if you are black, if you are white. The thing is you need Mother Earth to live on. If we burn it, we are also finished.”

Flaida Macheze, Gender Officer for the National Farmers Union, Mozambique¹⁸¹

As a first step, Nationally Determined Contributions (NDCs) and climate measures should specifically mention disproportionately vulnerable groups and the specific risks they face as well as implement strategies to support and build up resilience to climate impacts.¹⁸² An intersectional approach can strengthen equitable climate action by integrating the diversity within populations as well as vulnerability-shaping factors.¹⁸³ Crucially, the inherent agency, decision-making power, knowledge, social practices and ambitions of people should be centred and built upon.¹⁸⁴ Populations most affected must be provided with the resources they need to adapt, recover and participate in decision-making processes. Targeted interventions should use flexible and inclusive approaches regarding dynamic vulnerabilities and socio-economic or political developments; measure and monitor climate impacts, risk factors as well as progress and effectiveness of climate and human rights action; and empower local organisations and foster cooperation between relevant stakeholders. A fundamental principle of the UN's 2030 Agenda for Sustainable Development is to “leave no one behind” and to address the needs of those furthest behind first.



It must be asked,
“Whose needs are being met, who is being left out, and how can this be changed?”

Woman and child wade through flood waters in east Jakarta, Indonesia. Credit: Kompas/Hendra A Setyawan / World Meteorological Organization. (CC BY-NC-ND 2.0)

CLIMATE CHANGE AND VULNERABLE POPULATIONS: EXAMPLES

Social groups who are in many cases among the first and worst affected include, but are not exclusive to, Indigenous peoples, children, women and girls, migrants and displaced people, people with disabilities, people of colour, ethnic minorities, low income communities, and LGBTIQ+ people. There are no 'one-size-fits-all' solutions: climate and development policy must place human rights at their core and empower the leadership of affected communities.¹⁸⁵

WOMEN AND GIRLS:



Systemic and intersectional discrimination against women and girls can result in social, economic and political barriers. Gender-based violence, financial constraints, being confined to certain roles or lacking land rights restrict access to justice, to financial assets, education or decision-making processes.¹⁸⁶ Beyond that, women are particularly affected by extreme poverty.¹⁸⁷ In cases where women and girls are displaced or forced to migrate in the aftermath of disasters, the likelihood that their human rights will be harmed increases due to unstable and unsafe living conditions in transit or at relocation sites.¹⁸⁸ They are also disproportionately vulnerable to human trafficking and modern slavery and the climate crisis is increasing this risk.¹⁸⁹ Other aspects of gender identity must be considered as well as traits and factors like social status or ethnicity.

PERSONS WITH DISABILITIES:



Globally, an estimated one billion people (15% of the global population) experience some form of disability.¹⁹⁰ Poverty, discrimination or lack of access to basic services can shape their vulnerability to climate change impacts.¹⁹¹ As persons living with disabilities might have lower income or rely on established social networks, the effects of slow- or sudden-onset disasters can dramatically affect their food security, access to health care and adequate work.¹⁹² However, not only are their needs often not adequately met, but in many cases they are also excluded from consultations on climate-related action, such as disaster relief strategies.¹⁹³

PEOPLE LIVING IN POVERTY:



People living in poverty often find themselves in precarious working conditions and lacking access to adequate housing or social safety nets, undermining their capacity to prepare for, adapt to and cope with climate and environmental changes. Direct impacts, such as the loss of crop yields due to flooding, therefore hit them particularly hard as their livelihoods are more exposed to such impacts. As a result, they are disproportionately vulnerable to food insecurity, disease, displacement and death.¹⁹⁴ Global heating will increase poverty and inequality and subsequently, vulnerabilities.¹⁹⁵ Without significant climate action, up to 132 million additional people are at risk of extreme poverty by 2030.¹⁹⁶

CHILDREN:



Credit: ADB / Asian Development Bank (CC BY-NC-ND 2.0)

According to the United Nations Children's Fund (UNICEF), approximately one billion children live in extremely high-risk countries. 820 million children are currently highly exposed to heatwaves and 920 million are highly exposed to water scarcity.¹⁹⁷ Impacts overlap and are likely to worsen as global heating unfolds. Among the high-risk countries are the Central African Republic, Chad, Nigeria and Guinea, which have comparatively high levels of displacement.¹⁹⁸ The top ten countries on UNICEF's index emit only 0.55% of global emissions with a population of 502 million.¹⁹⁹ Children are physically, psychologically and physiologically more vulnerable and more prone to diseases. Climate-related shocks, stresses and hazards can deteriorate their life in the long run.²⁰⁰ Improving access to health and nutrition services through investments could considerably reduce overall climate risk for 460 million children and investing in the reduction of exposure to coastal flooding can reduce climate risk for 525 million children.²⁰¹

Smoke in their lungs: California's undocumented immigrant community on the frontlines of the climate crisis

In summer 2021, the North American west faced a historic heatwave, extreme drought and wildfires.²⁰² Approximately 93% of the US West is currently suffering from drought, with an estimated population of almost 59 million people living in drought areas.²⁰³ California Governor Gavin Newsom declared a drought emergency in 43 of the state's 58 counties.²⁰⁴ California has one of the hottest climates in the US, experiencing some of the highest temperatures recorded on Earth.²⁰⁵ Global heating is causing significant changes to California's climate. While temperatures are increasing across the entire southwest United States, this is especially noticeable in southern California, where temperatures have risen by 1.7°C in the last century. Heatwaves, lack of rainfall and declining snowpack are increasingly more common, threatening water supply across the region and contributing to longer and more severe droughts.²⁰⁶

"The climate crisis is already here. It's showing up in the heat waves, the drought, the wildfires."

Lucas Zucker is Policy and Communications Director at Central Coast Alliance United for a Sustainable Economy (CAUSE)²⁰⁷

Higher temperatures and drought have greatly increased wildfires in California. It is estimated that the area burned by wildfires across the western US between 1984-2015 was double the area that would have burned without climate change.²⁰⁸ Exacerbated by rising global temperatures, wildfires will become more frequent and more severe, with dire consequences for human health, property and livelihoods. Greater wildfires will not only pose severe security risks to local populations, but they will also cause significant landscape changes, expanding deserts and creating more arid conditions across the region.²⁰⁹

In 2018, nearly 11 million undocumented immigrants resided in the United States.²¹⁰ The highest number of these individuals – some 2.6 million in 2018 –²¹¹ live in California, making up over 6% of the state's total population.²¹² About 78% of California's undocumented population comes from Mexico and Central America, with 64% originating from Mexico alone.²¹³ The vast majority of this number – about 77% of undocumented immigrants in California – speak Spanish at home.²¹⁴ While undocumented immigrant communities are spread across the entire state, their numbers are particularly high in major urban and agricultural areas.²¹⁵ In Los Angeles, Santa Barbara and Ventura counties, undocumented immigrants make up at least 9% of the counties' total populations.²¹⁶ Moreover, the counties that host the largest populations of undocumented immigrants are often also the ones most frequently devastated by wildfires.²¹⁷

"Immigration deeply intersects with climate. Migrants are often excluded from the safety nets that are most important to protect people from climate change. We have millions of people in the US without status, who are systematically excluded from all kinds of benefits, whether that's healthcare, whether that's unemployment insurance, and at every step of the way facing threats to the loss of their livelihoods from natural disasters or longer-term disruptions in the industries that they work in."

Lucas Zucker (CAUSE)

When wildfires occur, California's undocumented immigrants are among the region's most vulnerable populations to the impacts.²¹⁸ This is because undocumented immigrants are generally excluded from government emergency response and relief efforts. When disaster hits, the same government assistance available to California's documented residents is not available to its undocumented ones, precisely because of their immigration status. Undocumented communities are often also restricted by language and cultural barriers, which significantly limit their access to vital information in emergencies.²¹⁹

The 2017 Thomas Fire in Ventura and Santa Barbara counties is a prime example of the exclusions and vulnerabilities that undocumented immigrant populations experience in the face of climate-induced disasters. At the time, the Thomas Fire was the largest fire in California since the state started keeping records in 1932, burning more than 280,000 acres, destroying over a thousand homes and structures, and killing two people.²²⁰

The Latino community, undocumented immigrants and low-income workers were all confronted with some of the worst challenges, both during and after the Thomas Fire. The ability of these communities to keep safe during the Thomas Fire was significantly limited, as warnings and information regarding evacuations, shelters, health and other safety measures were initially only available in English.^{221,222} Spanish translations were poorly accessible, despite Latinos making up between 43-46% of the affected counties' total populations.²²³

“What we saw during the wildfires [...] is immigrant communities really being left out of the critical safety information about power shutoffs, about unsafe drinking water, about evacuation orders.”

Lucas Zucker (CAUSE)

Thousands of low-income immigrant farmworkers were at particular risk in the aftermath of the fires. Smoke polluted the air for weeks and was especially hazardous to those who had to continue performing manual labour outdoors. Excluded from government emergency aid and disaster unemployment assistance due to their immigration status, undocumented workers could not afford to stop working.²²⁴

The unequal impacts of the Thomas Fire illustrate how climate vulnerability is exacerbated by other justice-related issues, including immigration status. They predict how the escalation of the climate crisis will continue to harm first and worst the US' already marginalised communities who benefit the least from our carbon-heavy economies.²²⁵

“Because the very same communities that have been impacted by the extractive industries, by the oil and gas industry, by industrial agriculture, [...] are the very same communities that are going to be most impacted by the climate threats that we're facing. [...] I hope that global climate policy making is really rooted in the needs of Indigenous and migrant communities that are systematically excluded and marginalised, that I think have not been centred in the conversation on climate change. They have a lot to say and a lot of leadership to contribute.”

Lucas Zucker (CAUSE)

Drought in southern Madagascar

At least 1.3 million people are experiencing acute food insecurity due to the most severe drought in southern Madagascar for four decades.²²⁶ 400,000 people have been pushed into starvation.²²⁷ The UN warns of a climate change famine.²²⁸ In the Great South, considered the country's poorest region,²²⁹ roughly 95% of its population relies on agriculture, livestock and fishing.²³⁰ Successive years of severe drought as well as failure of rains, high-intensity cyclones, semi-arid conditions, high levels of soil erosion and agricultural pests destroy harvests and decrease food production, which is expected to be less than 40% of the last five-year average in 2021.²³¹ Due to its location, Madagascar regularly faces extreme weather-related natural disasters, including droughts and floods, as well as cyclones. They displace tens of thousands of Madagascans each year, further damaging livelihoods, health and food insecurity.²³² The socio-economic impacts of Covid-19 add just another layer to this crisis.²³³

“Most Madagascans work in agriculture, more than 80%. But there is no social safety net. There is corruption. It’s tough. Many Madagascans are not only poor but increasingly suffer extreme weather events. The population is not resilient. Southern Madagascar is a dry place, but people lived there for years. But now, many people die because of the drought, children are undernourished.”

Dr. Tsiry Rakotoarisoa, German Climate Foundation²³⁴

The Great South naturally experiences great rainfall variability. In two consecutive years, it received only 60% of its usual rainfall. Droughts are complex extreme events, and it is difficult to conclusively attribute them to anthropogenic climate change. However, the food crisis in southern Madagascar shows how pre-existing vulnerabilities – such as reliance on rain-fed agriculture and poverty – already interact with today's climate variability. Droughts will likely increase in the region as global mean temperature continues to increase.²³⁵

Children, rural communities dependent on subsistence agriculture and rain-fed crops, and people with illnesses are among the most affected members of society.²³⁶ According to the World Food Programme with reference to an assessment conducted by the Ministry of Health, the Global Acute Malnutrition level²³⁷ in children under five has almost doubled in early 2021.²³⁸ 500,000 children under five are currently at risk of acute malnutrition.²³⁹

“In southern Madagascar it was extremely dry. [...] I saw the misery of the people. They didn’t have food; they ate cactuses for water. But now it got even worse. [...] Most people from the South lack resources to move. Climate change exacerbates poverty and hunger. Madagascar is an island, it’s isolated. It becomes almost like a prison. You can’t leave. You have to try to survive on the island.”

Dr. Tsiry Rakotoarisoa

Many children drop out of school as they have to support their parents in acquiring food.²⁴⁰ Madagascar has one of the highest poverty rates globally: 75% of the population was estimated to live below the international poverty line of US\$1.90.²⁴¹ Of the nearly 14 million children, 9.4 million were considered multidimensionally poor in 2018 (children who had deprivations in at least two dimensions of well-being) and 11.6 million were living below the monetary poverty line, according to UNICEF.²⁴² It also states that the rate of extreme poverty is twice as high in rural areas as in urban areas.²⁴³ Due to pandemic-related economic recessions, these rates are likely to rise. The government will have less resources available to respond to global heating and its impacts – leaving the population more vulnerable to climate-related risks.²⁴⁴

Credit: gemmmm on Unsplash

As the climate crisis unfolds, the incidence of climate sensitive diseases, for example malnutrition and malaria, increase.²⁴⁵ Although children are particularly affected because of their developing physiology, many policy and programme documents do not refer to this heightened vulnerability.²⁴⁶

In 2019, Madagascar emitted 4.01 million tonnes of CO₂. In the same year, Germany emitted 701.96 million tonnes, Australia 411.02 tonnes and the United Kingdom 369.88 million tonnes. China emitted 10.16 billion tonnes and the USA 5.28 billion tonnes.²⁴⁷

“It’s about climate justice. [...] Every year there are storms, droughts, heavy rains, floods. It’s deeply unjust because Madagascar didn’t contribute to global heating. [...] But climate change is more than greenhouse gas emissions. It has social and political roots. We must think about history, about colonialism and its lasting impacts on societies, economies and politics. We still feel it today. [...] To combat global heating, we have to go deeper.”

Dr. Tsiry Rakotoarisoa

A human rights crisis

Global heating is an injustice multiplier and threatens the full range of human rights.²⁴⁸

Among the affected rights are the right to life, safety, self-determination, development, health, food, water, adequate housing, and cultural rights. Often various human rights are affected at the same time or as impacts unfold.²⁴⁹ The development, implementation and enforcement of climate and environmental policies, practices and laws must enshrine equality, equity, non-discrimination and participatory decision-making, especially for the traditional custodians and beneficiaries of natural resources. Otherwise, the climate crisis will continue to exacerbate inequalities within and across borders.

Benefits for our climate and environment can turn into benefits for peoples’ human rights, and vice versa. Principles and standards of international human rights can set the agenda towards a fair transition to sustainable societies that leaves no one behind and empowers rights-holders. Human rights-consistent climate action can, for example, help to recognise discrimination and to create benefits for all through meaningful engagement and empowerment.²⁵⁰ This can result in a higher effectiveness of measures.²⁵¹

“[Human] rights obligations, standards and principles have the potential to inform and strengthen international, regional and national policymaking in the area of climate change, promoting policy coherence, legitimacy and sustainable outcomes.”

UN Human Rights Council resolution 41/21²⁵²

The potential contribution of ambitious and rights-based climate policies consistent with the 1.5°C target can also reduce extreme poverty and inequalities, for instance through redistribution of national carbon pricing revenues and transparent, targeted international climate finance.²⁵³ Beyond that, the health of ecosystems is inextricably linked to the well-being of local communities.²⁵⁴ The right to a healthy environment especially – recognised by the UN Human Rights Council as a human right (Resolution 48/13) – can be a promising pathway towards a healthier and sustainable future if countries effectively adopt and implement this right in national legislation and policies. It can catalyse action such as stronger environmental laws or increased public participation, and therefore serve towards better human rights outcomes.²⁵⁵

EXAMPLES OF HUMAN RIGHTS AFFECTED BY GLOBAL HEATING

THE RIGHT TO FOOD: The Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights enshrine the fundamental right to food.²⁵⁶ Global heating affects all dimensions of food security: availability, accessibility, adequacy and sustainability. In combination with other stressors such as economic shocks and protracted conflict, it exacerbates already existing fragilities.²⁵⁷ Low-income and already vulnerable populations are most affected.²⁵⁸ In 2019, an estimated three billion people worldwide could not access healthy diets due to high costs and income inequality.²⁵⁹ Small-scale farmers disproportionately suffer from climate impacts,²⁶⁰ particularly populations within developing countries who are heavily reliant on smallholder farming.²⁶¹ A 2020 study found that small-scale farmers in developing countries receive only 1.7% of climate finance,²⁶² despite their livelihoods being heavily climate-sensitive and the fact that they produce 55% of global calories.²⁶³ About three quarters of the extreme poor live in rural areas, but low adaptive capacity and inadequate and inefficient national policy approaches to rural regions and specific social situations often increase risks.²⁶⁴ The Food and Agriculture Organization of the United Nations (FAO) estimates that globally, up to 928 million people were severely food insecure in 2020 – an increase of 148 million compared to 2019.²⁶⁵

“With the flood, a lot of houses were completely destroyed. More than half a million people are displaced. More than 100 are dead already and more than 460 are injured. Here in Sudan, everything depends on natural resources, so when something big like this happens it will affect food security, it will affect economic security [...]”

Nisreen Elsaim, chair of Sudan Youth Organization on Climate Change²⁶⁶

CULTURAL RIGHTS: Almost 15% of the global poor are Indigenous peoples, despite constituting just 5% of the world's population.²⁶⁷ Up to 80% of Indigenous peoples live across the most climate vulnerable regions of Asia and the Pacific.²⁶⁸ A lack of legal protections exposes Indigenous peoples and local communities to land grabbing, illegal or forced expropriation of resources, illegally set fires for land clearing, dispossession and displacement.²⁶⁹ Sea level rise puts the cultural survival of entire peoples at risk.²⁷⁰ The United Nations Declaration on the Rights of Indigenous Peoples states, “indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures”.²⁷¹ In addition, the Glasgow Climate Pact emphasizes the important role of Indigenous peoples and the Paris Agreement outlines that adaptation measures “should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems”.²⁷²

“Our way of living is to make the most of the little that Mother Nature gives us to survive. We're not looking for how to be rich men. But we are the ones who suffer the consequences of what others do.”

Yuri Israel Lampson, Indigenous youth leader about climate change and Eta and Iota hurricanes²⁷³

THE RIGHT TO HEALTH AND THE RIGHT TO LIFE: Global heating affects the right to enjoy the highest attainable standard of physical and mental health through various channels, including weather extremes such as heat, changes in natural systems and subsequent disease vectors, and through impacts on food production.²⁷⁴ Climate and environmental change will deepen already existing health inequalities.²⁷⁵ Between 2005 and 2015, more than 700,000 people died and over 1.4 million were injured as a consequence of disasters.²⁷⁶ Globally, more than five million deaths were associated with non-optimal temperatures annually, with over half of excess deaths occurring in Asia, particularly in low-lying and populous coastal cities in East and South Asia.²⁷⁷ If the world's temperature reaches 2°C, one billion people would face extreme heat, according to the UK Met Office.²⁷⁸ The environmental and climate crisis will also increase the risk of infectious diseases and undermine efforts to control diseases such as dengue.²⁷⁹ Children especially will be affected – children under five years old have suffered 88% of diseases linked to climate change.²⁸⁰ In comparison to a future without climate change, the WHO predicts 95,000 additional deaths due to childhood undernutrition and 60,000 due to malaria in the year 2030 alone.²⁸¹ Migrants also face particular climate-related health risks, such as food and water security, changing patterns of infectious diseases or access to health care.²⁸²

LOSS AND DAMAGE

The international community must act to deliver large-scale, commensurate support to avert, minimise and address loss and damage caused by sudden and slow-onset effects.²⁸³ These can be economic and non-economic: including the loss of livelihoods, property or biodiversity. Climate-related disasters occurring between 2000-2019 almost doubled those within the period of 1980-1999.²⁸⁴ Estimated costs of loss and damage vary: one estimate suggests that economic costs in developing countries could amount to between US\$290 billion to US\$580 billion annually by 2030.²⁸⁵ Most industrialised countries are still reluctant to take responsibility – progress in providing resources and assistance has been slow.²⁸⁶ At COP26, civil society and developing nations argued that the issue of loss and damage can no longer be ignored, yet industrialised states still refuses commitments to fully support a funding facility for loss and damage.²⁸⁷ Wealthy countries must urgently commit to the establishment of a robust system and programmes to address loss and damage. It is fundamental that they act upon the uneven distribution of risks, address marginalisation and discrimination and support those displaced by loss and damage.²⁸⁸ Governments must leverage innovative fiscal and monetary policies to achieve sufficient funding levels.



Globally, more than five million deaths were associated with non-optimal temperatures annually, with over half of excess deaths occurring in Asia, particularly in low-lying and populous coastal cities in Eastern and Southern Asia.

Man and woman climbing up the eroded river bank. Jaliakhali, Dacope, Bangladesh

DISPLACEMENT: FALLING THROUGH THE CRACKS

Everyone deserves the right to a safe home, but the climate crisis is increasingly displacing people.²⁸⁹ According to the Internal Displacement Monitoring Centre (IDMC), weather and natural disasters – largely storms and floods – triggered 30.7 million new internal displacements in 2020.²⁹⁰ Although this is likely to be an underestimate due to incomplete data, it is the highest number recorded in a decade and in line with the steady rise over the past few years.²⁹¹ In India alone, more than 3.8 million people have been internally displaced in 2020, mostly due to weather-related disasters. China counted more than five million and the USA more than 1.7 million new displacements.²⁹² According to conservative estimates of the World Bank, climate change could cause over 216 million people in six regions to migrate within their own countries by 2050 if no effective climate and development action is taken. This is likely to be most prevalent in the poorest and most climate-vulnerable rural, urban, and coastal regions.²⁹³ Key impacting factors are water scarcity, lower crop productivity, sea level rise, storm surge, heat stress, extreme events and land loss. It also estimates that up to 80% of internal displacement by 2050 could be avoided with ambitious climate action.²⁹⁴ It must be noted that the figures do not reflect cross-border movements because of limited global data.

“It’s quite common to see people initially displaced internally even several times. And then finally across borders. [...] Human rights law must be applied here to protect the rights and needs of all displaced internally and across borders.”

Amali Tower, founder and executive director of Climate Refugees²⁹⁵

Around 70% of the most climate-vulnerable countries are also among the most fragile,²⁹⁶ characterised by weak government institutions and/or low levels of state legitimacy. They can catalyse drivers of conflict such as poverty, decreased access to resources or social inequalities.²⁹⁷ The combination of conflict and disasters can result in frequent and repeated displacements and can increase, prolong or protract emergency situations.²⁹⁸ According to the UN Environment Programme, at least 40% of internal conflicts display links to environmental degradation over the previous decades.²⁹⁹

Climate refugees still lack specific recognition and protection within international law.³⁰⁰ Legal pathways remain limited, inadequate and too often uncertain. The international community has obligations to protect those who flee or migrate in the context of climate change impacts.³⁰¹ A new legally binding international agreement is needed to protect those who are displaced by the climate crisis. This instrument is crucial to provide them with definition and status, to define rights and obligations, and to coordinate and combine our actions so that they are truly effective in protecting the most fundamental human right to a safe home.³⁰²



Cyclone Amphan was the most powerful storm to strike Bangladesh in more than a decade.

Cyclone Amphan was the most powerful storm to strike Bangladesh in more than a decade.

Nowhere to stay? The displacement risk in Bangladesh

Due to Bangladesh's natural susceptibility to extreme weather, its people have long used migration as a coping strategy. However, as conditions intensify under global heating, increasing numbers of people are being driven from their homes by more frequent and severe hazards. Sea level rise, storms, cyclones, drought, erosion, landslides, flooding and salinisation are already displacing large numbers of people. By 2050, one in every seven people in Bangladesh could be displaced by climate change, estimates suggest.³⁰³ Sea temperatures in the Bay of Bengal have significantly increased, which scientists believe has caused Bangladesh to suffer some of the fastest recorded sea level rises in the world.³⁰⁴ Already now, approximately one million Bangladeshis are displaced each year and losses amount to an estimated 1% of its gross domestic product.³⁰⁵

"The rice season is not at the right time, none of the rains are. And when it does rain, it is far heavier. Everyone is affected. [...] I feel sad, this is the birthplace of our children and grandchildren. We have no future here. We may have to look for somewhere else to live."

Abdul Zuffer, farmer in southern Bangladesh³⁰⁶



Coastal drinking water supplies have been contaminated with salt, leaving people who rely on such resources vulnerable to health problems such as hypertension, pre-eclampsia during pregnancy, acute respiratory infections and skin diseases.³⁰⁷ Agriculture, the mainstay of the Bangladeshi economy, is badly affected and crops damaged by rising salinity are at increased risk from resulting soil degradation.³⁰⁸

"Once this village was green with paddy fields. But now the water is salty, and the trees have died. [...] I am devastated when I think that I will have to move."

Gopal Munda from Kara Mura, southern Bangladesh



At least 60% of the population face flood risks.³⁰⁹ Land lost due to riverbank erosion is a primary cause of climate displacement inland. Those who live on Bangladesh's river islands, known as chars, are especially at risk.³¹⁰ Located within some of the world's most powerful river systems, chars can be formed or completely eroded over weeks or even days.

“I came to Dhaka because of river erosion. We had nowhere to stay. [...] We were dependent on the river for our livelihood. Once there was a strong tide. Our home was flooded that night. We stayed on a bamboo platform. The night caused us great suffering. [...] One night the water came in. [...] Our house and all our land were washed away.”



Shoripa Bibi from Kalikabari Village, Borguna District

Repeated displacement of this kind has the potential to trap people in a cycle of poverty. Every year, an estimated 500,000 people move from rural areas to Dhaka, the Bangladeshi capital.³¹¹ Rapid and unplanned urban growth is contributing to overcrowding and increased pressures on infrastructure, services and resources.

“Cyclone Aila is devastating us one day, cyclone Sidr is tearing us apart on another day. We are disturbed by seeing the storms. [...] Certainly, we will have to go. But we cannot move until we are financially sufficient.”



Musamat Meherunesa, from Dumuria, Gabura

Certain factors that shape vulnerability, such as gender, ethnicity or legal status, can significantly increase exposure, susceptibility and affect the ability to cope with and recover from climate impacts. They are also closely related to increased risks of violence, exploitation and discrimination.³¹² For example, Bangladeshi women are among the first to face the impacts of climate change.³¹³ They have less access to land, resources and decision-making processes than men, and their wages are lower, making it harder to survive post-displacement. They are bound by family responsibilities and therefore may remain in dangerous situations when disaster strikes. Bangladesh also hosts the world’s largest refugee camp, Kutupalong in Cox’s Bazar. Around one million refugees, mostly Rohingya Forcibly Displaced Myanmar Nationals, are exposed to a changing climate intersecting with weak institutions, public health challenges and other shocks and stresses.³¹⁴ As a first step for policies that are effective in leaving no one behind, it is crucial that the most vulnerable are involved in a holistic and inclusive process.



A threatened culture: Sami people

The Arctic is warming up to four times as fast as the rest of the world.³¹⁵ 2020 was the Arctic's second-warmest year on record.³¹⁶ Global heating is putting its unique ecosystem at risk, and with it the existence of Europe's only recognised indigenous people, the Sami, who have lived in the Arctic for millennia. Their traditions, rights and very way of life are in jeopardy.³¹⁷

"There are only a few places in the world where the ground and the land and the water are left like it is today. And we have that. I cannot understand that people don't put value into that [...] My daughter's generation, they will say, 'Why didn't you save it?' [...] There is always hope. [...] We should just stop being so afraid of changes."

Maxida Mäarak, Sami rights activist and artist³¹⁸



The Sami are native to Sápmi, which spans the northernmost parts of Sweden, Norway, Finland and Russia. Sápmi is home to an estimated 80,000 to 100,000 Sami.³¹⁹ They identify as one distinct people irrespective of the national borders now in place across their land,³²⁰ and they have existed in harmony with nature as far back as recorded history through sustainable use of their land and natural resources.³²¹ While Sami livelihoods have become more diverse, Sami identity and culture are anchored in the traditional practice of reindeer herding. They live semi-nomadically, following the seasonal migration patterns of reindeer as they move between winter and summer grazing grounds. This is the cornerstone of Sami culture and, for many Sami communities, the only way to survive in the Arctic.

"It all revolves around the reindeer. [...] there is a culture behind it. You are raised with it, it's a part of your life."

Lars-Ánte Kuhmunen, reindeer herder and Sami community leader, northern Sweden



The rapid warming of the Arctic is known as 'Arctic amplification' and is projected to strengthen in coming years,³²² mainly due to sea ice melt feedback loops.³²³ Impacts are felt throughout the food web. When precipitation falls as rain rather than snow, as it does increasingly as a result of global warming,³²⁴ thick layers of ice form on the snow, preventing grazing herbivores such as moose or reindeer from reaching the vegetation they need for food.³²⁵ Unusually high temperatures above freezing are causing more frequent rain, which freezes on the ground. Reindeer often fail to break the ice, and thousands starve to death.³²⁶



“They have a very hard time finding food because of the weather changes. [...] it’s very hard for the reindeer to adapt to the conditions. [...] We are doing wrong. Everyone. We are destroying this planet.”

Kenneth Pittja, reindeer herder and Sami community leader

The Sami also face encroachments onto their land from mining, energy generation, forestry and tourism.³²⁷ This competition for land use hampers their ability to be flexible and adapt to changing circumstances, such as searching for better summer grazing areas. It also often permanently alters the ecosystem.³²⁸ The Sami are acutely aware of climate change and the compounding competition for land use. Through the Sami Council and Parliament, they are calling for flexibility in their use of Sápmi land to keep their herds alive.³²⁹ Sami rights across Sápmi must be fully addressed by the four governments in control of Sápmi land, through consultation with Sami representatives.³³⁰



Unequal emissions, unequal impacts

The failure of the major greenhouse gas emitters and advanced economies to address the climate emergency equitably jeopardises the fundamental rights of people within and beyond their territories and exacerbates inequalities even within the wealthiest countries.³³¹ According to forecasts of the International Energy Agency, CO₂ emissions will climb to record levels in 2023 under governments' current Covid-19 recovery spending plans.³³² In particular, the major emitters are failing to live up to their fair share and many of them are not on track to meet their current NDCs.³³³

Inequality is increasing globally:³³⁴ economic disparities, impacts on the distribution of resources and an increasing inequality gap can be observed in both low-income and industrialised countries.³³⁵ The Working Group III part of the Sixth Assessment Report of the IPCC shows that the rich in every country produce more emissions than poorer populations, exacerbating inequalities within countries.³³⁶ In a

large-scale global expert survey, approximately 70% of economists interviewed believe that global heating “is likely or extremely likely” to exacerbate inequality within the majority of countries.³³⁷

A study found that households with the highest carbon footprint in the European Union (EU) are to a large extent those with the highest levels of income.³³⁸ In emerging economies, there is an even greater gap between the richest and poorest.³³⁹

According to Oxfam and the Stockholm Environment Institute, the richest 10% of the world's population was responsible for more than half of the cumulative carbon emissions from 1990 to 2015, whereas the poorest half was responsible for 7% in the same period.³⁴⁰ Roughly half the emissions of the richest 10% – constituting almost a quarter of global emissions – are related to citizens' consumption in Canada, the USA and the EU.

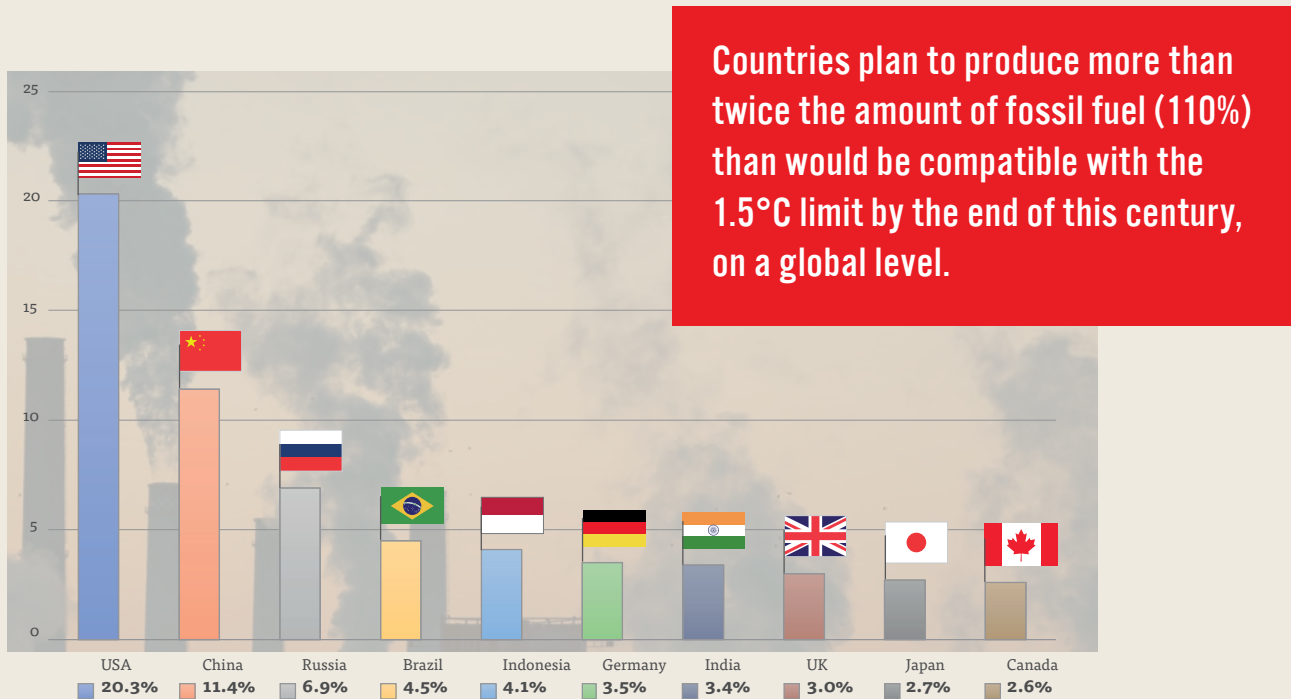
By 2030, people in the wealthiest 1% of the global population will be responsible for per capita consumption emissions footprints that are 30 times higher than the global per capita level compatible with the Paris 1.5°C goal. In contrast, the footprints of the poorest half of the global population are set to remain below the 1.5°C-compatible level.³⁴¹



Chris Leboutillier / Unsplash

HISTORICAL RESPONSIBILITY

Fossil fuel emissions have quadrupled over the last 60 years. If emissions remain at current levels, the remaining carbon budget for a 50% probability of staying below 1.5°C would be used up within ten years from 2022 onwards.³⁴² Further, the UN Environment Programme Production Gap Report finds that countries plan to produce more than twice the amount of fossil fuel (110%) than would be compatible with the 1.5°C limit by the end of this century, on a global level.³⁴³ It highlights that G20 countries have directed more new funds towards fossil fuel activities than toward clean energy since the start of the pandemic.³⁴⁴ The G20 is responsible for around 75% of GHG (including land use change and forestry).³⁴⁵



National responsibility for historical CO₂ emissions from 1850-2021 (Carbon Brief analysis, 05.10.2021). The national totals are based on cumulative national territorial CO₂ emissions.



Approximately 60% of GHG emissions are produced by 10 countries, whereas less than 3% come from the 100 least-emitting countries.

Countries that have historically contributed the least to greenhouse gas emissions – including Small Island Developing States (SIDS) and Least Developed Countries (LDCs) –, are those suffering first and worst from the climate crisis.³⁴⁶ Approximately 60% of GHG emissions are produced by 10 countries, whereas less than 3% come from the 100 least-emitting countries.³⁴⁷ CO₂ emissions resulting from fossil fuels still dominate total GHG emissions.³⁴⁸ In 2019, the world's major CO₂ emitters – China, the USA, India, the EU27+ UK, Russia and Japan – together emitted 67% of total fossil CO₂.³⁴⁹ 20 of the 36 highest emitting countries are, as a whole, among the least vulnerable to future negative climate impacts.³⁵⁰ Global heating has led to a 25% increase in economic between-country inequality over the past half century.³⁵¹ It is critical that developing countries are not left behind in the transition to green economies.³⁵² To ensure that everyone can enjoy a healthy environment, people and governments must have the means to mitigate, adapt to and recover from the climate crisis in a human rights-consistent manner.³⁵³

HOLD BUSINESSES ACCOUNTABLE

Only 100 companies are responsible for 71% of all global industrial GHG emissions since 1988.³⁵⁴ States must protect human rights affected by actions of third parties, including business enterprises, and implement necessary measures, including action on climate-induced negative impacts on human rights. It is therefore key to incentivise best practice among corporate actors and to install a due diligence legislation which precisely addresses climate change, holds corporate and financial actors accountable, and ensures effective remedies.³⁵⁵

Moreover, business enterprises should recognise their responsibility to do no harm. They should identify, prevent, mitigate and account for negative impacts on human rights, as the UN Guiding Principles on Business and Human Rights affirm, and develop company-wide pathways towards 1.5°C trajectories.³⁵⁶ This should include prevention and reduction of GHG emissions across value chains and operations, consultation of affected rights-holders, and the implementation of transparent strategies and measures in compliance with the objectives of the Paris Agreement and scientific evidence.



Flooding in Pibor, South Sudan. Credit: Gideon Sackitey / UNMISS (CC BY-NC-ND 2.0)

China: which path will the climate superpower take?

Since 2005, China has been the world's largest CO₂ emitter.³⁵⁷ Its carbon emissions accounted for 28% of total global emissions in 2019.³⁵⁸ Nearly 90% of its emissions come from energy generation.³⁵⁹ Globally, China's energy generation and consumption surpasses all other countries,³⁶⁰ and per capita energy consumption is still increasing.³⁶¹ The country runs a heavily fossil fuel reliant economy, with more than 65% of its electricity generated by coal (as of 2018).³⁶² Its total operating coal capacity is larger than all other countries combined.³⁶³ President Xi Jinping has pledged that China will cease building coal plants abroad, but domestic coal plants are still being built – in the first half of 2021, China approved yet another 24 coal-fired power plants.³⁶⁴

Although China has committed to peak its emissions by 2030 and reach real zero by 2060, its near-term targets are not sufficient to reach these goals.³⁶⁵ China has demonstrated a lack of clear trajectory to peak emissions, as well as a lack of publicly reliable statistics and policy assessment mechanisms. Furthermore, its goals centre around emissions intensity rather than total emissions, which harm chances of effectively reducing emissions and reaching real zero targets.³⁶⁶

While China's pace of emissions reductions is slow, its climate is changing fast. Over the past century, the average temperature in China has increased by 0.9-1.5°C, coupled with increased spatial variation in the amount of precipitation.³⁶⁷ The area of permafrost has reduced by 18.6% from 1983 to 2013,³⁶⁸ and the rate of sea level rise along the coastline of China has been approximately 2.4-3.8 mm per year over the last decade.³⁶⁹ A severe flood event at the Yangtze river basin in 2020 cost the country US\$32 billion.³⁷⁰ Within China's limited arable land, nearly one third of the area is affected by climate-related disasters, resulting in crop failures.³⁷¹ Under a business-as-usual emissions scenario, the hazards of severe extreme events will gradually increase, including severe droughts, heat waves and floods.³⁷²

Droughts have been one of the major threats to China's 300 million people dependent on agriculture.³⁷³ China has long suffered from a lack of water: its freshwater resources per capita is 28% of the world average,³⁷⁴ and more than half of its land is arid or semi-arid,³⁷⁵ with a rapid expansion of semi-arid areas.³⁷⁶ As global heating unfolds, droughts are expected to last longer, with increased severity and frequency. By 2030, over 60% of China's 1.4 billion population could be affected by a 10% longer duration of agricultural droughts, while more than 95% of land could be hit by 10% more severe agricultural droughts.³⁷⁷ The central and western parts of China are most impacted by changes in drought frequency, duration and intensity,³⁷⁸ including areas with higher ecological vulnerability, areas with higher rates of poverty,³⁷⁹ and autonomous regions of ethnic minorities.³⁸⁰

Older people are amongst the most vulnerable to climate effects due to their limited adaptive capacity.³⁸¹ In 2020, 18.7% of China's population was above 60 years old.³⁸² This proportion is expected to grow faster in the coming years.³⁸³ Heatwaves have direct causal effects on the rise of mortality rates, and this impact falls disproportionately on elderly people.³⁸⁴ As the exposure time of heatwaves rises steadily, the mortality rate is also rising at a rate of an additional 1,000 deaths every one to two years.³⁸⁵ Other health risks related to global heating include the increasing spread of dengue.³⁸⁶



Mulan Wind Farm, China. Credit: Land Rover Our Planet. (CC BY-ND 2.0)

From 1990 to 2020, the share of China's population living in an urban centre has increased from 27% to 64%.³⁸⁷ Urbanisation leads to the increase of impervious surfaces³⁸⁸ and intensifies the effects of extreme precipitation.³⁸⁹ On 17 July 2021, record-breaking rainfall hit Henan, a province located south of the Yellow River. For the following three days, some 600 mm of rain fell in the capital city Zhengzhou, resulting in over 300 fatalities and dozens missing.³⁹⁰ In addition to precipitation, sea level rise also poses flooding threats to coastal cities. Approximately 11.4% of the Chinese population lives in cities in low-lying coastal zones.³⁹¹ A sea level rise of 0.4 to 0.6 m is predicted along the coastline of China by the end of this century.³⁹²

However, China can still alter its course: an analysis by the World Resources Institute found that China could prevent 1.9 million premature deaths and generate up to US\$1 trillion in net economic and social benefits by 2050 if it applies more ambitious climate action – among other things, it is key to phase out coal as early as possible.³⁹³ China could become a pioneer in the global energy transition. This would provide jobs, reduce its dependency on coal and mitigate the climate crisis and its harmful effects. The world needs China to succeed if we are to keep global heating to 1.5°C and avoid the catastrophic impacts of unmitigated climate change.

By 2030, over 60% of China's 1.4 billion population could be affected by a 10% longer duration of agricultural droughts, while more than 95% of land could be hit by 10% more severe agricultural droughts.

Towards human rights-consistent climate action

As illustrated in this report, the climate crisis is affecting the full range of rights recognised under international human rights law and it exacerbates inequities. The Universal Declaration of Human Rights declares that **all human beings are entitled to have their rights and freedoms fully realised**.³⁹⁴ Human rights are universal, inalienable, indivisible, interdependent and interrelated. States have obligations under international human rights law to mitigate the climate crisis: they must take immediate individual and collective action to the greatest extent possible to prevent current and future harms to human rights. They must also ensure that policies and measures are consistent with human rights obligations, standards and principles in order to respect, protect and fulfil human rights without discrimination.³⁹⁵ The Paris Agreement states:

“Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity”.³⁹⁶

In particular, industrialised countries and major emitters must urgently mitigate global heating to the full extent of their abilities. This must be based on the principle of equity and their common but differentiated responsibilities³⁹⁷ and respective capabilities, as is enshrined in the UN Framework Convention on Climate Change (UNFCCC).³⁹⁸ As it stands, they do not address the crisis accordingly, despite the fact that those countries and people most impacted,³⁹⁹ as well as UN institutions,⁴⁰⁰ have warned for years that the climate crisis violates human rights.

“Failure to take measures to prevent foreseeable human rights harm caused by climate change, or to regulate activities contributing to such harm, could constitute a violation of States’ human rights obligations.”

Joint statement of five UN Human Rights Treaty Bodies⁴⁰¹

While the streets of Glasgow and across the world resounded with the calls of “climate justice now!” during COP26, government policy has not yet sufficiently embedded the protection of human rights in climate action.



Many governments are failing to engage their most affected communities. Other key gaps relate to adequate responses to loss and damage as a consequence of climate impacts, or an international agreement that clarifies the rights and ensures the protection of climate refugees. Climate change is unequivocally an international issue and states' obligations and responsibilities, particularly of the major emitters, are relevant within their territory as well as beyond.⁴⁰²

Not only must existing human rights instruments and mechanisms be consistently and coherently implemented and advanced, but cooperation between climate and human rights regimes should be holistically strengthened. In that regard, the creation of the mandate of the Special Rapporteur on the promotion and protection of human rights in the context of climate change by the UN Human Rights Council is an important first step towards greater accountability for rights abuses linked to climate change and towards guidance for governments. To increase transparency and cooperation of climate and human rights regimes, the reporting on climate policy instruments could address, for instance, which persons or groups will be or are disproportionately affected and what measures the respective state will take.⁴⁰³



“The promises made in the UN Charter and the Universal Declaration [of Human Rights] were explicitly to future as well as current generations. And yet we risk breaking those promises. [...] We face a terrible paradox. Global challenges are more connected than ever, but our responses are more fragmented. Indeed, we have seen the emergence of multiple rifts – between powerful Member States, [...] in our human solidarity with each other, between people and planet [...].”

António Guterres,
United Nations Secretary-General⁴⁰⁴

Climate policies and practices should follow principles of justice and ensure that all persons have the capacity to adapt, establish accountability for negative human rights impacts and provide access to meaningful remedy.⁴⁰⁵ Effective adaptation can strengthen local economies as key sectors such as agriculture or health become more resilient. States should enhance transparent, equitable approaches to measure collective progress in countries' adaptation efforts.⁴⁰⁶ The Paris Agreement calls upon states to support countries of the Global South both in climate mitigation and adaptation. In addition to providing technologies based on most recent scientific knowledge, scaled-up international public climate finance is critical.⁴⁰⁷ Currently, wealthy countries are not living up to the promised target of mobilising US\$100 billion,⁴⁰⁸ and marginalise the debate on their fair shares.⁴⁰⁹ In 2019, climate finance for developing countries mobilised by developed countries totalled US\$79.6 billion, according to an OECD analysis.⁴¹⁰ The transparent and effective delivery of climate finance, and the closure of the finance gap accompanied by debt relief, is fundamental for developing economies' transition towards a resilient and climate-neutral future, and to restore trust among the international community.⁴¹¹

Human rights obligations, principles, standards and mechanisms are fundamental to account for different needs and vulnerabilities.⁴¹² They can help to clarify the obligation of states, particularly those with an inordinate contribution to the climate and environmental crisis, to adequately fight global heating and to ensure that climate practices do not violate human rights or exacerbate inequalities.⁴¹³ To avert the worst climate impacts, only a narrow pathway is left. But the challenge can turn into a real chance for our societies. Equity and justice are the very foundations of meaningful, transformative climate action.

RECOMMENDATIONS

All countries must immediately take action to the full extent of their abilities and in reflection of their respective level of responsibility and eliminate greenhouse gas emissions in line with the goal to keep the increase of global average temperature as low as possible and no higher than 1.5°C above pre-industrial levels.

- Industrialised countries must act fastest and aim for real zero GHG emissions by 2035 at the latest.
- All states should set science-based short- and long-term GHG emissions reduction strategies and translate these into concrete action plans based on just, effective, cross-sectoral and integrated measures. They must adopt enhanced NDCs aligned with their fair share and responsibilities towards human rights, and the commitments under the UNFCCC, and they should aim for annual climate target ambition raising at each UN climate summit. NDCs should explicitly include the most vulnerable groups, specific risks and reference human rights.
- Climate targets must be supported by concrete policies and long-term goals must be translated into real zero aligned 2030 targets. All states should implement a 'whole of government' approach which integrates human rights-based mitigation and adaptation into every political portfolio to drive transformative policies in key sectors – including, but not limited to:
 - decarbonising economies and ending all new fossil fuel extraction based on a just transition, and rapidly phasing out existing production and climate-damaging subsidies;
 - phasing out coal in the power sector by 2030, ensuring a resilient, sustainable and just recovery from the Covid-19 pandemic to facilitate a more sustainable and equitable future for all;⁴¹⁴
 - rapidly expanding the renewables industry and creating an infrastructure fit-for-purpose to support energy generation and efficient distribution;
 - conserving, restoring and prioritising nature-based solutions, such as forests, the ocean and wetlands, whilst ensuring the full protection and traditional usage rights of Indigenous peoples and local communities; and
 - ensuring effective enforcement of environmental and climate standards against public and private actors.



Countries must strengthen international cooperation to drive a transition towards a sustainable, fair and climate-smart future in accordance with the duty of international cooperation, and with special regard to the needs of the most vulnerable in a spirit of solidarity, fairness and responsibility.

- Cooperation with third countries should be based on the principles of accountability, inclusiveness, transparency, equality and non-discrimination. Industrialised, wealthy countries should support, share and transfer financial resources, logistics and technology, as well as capacity building, according to their respective responsibilities.
- Industrialised, developed countries must urgently mobilise and allocate maximum available resources to meet and surpass the agreed target of US\$100 billion international climate finance annually for developing countries from 2020 up to 2024. They should aim to double public climate finance by 2025 and significantly increase annual sums from 2025 onwards. Climate finance should be transparent, new and additional to existing development assistance and other government efforts. It should also prioritise concessional and grant funding. Finance flows must be accessible and predictable, and additional resources should be made available for the most vulnerable communities. An independent annual monitoring mechanism should be installed. Industrialised countries should base new goals on scientific findings, agree on a strengthened reporting and accounting framework, and commit to a clear definition of climate finance.
- All states must effectively and systematically address, avert and minimise loss and damage and advance the establishment of a robust, operational mechanism for the Santiago Network on Loss and Damage. Developed countries must deliver needs-based, large-scale, commensurate support, specifically including direct financial contributions, to address loss and damage based on specific financial commitments. Loss and damage funding must be new and additional, and should include the provision of effective finance prioritising grants, and the strengthening of risk management, climate information systems and social protection systems. Funds need to be identified and applied to support loss and damage across LDCs and should amount to a minimum of US\$50 billion annually in the immediate term. Similar sums should be provided for low-income developing countries, including plans to significantly raise this amount.⁴¹⁵

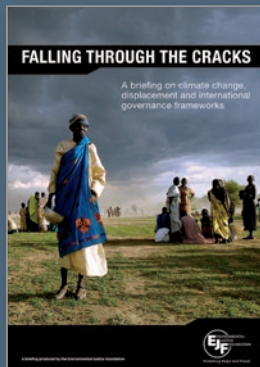
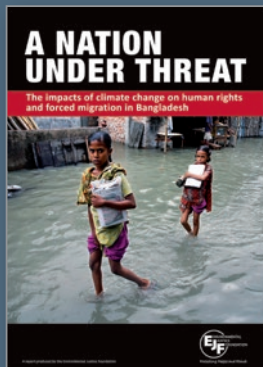
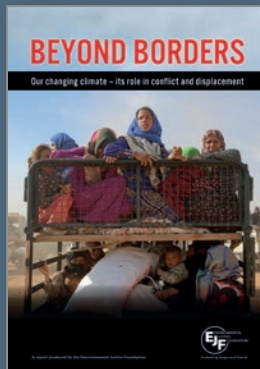
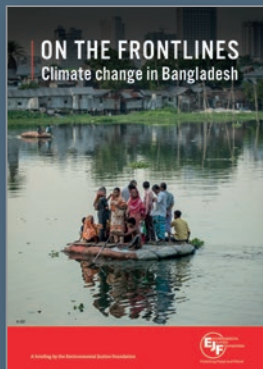
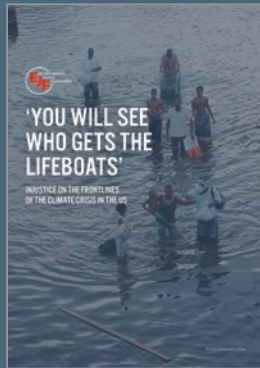
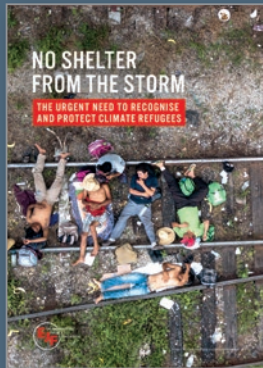


Solar powered drip and conservation agriculture in Dhanghista, Ethiopia. Credit: Petra Schmitter / IWMI (CC BY-NC-ND 2.0)

All countries must ensure that climate policies, laws and practices are human rights-consistent, inclusive, intersectional and intergenerational, and that they benefit both people and planet.

- All states should incorporate human rights-based obligations, standards and principles in all climate-related measures. Stakeholders should provide information on how human rights are implemented and integrated into climate policies and laws as part of the reporting under the Paris Agreement to increase accountability.⁴¹⁶
- A new legally binding international agreement is needed to protect climate refugees. This instrument is crucial to provide definition and status to climate refugees, to define rights and obligations, and to coordinate and combine actions so that they are truly effective in protecting the fundamental human right to a safe home.
- The UN Human Rights Council recognised the right to a safe, clean, healthy and sustainable environment as a human right (Resolution 48/13). States should adopt national legislation recognising and implementing the right to a healthy environment.
- Climate mitigation, adaptation and disaster risk reduction, as well as relief measures, should be led by cross-sectoral, inclusive, evidence-based, context-sensitive and transparent approaches. Climate action must target both slow- and rapid-onset events and strengthen or upgrade key systems, such as health and food.
- States must provide effective and comprehensive access to information and facilitate meaningful, free and active participation for local, Indigenous, marginalised and disenfranchised members of society in line with the International Covenant on Civil and Political Rights, and actively engage them as experts and agents of change. Climate action should be designed and implemented with the full engagement and free, prior and informed consent of Indigenous Peoples and local communities.
- States should support the systematic assessment of climate impacts on populations and ensure that it reflects key characteristics of those affected or vulnerable to ensure, among other things, integrated human rights-based, context-sensitive and gender-responsive approaches.
- Timely access to justice and legal remedy for human rights harms related to climate change impacts and action must be ensured, and judicial and administrative procedural rules should be clarified.
- Possible effects of projects and policies on environmental and human rights must be carefully and transparently assessed and prevented.
- The important role of environmental human rights defenders must be acknowledged and a safe environment must be ensured in line with the UN Declaration on Human Rights Defenders.⁴¹⁷
- States should ensure that climate action delivers for the most vulnerable people and areas in line with human rights obligations and serving the United Nations Sustainable Development Goals under the 2030 Agenda. Individual vulnerabilities, needs, perceptions, knowledge and capacities must be identified to capture and address the heterogeneity within and between countries. Climate action should target poverty, inequality, marginalisation, discrimination and specific vulnerabilities to make societies more just, sustainable and resilient.





References

- 1 Intergovernmental Panel on Climate Change (IPCC) (2021) Masson-Delmotte, V. et al., Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press (in Press), IPCC, Geneva, Switzerland, pp. 3949, <https://www.ipcc.ch/report/ar6/wg1/>
- 2 Ibid.
- 3 Climate Action Tracker, 09.11.2021, 'Glasgow's 2030 credibility gap: net zero's lip service to climate action', accessed 15.11.2021, <https://climateactiontracker.org/publications/glasgows-2030-credibility-gap-net-zero-s-lip-service-to-climate-action/>; UNFCCC (2021) Nationally determined contributions under the Paris Agreement, Synthesis report by the secretariat, UNFCCC, FCCC/PA/CMA/2021/8, https://unfccc.int/sites/default/files/resource/cma2021_08_adv_1.pdf; IPCC (2021) op. cit. [Note: In the IPCC intermediate scenario, average global surface temperature over 2081 to 2100 would very likely increase by 2.1°C to 3.5°C.]; UN Climate Change, 25.10.2021, 'Updated NDC Synthesis Report: Worrying Trends Confirmed', accessed 25.10.2021, <https://unfccc.int/news/updated-ndc-synthesis-report-worrying-trends-confirmed>
- 4 Intergovernmental Panel on Climate Change (IPCC) (2022) Portner, H.-O. et al., Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press (in Press), IPCC, Geneva, Switzerland, <https://www.ipcc.ch/report/ar6/wg2/>
- 5 Note: Although all regions globally are or will be affected by the climate crisis, it must be noted that the consequences significantly differ between countries and communities.
- 6 UNICEF (2021) The climate crisis is a child rights crisis: Introducing the Children's Climate Risk Index, New York, USA, 128 pp., <https://www.unicef.org/media/105376/file/UNICEF-climate-crisis-child-rights-crisis.pdf>
- 7 FAO, IFAD, UNICEF, WFP & WHO (2021) The State of Food Security and Nutrition in the World 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all, FAO, Rome, Italy, 240 pp., <https://doi.org/10.4060/cb4474en>
- 8 Internal Displacement Monitoring Centre & Norwegian Refugee Council (2021) Global Report on Internal Displacement 2021, Geneva, Switzerland, 85 pp., https://www.internal-displacement.org/sites/default/files/publications/documents/grid2021_idmc.pdf
- 9 World Bank (2020) Jafino, B.A. et al., Revised Estimates of the Impact of Climate Change on Extreme Poverty by 2030, Policy Research Working Paper, No. 9417, World Bank, Washington, D.C., USA, 17 pp., <https://openknowledge.worldbank.org/handle/10986/34555>
- 10 IPCC (2022) Impacts, Adaptation and Vulnerability. op. cit.
- 11 Oxfam (2020a) Confronting Carbon Inequality, Oxfam Media Briefing, 21.09.2020, 12 pp., <https://oxfamlibrary.openrepository.com/bitstream/handle/10546/621052/mb-confronting-carbon-inequality-210920-en.pdf>; Sauter, C., Grether, J.-M. & Mathys, N. (2016) Geographical spread of global emissions: Within-country inequalities are large and increasing. Energy Policy, 89, pp. 138-149.
- 12 Climate Watch, 'Global greenhouse gas emissions database', accessed 15.06.2021, www.climatewatchdata.org/ghg-emissions?regions=TOP&source=34 [Note: Climate Watch uses four different historical emissions data sources with slightly different approaches. Thus, figures might vary depending on the respective dataset.]
- 13 Oxfam (2020a) op. cit.
- 14 Intergovernmental Panel on Climate Change (IPCC) (2021) Masson-Delmotte, V. et al., Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press (in Press), IPCC, Geneva, Switzerland, pp. 3949, <https://www.ipcc.ch/report/ar6/wg1/>
- 15 Ibid.
- 16 Interview conducted by EJF, February 2021 (same applies to following cited statements from David R. Boyd throughout the report)
- 17 Hardy, R.D., Milligan, R.A. & Heynen, N. (2017) Racial coastal formation: The environmental injustice of colorblind adaptation planning for sea-level rise. Geoforum, 87, pp. 62-72.; Miller Hesed, C.D. & Paolisso, M. (2015) Cultural knowledge and local vulnerability in African American communities. Nature Climate Change, 5 (7), pp. 683-687.
- 18 Ray-Bennett, N.S. (2009) The influence of caste, class and gender in surviving multiple disasters: A case study from Orissa, India. Environmental Hazard, 8 (1), pp. 5-22.
- 19 ReliefWeb, 12.08.2021, 'Madagascar: "We have nothing to eat because of the drought"', accessed 12.08.2021, <https://reliefweb.int/report/madagascar/madagascar-we-have-nothing-eat-because-drought>
- 20 Menton, M. et al. (2020) Environmental justice and the SDGs: from synergies to gaps and contradictions. Sustainability Science, 15, pp. 1621-1636.
- 21 WMO (2021) Greenhouse Gas Bulletin, No. 17, WMO, Geneva, Switzerland, 10 pp., https://library.wmo.int/doc_num.php?explnum_id=10838
- 22 IPCC (2018) Masson-Delmotte, V. et al. (eds.), Global Warming of 1.5 °C. An IPCC Special Report on the impacts of global warming of 1.5 °C above preindustrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, Summary for Policymakers, Geneva, Switzerland, 32 pp., <https://www.ipcc.ch/sr15/>
- 23 Germanwatch (2021) Eckstein, D., Künzel, V. & Schäfer, L., Global Climate Risk Index 2021, Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2019 and 2000-2019, Briefing Paper, Bonn, Germany, 50 pp., https://germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf
- 24 The Guardian, 15.07.2021, 'Move faster to cut emissions, developing world tells rich nations', accessed 31.08.2012, <https://www.theguardian.com/environment/2021/jul/15/move-faster-to-cut-emissions-developing-world-tells-rich-nations>
- 25 IPCC (2021) op. cit.
- 26 UN (1948) Universal Declaration of Human Rights, United Nations General Assembly, Paris, France, <https://www.un.org/en/about-us/universal-declaration-of-human-rights/>; UN (1966a) International Covenant on Civil and Political Rights (ICCPR), UN General Assembly, <https://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx>; UN (1966b) International Covenant on Economic, Social and Cultural Rights (ICESCR), UN General Assembly, <https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx>
- 27 Menton, M. et al. (2020) op. cit.
- 28 Soergel, B. et al. (2021) Combining ambitious climate policies with efforts to eradicate poverty. Nature, 12 (2342).
- 29 Environmental Justice Foundation (EJF) (2021) A Manifesto to Combat Global Heating, EJF, London, UK, 56 pp., <https://ejfoundation.org/reports/ejf-climate-manifesto>
- 30 Climate Action Tracker, 09.11.2021, op. cit.
- 31 Ibid.
- 32 Ibid.
- 33 UNEP & UNEP DTU Partnership (2021) Emissions Gap Report 2021: The Heat Is On – A World of Climate Promises Not Yet Delivered, Nairobi, Kenya, 112 pp., <https://www.unep.org/resources/emissions-gap-report-2021>
- 34 UNFCCC (2021) Glasgow Climate Pact Decision -/CMA.3, Glasgow, Scotland, 11 pp., https://unfccc.int/sites/default/files/resource/cma3_auv_2_cover%20decision.pdf
- 35 UNFCCC (2021) op. cit.
- 36 IEA (2021) Net Zero by 2050: A Roadmap for the Global Energy Sector, 224 pp., <https://www.iea.org/reports/net-zero-by-2050>
- 37 UK COP26 Presidency, Wilkinson, J. & Flasbarth, J. (2021) Climate Finance Delivery Plan: Meeting the US\$100 Billion Goal, 12 pp., <https://ukcop26.org/wp-content/uploads/2021/10/Climate-Finance-Delivery-Plan-1.pdf>
- 38 The Guardian, 15.11.2021, 'Cop26: Pacific delegates condemn 'monumental failure' that leaves islands in peril', accessed 16.11.2021, <https://www.theguardian.com/world/2021/nov/15/cop26-pacific-delegates-condemn-monumental-failure-that-leaves-islands-in-peril>
- 39 UNFCCC (2021) Glasgow Climate Pact Decision -/CMA.3. op. cit.
- 40 UK COP26, 'COP26 outcomes', accessed 15.11.2021, <https://ukcop26.org/the-conference/cop26-outcomes/>
- 41 Climate Action Tracker, 09.11.2021, op. cit.
- 42 UN News, 08.10.2021, 'Access to a healthy environment, declared a human right by UN rights council', accessed 10.10.2021, <https://news.un.org/en/story/2021/10/1102582>
- 43 Carbon Market Watch, 13.11.2021, 'COP26: half-baked carbon market rules fail to take heat off the climate', accessed 15.11.2021, <https://carbonmarketwatch.org/2021/11/13/cop26-half-baked-carbon-market-rules-fail-to-take-heat-off-the-climate/>; The Guardian, 16.11.2021, 'A death sentence': Indigenous climate activists denounce Cop26 deal', accessed 16.11.2021, <https://www.theguardian.com/environment/2021/nov/16/indigenous-climate-activists-cop26-endangers-native-communities>
- 44 IPCC (2021) op. cit.
- 45 IPCC (2021) op. cit.; Note: In 2020, the global average temperature was about 1.2° Celsius above the pre-industrial (1850-1900) level. (WMO (2021) State of the Global Climate 2020, Geneva, Switzerland, 56 pp., https://library.wmo.int/index.php?lvl=notice_display&id=21880#.YZN9hhDMJhH)
- 46 NASA, 14.01.2021, '2020 Tied for Warmest Year on Record, NASA Analysis Shows', accessed 20.05.2021, <https://www.nasa.gov/press-release/2020-tied-for-warmest-year-on-record-nasa-analysis-shows> [Note: According to NASA, "a separate, independent analysis by the National Oceanic and Atmospheric Administration (NOAA) concluded that 2020 was the second-warmest year in their record, behind 2016. NOAA scientists use much of the same raw temperature data in their analysis, but have a different baseline period (1901-2000) and methodology. Unlike NASA, NOAA also does not infer temperatures in polar regions lacking observations, which accounts for much of the difference between NASA and NOAA records." For NOAA's calculation, see: <https://www.noaa.gov/news/2020-was-earth-s-2nd-hottest-year-just-behind-2016/>]
- 47 Phys, 27.05.2021, WMO, 'New 'hottest year on record' likely to occur in the next five years', accessed 10.06.2021, <https://phys.org/news/2021-05-hottest-year-years.html>; NOAA, 14.01.2021, 'Assessing the Global Climate in 2020', accessed 17.06.2021, <https://www.ncei.noaa.gov/news/global-climate-202012>
- 48 Xu, C. et al. (2020) Future of the human climate niche. PNAS, 117 (21), pp. 11350-11355.
- 49 Nobre, C.A. et al. (2016) Land-use and climate change risks in the Amazon and the need of a novel sustainable development paradigm. PNAS, 113 (39), pp. 10759-10768.; Boers, N. & Rypdal, M. (2021) Critical slowing down suggests that the western Greenland Ice Sheet is close to a tipping point. Proceedings of the National Academy of Sciences of the United States of America, 118 (21), e2024192118.; Lenton, T.M. et al., 27.11.2019, 'Climate tipping points – too risky to bet against', accessed 21.05.2021, <https://www.nature.com/articles/d41586-019-03595-0>; Wunderling, N. et al. (2021) Interacting tipping elements increase risk of climate domino effects under global warming. Earth Syst. Dynm., 12, pp. 601-619.; The Guardian, 23.06.2021, 'IPCC steps up warning on climate tipping points in leaked draft report', accessed 23.06.2021, <https://www.theguardian.com/environment/2021/jun/23/climate-change-dangerous-thresholds-un-report>
- 50 Pan, L. et al. (2021) Rapid postglacial rebound amplifies global sea level rise following West Antarctic Ice Sheet collapse. Science Advances, 7 (18), eabf7787.
- 51 IPCC (2021) op. cit.
- 52 Ibid.
- 53 Ibid.
- 54 Ibid.
- 55 Oxfam (2021) Sen, A. & Dabi, N., Tightening the Net: Net zero climate targets – implications for land and food equity, Oxfam, Oxford, UK, 42 pp., <https://oxfamlibrary.openrepository.com/bitstream/handle/10546/621205/bp-net-zero-land-food-equity-030821-en.pdf>
- 56 Ibid.
- 57 IPCC (2018) Masson-Delmotte, V. et al. (eds.), Special Report: Global Warming of 1.5°C, IPCC, Geneva, Switzerland, <https://www.ipcc.ch/sr15/>; Carbon Brief, 2021, The impacts of climate change at 1.5°C, 2°C and beyond, accessed 15.11.2021., https://interactive.carbonbrief.org/impacts-climate-change-one-point-five-degrees-two-degrees/?mc_cid=80e73b1812&mc_eid=02593c5294
- 58 Interview conducted by EJF, October 2020
- 59 IPCC (2018) op. cit.; World Meteorological Organization (WMO) (2021) State of the Global Climate 2020, Geneva, Switzerland, 56 pp., https://library.wmo.int/index.php?lvl=notice_display&id=21880#.YOhMSxMzZhF
- 60 Yale Climate Connections, 15.08.2021, Sinclair, P., 'Is Western U.S. experiencing a 'megadrought'?', accessed 23.08.2021, <https://yaleclimateconnections.org/2021/08/is-western-u-s-experiencing-a-megadrought/>
- 61 World Weather Attribution, 07.07.2021, 'Western North American extreme heat virtually impossible without human-caused climate change', accessed 20.08.2021, <https://www.worldweatherattribution.org/western-north-american-extreme-heat-virtually-impossible-without-human-caused-climate-change/>

- 62 American Security Project, 27.09.2021, 'The Cost Behind Increasing Heat Domes', accessed 04.10.2021, <https://www.americansecurityproject.org/the-cost-behind-increasing-heat-domes/>
- 63 Carbon Brief, 30.06.2021, 'Media reaction: Pacific north-west 'heat dome' and the role of climate change', accessed 10.08.2021, <https://www.carbonbrief.org/media-reaction-pacific-north-west-heat-dome-and-the-role-of-climate-change>
- 64 NOAA National Centers for Environmental Information (NCEI) (2021) U.S. Billion-Dollar Weather and Climate Disasters, accessed 02.12.2021, <https://www.ncdc.noaa.gov/billions/>
- 65 BBC, 21.07.2021, 'China floods: 12 dead in Zhengzhou train and thousands evacuated in Henan', accessed 23.08.2021, <https://www.bbc.com/news/world-asia-china-57861067>; Reuters, 02.08.2021, 'Death toll from floods in China's Henan province rises to 302', accessed 23.08.2021, <https://www.reuters.com/world/china/death-toll-flooding-chinas-henan-province-rises-302-2021-08-02/>; UNICEF, 29.07.2021, 'UNICEF Sends Supplies to Children Affected by Henan Floods', accessed 23.08.2021, <https://www.unicef.cn/en/press-releases/unicef-sends-supplies-children-affected-henan-floods>
- 66 Aon (2021a) Global Catastrophe Recap, July 2021, 19 pp., http://thoughtleadership.aon.com/Documents/20211008_analytics-if-july-global-recap.pdf
- 67 Ciavarella, A. et al. (2021) Prolonged Siberian heat of 2020 almost impossible without human influence. *Climatic Change*, 166, 9.; NASA Earth Observatory, 05.07.2021, 'Fires Scorch the Sakha Republic', accessed 23.08.2021, <https://earthobservatory.nasa.gov/images/148537/fires-scorch-the-sakha-republic>
- 68 Greenpeace Russia, 17.09.2021, '2021 год — полный рекордсмен по пожарам', accessed 30.11.2021, <https://greenpeace.ru/blogs/2021/09/17/2021-god-polnyj-rekordsmen-po-pozharam/>
- 69 Copernicus, 21.09.2021, 'Copernicus: A summer of wildfires saw devastation and record emissions around the Northern Hemisphere', accessed 30.11.2021, <https://atmosphere.copernicus.eu/copernicus-summer-wildfires-saw-devastation-and-record-emissions-around-northern-hemisphere>
- 70 Our World in Data, Ritchie, H. & Roser M., Germany: CO2 Country Profile, accessed 30.11.2021, <https://ourworldindata.org/co2/country/germany>
- 71 ReliefWeb, 23.08.2021, 'Water crisis and drought threaten more than 12 million in Syria and Iraq', accessed 23.08.2021, <https://reliefweb.int/report/syrian-arab-republic/water-crisis-and-drought-threaten-more-12-million-syria-and-iraq>
- 72 The Guardian, 01.02.2021, 'Tropical Cyclone Ana: Fiji suffers second deadly storm in a month', accessed 23.08.2021, <https://www.theguardian.com/world/2021/feb/01/tropical-cyclone-ana-fiji-suffers-second-deadly-storm-in-a-month>; World Food Programme (2021) WFP Hazard Analysis for Tropical Cyclones Ana and Yasa, WFP, Rome, Italy, 6 pp., https://reliefweb.int/sites/reliefweb.int/files/resources/hazard_analysis_for_tropical_cyclones_ana_and_yasa.pdf
- 73 RNZ, 16.02.2021, 'Cyclone Yasa damage to Fiji worth nearly \$US250m', accessed 30.11.2021, <https://www.rnz.co.nz/international/pacific-news/436485/cyclone-yasa-damage-to-fiji-worth-nearly-us250m>
- 74 Bundeszentrale für politische Bildung, 28.07.2021, 'Jahrhunderthochwasser 2021 in Deutschland', accessed 23.08.2021, <https://www.bpb.de/politik/hintergrund-aktuell/337277/jahrhunderthochwasser-2021-in-deutschland>; The Guardian, 16.07.2021, 'Climate scientists shocked by scale of floods in Germany', accessed 23.08.2021, <https://www.theguardian.com/environment/2021/jul/16/climate-scientists-shocked-by-scale-of-floods-in-germany>; Tagesschau, 25.08.2021, 'Flut-schäden weit höher als befürchtet', accessed 25.08.2021, <https://www.tagesschau.de/wirtschaft/unternehmen/flut-katastrophe-versicherungsschaeden-101.html>; World Weather Attribution, 23.08.2021, 'Heavy rainfall which led to severe flooding in Western Europe made more likely by climate change', accessed 23.08.2021, <https://www.worldweatherattribution.org/heavy-rainfall-which-led-to-severe-flooding-in-western-europe-made-more-likely-by-climate-change/>
- 75 Aon (2021b) Global Catastrophe Recap, October 2021, 23 pp., <http://thoughtleadership.aon.com/Documents/20211011-analytics-if-october-global-recap.pdf> [Note: "Economic loss totals are separate from any available insured loss estimates. An insured loss is the portion of the economic loss covered by public or private insurance entities."]
- 76 ReliefWeb, 'Tropical Cyclone Seroja - Apr 2021', accessed 23.08.2021, <https://reliefweb.int/disaster/tc-2021-000033-idx>; AntaraNews, 24.01.2021, '197 natural disasters struck Indonesia during January 1-23', accessed 23.08.2021, <https://en.antaranews.com/news/166628/197-natural-disasters-struck-indonesia-during-january-1-23>
- 77 NASA Earth Observatory, 10.08.2021, 'Fire Consumes Large Swaths of Greece', accessed 23.08.2021, <https://earthobservatory.nasa.gov/images/148682/fire-consumes-large-swaths-of-greece>
- 78 BBC, 11.08.2021, 'Wildfires: How are they linked to climate change?', accessed 23.08.2021, <https://www.bbc.com/news/58159451>
- 79 Reuters, 28.07.2021, 'Lebanon battles wildfires in country's north, firefighter dies', accessed 23.08.2021, <https://www.reuters.com/world/middle-east/lebanon-battles-wildfires-country-north-firefighter-dies-2021-07-28/>
- 80 The Guardian, 10.08.2021, 'Wildfires rage in Greece and Italy as EU mounts firefighting operation', accessed 23.08.2021, <https://www.theguardian.com/world/2021/aug/09/wildfires-rage-greece-italy-eu-mounts-firefighting-operation-evacuations-destruction-southern-europe>
- 81 WFP & FAO (2021) Hunger Hotspots. FAO-WFP early warnings on acute food insecurity: March to July 2021 outlook, Rome, Italy, 38 pp., https://docs.wfp.org/api/documents/WFP-0000125170/download/?_ga=2.129180812.1863239249.1628673509-213530767.1628673509; ReliefWeb, 26.07.2021, 'Malnutrition among children expected to quadruple in Southern Madagascar as drought worsens, warn UNICEF and WFP', accessed 28.07.2021, <https://reliefweb.int/report/madagascar/malnutrition-among-children-expected-quadruple-southern-madagascar-drought-worsens>
- 82 JRC Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) (2021) GDO Analytical Report: Drought in Sub-Saharan and Southern Africa - August 2021, 32 pp., https://reliefweb.int/sites/reliefweb.int/files/resources/GDODroughtNews202108_Sub-Saharan_and_Southern_Africa.pdf
- 83 UNHCR, 29.06.2021, 'Severe storms damage shelters of 16,000 Ethiopian refugees in Sudan', accessed 23.08.2021, <https://www.unhcr.org/news/briefing/2021/6/60dad6574/severe-storms-damage-shelters-16000-ethiopian-refugees-sudan.html>; World Bank Group, 'Sudan', accessed 23.08.2021, <https://climateknowledgeportal.worldbank.org/country/sudan/vulnerability>
- 84 Yale Climate Connections, 17.04.2021, op. cit.; ReliefWeb, 'Typhoon Surigae - Apr 2021', op. cit.
- 85 Aon (2021a) op. cit.
- 86 ReliefWeb, 'Tropical Cyclone Eloise - Jan 2021', accessed 24.08.2021, <https://reliefweb.int/disaster/tc-2021-000008-moz>
- 87 Aon (2021b) op. cit.
- 88 ReliefWeb, 'Malaysia: Floods - Jan 2021', accessed 24.08.2021, <https://reliefweb.int/disaster/fl-2021-000001-mys>
- 89 Phys. 09.06.2021, 'Historic drought threatens Brazil's economy', accessed 23.08.2021, <https://phys.org/news/2021-06-historic-drought-threatens-brazil-economy.html>
- 90 NASA Earth Observatory, 17.07.2021, 'Brazil Battered by Drought', accessed 24.08.2021, <https://earthobservatory.nasa.gov/images/148468/brazil-battered-by-drought>
- 91 Aon (2021b) op. cit.
- 92 National Snow & Ice Data Center, 18.08.2021, 'Rain at the summit of Greenland', accessed 18.08.2021, <https://nsidc.org/greenland-today/2021/08/rain-at-the-summit-of-greenland/>
- 93 Briner, J.P. et al. (2020) Rate of mass loss from the Greenland Ice Sheet will exceed Holocene values this century. *Nature*, 586, pp. 70-74.
- 94 BBC, 04.10.2021, 'Shaheen: Tropical cyclone batters Oman and Iran, killing 13', accessed 05.10.2021, <https://www.bbc.com/news/world-middle-east-58783992>
- 95 Aon (2021b) op. cit.
- 96 NOAA, 10.11.2020, '2020 Atlantic Hurricane Season takes infamous top spot for busiest on record', accessed 23.08.2021, <https://www.noaa.gov/news/2020-atlantic-hurricane-season-takes-infamous-top-spot-for-busiest-on-record>
- 97 IFRC (2021) Central America: Hurricanes Eta & Iota - 6-months Operation Update, 60 pp., <https://reliefweb.int/sites/reliefweb.int/files/resources/MDR430070u3.pdf>
- 98 Aon (2020a) Global Catastrophe Recap, November 2020, 20 pp., http://thoughtleadership.aon.com/documents/20201210_analytics-if-november-global-recap.pdf
- 99 ABC News, 14.03.2020, 'Great Barrier Reef bleaching concerns after hottest month of sea temperatures on record', accessed 09.08.2021, <https://www.abc.net.au/news/2020-03-15/cyclone-great-barrier-reef-bleaching-record-seas-temperatures/12050102>; ABC News, 06.04.2020, 'Great Barrier Reef found to be coral bleached from north to south for first time', accessed 09.08.2021, <https://www.abc.net.au/news/2020-04-07/great-barrier-reef-most-widespread-coral-bleaching-on-record/12107054>
- 100 World Weather Attribution, 10.01.2020, 'Attribution of the Australian bushfire risk to anthropogenic climate change', accessed 25.08.2021, <https://www.worldweatherattribution.org/bushfires-in-australia-2019-2020/>; WWF (2020) Australia's 2019-2020 bushfires: the wildlife toll, WWF Australia, 5 pp., <https://www.wwf.org.au/ArticleDocuments/353/Animals%20Impacted%20Interim%20Report%2024072020%20final.pdf.aspx?OverrideExpiry=Y>
- 101 Aon (2020b) Weather, Climate & Catastrophe Insight, 2019 Annual report, pp. 83, <http://thoughtleadership.aon.com/Documents/20200122-if-natcat2020.pdf>
- 102 WMO, 01.07.2021, 'WMO verifies one temperature record for Antarctic continent and rejects another', accessed 24.08.2021, <https://public.wmo.int/en/media/press-release/wmo-verifies-one-temperature-record-antarctic-continent-and-rejects-another>
- 103 Christian Aid (2020) Counting the cost 2020: A year of climate breakdown, December 2020, 26 pp., <https://www.christianaid.org.uk/sites/default/files/2020-12/Counting%20the%20cost%202020.pdf>; Aon (2020) Global Catastrophe Recap, December 2020, 20 pp., <http://thoughtleadership.aon.com/Documents/20210124-if-dec-global-recap.pdf>
- 104 UN Bangladesh (2020) HCTT Response Plan, Cyclone Amphan, United Nations Bangladesh Coordinated Appeal, June-September 2020, 30 pp., https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/31.05.2020_final_hctt_cyclone_amphan_response_plan.pdf
- 105 World Bank, 'The World Bank Group and the Locust Crisis', accessed 25.05.2021, <https://www.worldbank.org/en/topic/the-world-bank-group-and-the-desert-locust-outbreak>
- 106 The World Bank Group, 10.04.2021, 'The Locust Crisis and the World Bank Group', accessed 30.11.2021, <https://www.worldbank.org/en/topic/agriculture/brief/the-locust-crisis-and-the-world-bank-group>
- 107 JBA risk management, 'Kyushu Island, Japan', accessed 25.05.2021, <https://www.jbarisk.com/flood-services/event-response/kyushu-flooding-japan/>
- 108 Aon (2021c) op. cit.
- 109 The Guardian, 14.08.2021, 'Million urged to seek shelter as floods and landslides hit Japan', accessed 16.08.2021, <https://www.theguardian.com/world/2021/aug/14/million-urged-to-seek-shelter-as-floods-and-landslides-hit-japan>
- 110 NASA Earth Observatory, 21.09.2021, 'Extreme Monsoon Rains in Pakistan', accessed 25.08.2021, <https://earthobservatory.nasa.gov/images/147330/extreme-monsoon-rains-in-pakistan>
- 111 Aon (2021c) op. cit.
- 112 Statista, 07.02.2021, 'Number of wildfires in South America in 2020, by country or territory', accessed 25.08.2021, <https://www.statista.com/statistics/1043895/number-wildfires-south-america-country/>
- 113 Pivello, V.R. et al. (2021) Understanding Brazil's catastrophic fires: Causes, consequences and policy needed to prevent future tragedies. *Perspectives in Ecology and Conservation*, 19 (3), pp. 233-255.; Alberts, E.C., 16.09.2021, 'The Pantanal is burning again. Will it be another devastating year?', accessed 17.09.2021, <https://news.mongabay.com/2021/09/the-pantanal-is-burning-again-will-it-be-another-devastating-year/>
- 114 Aon (2020) Global Catastrophe Recap, December 2020, 20 pp., <http://thoughtleadership.aon.com/Documents/20210124-if-dec-global-recap.pdf>
- 115 NOAA, 'Global Climate Report - September 2021', accessed 20.10.2021, <https://www.ncdc.noaa.gov/sotc/global/202109>
- 116 NOAA, 13.08.2021, op. cit.
- 117 Ibid.
- 118 UN DESA (2020) World Social Report 2020: Inequality in a rapidly changing world, New York, USA, 216 pp., <https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/01/World-Social-Report-2020-FullReport.pdf>
- 119 OHCHR (2021) op. cit.; Germanwatch (2021) op. cit.
- 120 Hallegatte, S. & Rozenberg, J. (2017) Climate change through a poverty lens. *Nat. Clim. Change*, 7, pp. 250-256.; Hsiang, S. et al. (2017) Estimating economic damage from climate change in the United States. *Science* 356, pp. 1362-1369.; IPCC (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, Geneva, Switzerland, 34 pp., https://www.ipcc.ch/site/assets/uploads/2018/02/ar5_wgII_spm_en.pdf

- 121 Cohen, F. & Dechezleprêtre, A. (2020) Mortality, temperature, and public health provision: evidence from Mexico, Centre for Climate Change Economics and Policy Working Paper No. 305, 81 pp., https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2019/10/Working-paper-268-Cohen-Dechezlepretre_Oct2020.pdf
- 122 ILO (2019) Kjellstrom, T. et al., Working on a warmer planet: the effect of heat stress on productivity and decent work, ILO, Geneva, Switzerland, 98 pp., https://www.ilo.org/global/publications/books/WCMS_711919/lang-en/index.htm
- 123 Day, E. et al. (2019) Upholding labour productivity under climate change: an assessment of adaptation options. *Climate Policy*, 19 (3), pp. 367-385.; Chinnadurai, J. et al. (2016) Influence of occupational heat stress on labour productivity – a case study from Chennai. *India International Journal of Productivity and Performance Management*, 65 (2), pp. 245-255.; Union of Concerned Scientists (2021) Too hot to work: Assessing the Threats Climate Change Poses to Outdoor Workers, 10 pp., https://ussusa.org/sites/default/files/2021-08/Too%20Hot%20to%20Work_8-13.pdf
- 124 Islam, S.N. & Winkel, J. (2017) Climate Change and Social Inequality, DESA Working Paper No. 152, 32 pp., https://www.un.org/esa/desa/papers/2017/wp152_2017.pdf; IPCC (2014) op. cit.
- 125 Neumann, B., et al. (2015) Future Coastal Population Growth and Exposure to Sea-Level Rise and Coastal Flooding - A Global Assessment. *PLoS ONE*, 10 (3), pp. 1-34.
- 126 World Bank (2014) Wodon, Q., et al. (eds.), *Climate Change and Migration: Evidence from the Middle East and North Africa*, Washington, D.C., USA, 287 pp., <https://documents1.worldbank.org/curated/en/748271468278938347/pdf/Climate-change-and-migration-evidence-from-the-Middle-East-and-North-Africa.pdf>; Islam, S.N. & Winkel, J. (2017) op. cit.; Hoffmann, B., IDB, *Climate Change and Natural Disasters: Unequal Exposure, Impacts, and Ability to Cope in IDB (2020)* Busso, M & Messina, J. (eds.) *The Inequality Crisis: Latin America and the Caribbean at the Crossroads*, Washington, D.C., USA, pp. 232-252, <https://publications.iadb.org/publications/english/document/The-Inequality-Crisis-Latin-America-and-the-Caribbean-at-the-Crossroads.pdf>
- 127 UNICEF (2021) The climate crisis is a child rights crisis: Introducing the Children's Climate Risk Index, New York, USA, 128 pp., <https://www.unicef.org/media/105376/file/UNICEF-climate-crisis-child-rights-crisis.pdf>
- 128 New York Times, 03.09.2018, Fernandez, M., 'A Year After Hurricane Harvey, Houston's Poorest Neighborhoods Are Slowest to Recover', accessed 21.05.2021, <https://www.nytimes.com/2018/09/03/us/hurricane-harvey-houston.html>
- 129 UNESCO, 19.03.2021, 'Zimbabwe Ildai Recovery Project', accessed 28.05.2021, <https://projects.worldbank.org/en/projects-operations/project-detail/P171114>
- 130 United Nations Office for the Coordination of Human Affairs (OCHA), 'Cyclones Ildai and Kenneth', accessed 28.05.2021, <https://www.unocha.org/southern-and-eastern-africa-rosea/cyclones-ildai-and-kenneth>; International Organisation for Migration (IOM), 11.05.2019, 'Cyclone Ildai Affected Communities Desperate for Permanent Shelter, Livelihoods', accessed 28.05.2021, <https://www.iom.int/news/cyclone-ildai-affected-communities-desperate-permanent-shelter-livelihoods>
- 131 UNAIDS, 'People Living with HIV Receiving ART (as of 30 June)', accessed 28.05.2021, <http://aidsinfo.unaids.org/>
- 132 United Nations Children's Fund (UNICEF) (2020) CYCLONE IDAI Integration of HIV into the humanitarian response in Malawi, Mozambique and Zimbabwe, Eastern and Southern Africa Regional Office, Nairobi, Kenya, 14 pp., http://www.childrendaids.org/sites/default/files/2020-02/HIVinEmergencies_CaseStudy_UNICEFESARO_2020.pdf
- 133 Cordis, 14.08.2013, 'Final Report Summary - CLICO (Climate change, hydro-conflicts and human security)', accessed 21.06.2021, [http://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2015/07/Working-Paper-200-Castells-Quintana-et-al.pdf](https://cordis.europa.eu/project/id/244443/reporting/es; Abass, R., Mensah, A. & Fosu-Mensah, B. (2019) The Role of Formal and Informal Institutions in Smallholder Agricultural Adaptation: The Case of Lawra and Nandom Districts, Ghana. West African Journal of Applied Ecology, 26, pp. 56-72.; Barbier, E.B. & Orchard, J. (2018) The impacts of climate change on the poor in disadvantaged regions. <i>Review of Environmental Economics and Policy</i>, 12(1), pp. 26-47.; Castells-Quintana, D., Lopez-Urbe, M.P. & McDermott, T. (2015) Coping with climate risk: the role of institutions, governance and finance in private adaptation decisions of the poor, Centre for Climate Change Economics and Policy Working Paper No. 225, 54 pp., <a href=)
- 134 IPCC (2014) op. cit.; Kalkuhl, M. & Wenz, L. (2020) The impact of climate conditions on economic production: evidence from a global panel of regions. *J. Environ. Econ. Manag.*, 103, 102360; Taconet, N., Méjean, A. & Guivarch, C. (2020) Influence of climate change impacts and mitigation costs on inequality between countries. *Clim. Change.*, 160, pp. 15-34.
- 135 Hoeke, R.K. et al. (2021) Severe Flooding in the Atoll Nations of Tuvalu and Kiribati Triggered by a Distant Tropical Cyclone Pam. *Front. Mar. Sci.*, 7, 539646.; Cauchi, J.P. et al. (2021) Coping with environmental hazards and shocks in Kiribati: Experiences of climate change by atoll communities in the Equatorial Pacific. *Environmental Development*, 37, 100549.
- 136 Hay, J. E. & Sem, G. (1999) A Regional Synthesis of National Greenhouse Gas Inventories. South Pacific Regional Environment Programme, Apia, Samoa, 29 pp.; Greenpeace (2021) Čašule, N. & Jiva, G., Te Mana o te Moana: The state of the climate in the Pacific 2021, Greenpeace, 23 pp., <https://acthubspot.greenpeace.org.au/pacific-climate-report>
- 137 Germanwatch (2021) op. cit.
- 138 Centre for Research on the Epidemiology of Disaster & UN Office for Disaster Risk Reduction (2015) The human cost of weather-related disasters 1995-2015, Belgium, 30 pp., https://www.unisdr.org/2015/docs/climatechange/COP21_WeatherDisastersReport_2015_FINAL.pdf
- 139 Internal Displacement Monitoring Centre & Norwegian Refugee Council (2021) op. cit.
- 140 Verisk Maplecroft, 12.05.2021, 'Asian cities in eye of environmental storm – global ranking', accessed 15.05.2021, <https://www.maplecroft.com/insights/analysis/asian-cities-in-eye-of-environmental-storm-global-ranking/>; Germanwatch (2021) op. cit.; Earth Observatory, 2019, 'Unusual Monsoon Season Causes Flooding in India', accessed 31.05.2021, <https://earthobservatory.nasa.gov/images/145703/unusual-monsoon-season-causes-flooding-in-india>; ReliefWeb, 27.09.2020, 'India: Floods and Landslides', accessed 31.05.2021, <https://reliefweb.int/disaster/fl-2019-000084-ind>
- 141 UN Department of Economic and Social Affairs (2018) World Urbanization Prospects 2018: Highlights, UN, New York, USA, 38 pp., <https://population.un.org/wup/Publications/Files/WUP2018-Highlights.pdf>
- 142 UN Department of Economic and Social Affairs (2018) op. cit.; Reuters, 29.11.2019, 'Mumbai slum-dwellers by the sea live at the mercy of climate change', accessed 21.06.2021, [https://cdn.odi.org/media/documents/ODI-JR-CostClimateChangeIndia-final.pdf](https://www.reuters.com/article/us-climate-change-india-slums/mumbai-slum-dwellers-by-the-sea-live-at-the-mercy-of-climate-change-idUSKBN1Y3197; Hari, V. et al. (2021) Climate hazards are threatening vulnerable migrants in Indian megacities. <i>Nature Climate Change</i>, 11, pp. 636-638.</p>
<p>143 Picciariello, A. et al. (2021) The costs of climate change in India: a review of the climate-related risks facing India, and their economic and social costs, ODI Literature review, London, UK, 31 pp., <a href=)
- 144 Interview conducted by EJE, June 2021 (same applies to following cited statements in this case study)
- 145 World Bank, 'Population living in slums (% of urban population) - India', accessed 10.06.2021, <https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS>; Ruff Institute of Global Homelessness, 'Homelessness: An Emerging Threat', accessed 25.05.2021, <https://ighhub.org/resource/homelessness-emerging-threat>
- 146 Patel, A., Shah, P. & Beauregard, B.E. (2020) Measuring multiple housing deprivations in urban India using Slum Severity Index. *Habitat International*, 101, 102190.
- 147 The World Bank, 'Gini index (World Bank estimate) - India', accessed 31.05.2021, <https://data.worldbank.org/indicator/SI.POV.GINI?locations=IN>
- 148 Picciariello, A. et al. (2021) op. cit.
- 149 Our World in Data, 'CO2 emissions', accessed 02.11.2021, <https://ourworldindata.org/co2-emissions>
- 150 The Guardian, 05.11.2021, 'Is India's pledge of net zero by 2070 an ambitious target – or worthless words?', accessed 05.11.2021, <https://www.theguardian.com/world/2021/nov/05/is-indias-pledge-of-net-zero-by-2070-an-ambitious-target-or-worthless-words>
- 151 Government of India – Ministry of Housing and Urban Affairs, 14.06.2021, 'Level of Urbanisation', accessed 14.06.2021, <http://mohua.gov.in/cms/level-of-urbanisation.php>
- 152 IRCUDC, 'About us', accessed 10.06.2021, <https://ircduc.org/about-us>
- 153 Ray-Bennett, N.S. (2009) The influence of caste, class and gender in surviving multiple disasters: A case study from Orissa, India. *Environmental Hazard*, 8 (1), pp. 5-22.; Chatterjee, M. (2010) Slum dwellers response to flooding events in the megacities of India. *Mitigation and Adaptation Strategies for Global Change*, 15 (4), pp. 337-353.
- 154 Interview conducted by EJE, June 2021 (same applies to following cited statements in this case study)
- 155 Verisk Maplecroft, 12.05.2021, op. cit.
- 156 Jyoteeshkumar, P., Kiran, P.V. & Balaji, C. (2020) Chennai extreme rainfall event of 2015 under future climate projections using the pseudo global warming dynamic downscaling method. *Current Science*, 118 (12), pp. 1968-1979.; Athida, T. & Agilan, V. (2020) Impact of climate change on rainfall over Chennai. *IOP Conf. Series: Earth and Environmental Science*, 491, 012008.
- 157 Climate Central, 2019, 'Report: Flooded Future: Global vulnerability to sea level rise worse than previously understood', accessed 01.06.2021, <https://www.climatecentral.org/news/report-flooded-future-global-vulnerability-to-sea-level-rise-worse-than-previously-understood>
- 158 Housing and Land Rights Network & IRCUDC (2017) From Deluge to Displacement: The Impact of Post-flood Evictions and Resettlement in Chennai, Information and Resource Centre for the Deprived Urban Communities, and Housing and Land Rights Network, New Delhi, India, 96 pp., <https://ircduc.org/resources>
- 159 The Times of India, 09.12.2015, 'Delay in opening sluice gates caused flooding', accessed 15.06.2021, <https://timesofindia.indiatimes.com/india/delay-in-opening-sluice-gates-caused-flooding/articleshow/50099873.cms>; The Wire, 09.12.2015, 'How Official Negligence Turned a Natural Crisis into a Human-Made Catastrophe', accessed 15.06.2021, <https://thewire.in/environment/how-official-negligence-turned-a-natural-crisis-into-a-human-made-catastrophe>; Comptroller and Auditor General of India (CAG) (2018) Flood management and response in Chennai and its suburban areas, Government of Tamil Nadu, Report No. 4 of 2017 – Performance Audit, <https://cag.gov.in/ag1/tamil-nadu/en/audit-report/details/45722>; The Economic Times, 09.07.2021, 'Chennai floods in December 2015 man-made, says CAG Report', accessed 15.06.2021, [https://link.springer.com/content/pdf/10.1007%2F978-981-15-4327-2.pdf](https://economictimes.indiatimes.com/news/politics-and-nation/chennai-floods-in-december-2015-man-made-says-cag-report/articleshow/64921574.cms?from=mdr; Bremner, L. (2020) Planning the 2015 Chennai floods. <i>Environment and Planning E: Nature and Space</i>, 3 (3), pp. 732-760.</p>
<p>160 Van Oldenborgh, G.J. et al. (2016) The heavy precipitation event of December 2015 in Chennai, India. <i>Special Supplement to the Bulletin of the American Meteorological Society</i>, 97 (12), pp. 87-91.</p>
<p>161 Kumaran, T.V., Murali, O.M. & Senthamarai, S.R. (2020) Chennai floods 2005, 2015: Vulnerability, Risk and Climate Change. <i>Urban Health Risk and Resilience in Asian Cities</i>, pp. 73-100.</p>
<p>162 Ramachandran, A. et al. (2019) Climate change impact on fluvial flooding in the Indian sub-basin: A case study on the Adyar sub-basin. <i>PLoS One</i>, 14 (5), e0216461.; Suneetha, P. et al. (2018) Future climate projections of northeast monsoon over south India. <i>Canadian Journal of Pure and Applied Sciences</i>, 12 (2), pp. 4489-4499.; Andimuthu, R. et al. (2019) performance of urban storm drainage network under changing climate scenarios: Flood mitigation in Indian coastal city. <i>Scientific Reports</i>, 9 (7783); Climate Central, 2019, op. cit.; Krishnan, R. et al. (eds.) (2021) Assessment of Climate Change over the Indian Region, Report of the Ministry of Earth Sciences (MoES), Government of India, Pune, India, 243 pp., <a href=); Picciariello, A. et al. (2021) op. cit.
- 163 Housing and Land Rights Network & IRCUDC (2017) op. cit.
- 164 Diwakar, P. (2019) A Recipe for Disaster: Framing Risk and Vulnerability in Slum Relocation Policies in Chennai, India. *City & Community*, 18 (4), pp. 1314-1337.; Dupont, V. & Dhanalakshmi (2020) Living on the margins of the legal city in the southern periphery of Chennai. *Living in the Margins in Mainland China, Hong Kong and India*, Routledge, London, UK.
- 165 Wilk, J. et al. (2018) The perspectives of the urban poor in climate vulnerability assessments – The case of Kota, India. *Urban Climate*, 24, pp. 633-642.; Rajasekar, U. et al., *Climate Resilient Smart Cities: Opportunities for Innovative Solutions in India* in Hughes, S., Chu, E.K. & Mason, S.G. (eds.) (2018) *Climate Change in Cities*, Springer, pp. 203-227, https://link.springer.com/chapter/10.1007/978-3-319-65003-6_11; Williams, D.S. et al. (2019) Vulnerability of informal settlements in the context of rapid urbanization and climate change. *Environment and Urbanization*, 31 (1), pp. 157-176.

- 166 Saini, S. (2018) Delhi's Marginalized Women Excluded from Training on Adapting to Climate Change. *ANTYAJAA: Indian Journal of Women and Social Change*, <https://doi.org/10.1177/24556327187878354>; Patel, A. et al. (2020) Gendered Impacts of Environmental Degradation in Informal Settlements: A Comparative Analysis and Policy Implications for India, Bangladesh, and Pakistan. *Journal of Comp. Policy Analysis*, <https://doi.org/10.1080/13876988.2020.1829454>; Sunikka-Blank, M., Bardhan, R. & Haque, A.N. (2019) Gender, domestic energy and design of inclusive low-income habitats: A case of slum rehabilitation housing in Mumbai, India. *Energy Research & Social Science*, 49, pp. 53-67.; Haas, S., Gianoli, A. & van Eerd, M. (2021) The roles of community resilience and risk appraisal in climate change adaptation: the experience of the Kannagi Nagar resettlement in Chennai. *Environment and Urbanization*, February 2021, pp. 1-19.
- 167 Housing and Land Rights Network, & IRCDUC (2017) op. cit.
- 168 Information and Resource Centre for the Deprived Urban Communities & Housing and Land Rights Network (2019) Deprivation by Design: An Assessment of the Long-term Impacts of Forced Relocation from Porur Lake, Chennai, New Delhi, India, 52 pp., https://www.hlrn.org.in/documents/Deprivation_by_Design.pdf
- 169 Ray-Bennett, N.S. (2009) The influence of caste, class and gender in surviving multiple disasters: A case study from Orissa, India. *Environmental Hazard*, 8 (1), pp. 5-22.; Chatterjee, M. (2010) Slum dwellers response to flooding events in the megacities of India. *Mitigation and Adaptation Strategies for Global Change*, 15 (4), pp. 337-353.
- 170 Agarwal, S. et al. (2020) Local solutions by slum communities to deal with summer water scarcity: Learning from Indore, India. *European Journal of Public Health*, 20 (5); Mongabay, 16.03.2020, Chandraamouli, K., 'Women act to make slums climate-resilient, one house at a time, accessed 17.06.2021, <https://india.mongabay.com/2020/03/women-act-to-make-slums-climate-resilient-one-house-at-a-time/>; UNFCCC, 'Women's Action Towards Climate Resilience for Urban Poor in South Asia | Bangladesh, India, Nepal', accessed 17.06.2021, <https://unfccc.int/climate-action/momentum-for-change/women-for-results/mahila-housing-trust>
- 171 Okapi, IRCDUC, USWT & Azmin Premji University (2021) Understanding Disaster Vulnerability of Chennai's Homeless - A Policy Paper, 12 pp., <http://okapia.co/serviceareas/blueprint/understanding-disaster-vulnerability-of-chennai-homeless>
- 172 Levy, B.S. & Patz, J.A. (2015) Climate change, human rights, and social justice. *Annals of Global Health*, 81, pp. 310-322.; Islam, S.N. & Winkel, J. (2017) op. cit.
- 173 Islam, S.N. & Winkel, J. (2017) op. cit.
- 174 IPCC (2014) op. cit.
- 175 Reckien, D. et al. (2017) Climate change, equity and the sustainable development goals: An urban perspective. *Environment and Urbanization*, 29, pp. 159-182.; OHCHR (2021) op. cit.; Thomas, K. et al. (2019) Explaining differential vulnerability to climate change: A social science review. *Wiley Interdiscip. Rev. Clim. Change*, 10 (2), e565.; Kuran, C.A.H. et al. (2020) Vulnerability and vulnerable groups from an intersectionality perspective. *Int. Journal of Disaster Risk Reduction*, 50, 108126.; Vickery, J. (2018) Using an intersectional approach to advance understanding of homeless persons' vulnerability to disaster. *Environ. Sociol.*, 4 (1), pp. 136-147.; Chaplin, D., Twigg, J. & Lovell, E. (2019) Intersectional approaches to vulnerability reduction and resilience-building, *Braced, Resilience Intel*, 12, 35 pp., <https://cdn.odi.org/media/documents/12651.pdf>; Barbelet, V. (2018) Older people in displacement: falling through the cracks of emergency responses, ODI Report, London, UK, 52 pp., <https://cdn.odi.org/media/documents/12292.pdf>
- 176 UNICEF (2021) op. cit.
- 177 UNDP (2016) Habtezion, S. et al., Gender and Climate Change: Overview of linkages between gender and climate change, 8 pp., <https://www1.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/UNDP%20Linkages%20Gender%20and%20CC%20Policy%20Brief%201-WEB.pdf>
- 178 Davies, I.P. et al. (2018) The unequal vulnerability of communities of color to wildfire. *PLoS one*, 13 (11), e0205825.
- 179 Thomas, K. et al. (2019) op. cit.; Salm, L. et al. (2020) How climate change interacts with inequity to affect nutrition. *WIREs Climate Change*, 12 (2), e696.; Chaplin, D., Twigg, J. & Lovell, E. (2019) op. cit.; Islam, S.N. & Winkel, J. (2017) op. cit.
- 180 Nalau, J., Preston, B. & Maloney, M.C. (2015) Is adaptation a local responsibility? *Environmental Science and Policy*, 48, pp. 89-98.; Barnett, J. (2018) Global environmental change II: Political economies of vulnerability to climate change. *Progress in Human Geography*, 44 (6), pp. 1172-1184.; Cinner, J.E. et al. (2018) Building adaptive capacity to climate change in tropical coastal communities. *Nature Climate Change*, 8, pp. 117-123.; Logan, J.R., Sukriti, I. & Xu, Z. (2016) Trapped in place? Segmented resilience to hurricanes in the Gulf Coast, 1970-2005. *Demography*, 53 (5), pp. 1511-1534.; Chaplin, D., Twigg, J. & Lovell, E. (2019) op. cit.
- 181 Interview conducted by EJE, March 2021
- 182 UNICEF (2021) op. cit.; Lawrence R. et al. (2018) Prioritizing the needs of children in a changing climate. *PLOS Medicine*, 15 (7), e1002627.
- 183 Markkanen, S. & Anger-Kraawi, A. (2019) Social impacts of climate change mitigation policies and their implications for inequality. *Climate Policy*, 19 (7), pp. 827-844.; Chaplin, D., Twigg, J. & Lovell, E. (2019) op. cit.; Versey, H.S. (2021) Missing Pieces in the Discussion on Climate Change and Risk: Intersectionality and Compounded Vulnerability. *Policy Insights from the Behavioral and Brain Sciences*, 8 (1).
- 184 Barnett, J. (2018) op. cit.; OHCHR, 16.09.2019, 'Five UN human rights treaty bodies issue a joint statement on human rights and climate change', accessed 16.06.2021, [ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=24998&LangID=E](https://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=24998&LangID=E); Luetz, J.M., Bergsma, C. & Hills, K., 'The Poor just Might Be the Educators We Need for Global Sustainability - A Manifesto for Consulting the Unconsulted in Filho, W.L., McCrea, A.C. (2018) Sustainability and the Humanities, pp. 115-140.; Climate Justice Syllabus, 'Climate Justice is...', accessed 25.06.2021, <https://www.climatejusticesyllabus.org/>
- 185 CIFOR (2016) Djoudi, H., At the intersection of inequities - Lessons learned from CIFOR's work on gender and climate change adaptation in West Africa. Brief for GSDR, 2016 Update, Center for International Forestry Research (CIFOR), 4 pp., <https://www.cifor.org/knowledge/publication/5899>; Vickery, J. (2018) op. cit.; Djoudi, H. et al. (2016) Beyond dichotomies: gender and intersecting inequalities in climate change studies. *Ambio*, 45, pp. 248-262.
- 186 UN Human Rights Council (2019) Analytical study on gender-responsive climate action for the full and effective enjoyment of the rights of women, UN General Assembly, A/HRC/41/26, Annual report of the United Nations High Commissioner for Human Rights and reports of the Office of the High Commissioner and the Secretary-General, 19 pp., <https://undocs.org/en/A/HRC/41/26>; Sultana, F. (2014) Gendering climate change: Geographical insights. *The Professional Geographer*, 66 (3), pp. 372-381.
- 187 The World Bank (08.03.2018), 'No, 70% of the world's poor aren't women, but that doesn't mean poverty isn't sexist', accessed 03.06.2021, <https://blogs.worldbank.org/developmenttalk/no-70-world-s-poor-aren-t-women-doesn-t-mean-poverty-isn-t-sexist>
- 188 Chindarkar, N. (2012) Gender and climate change-induced migration: proposing a framework for analysis. *Env. Res. Lett.*, 7 (2), 025601.; Gartrell, A. et al. (2020) Disaster experiences of women with disabilities: Barriers and opportunities for disability inclusive disaster risk reduction in Cambodia. *Global Env. Change*, 64, 102134.
- 189 Cameron, E.C. et al. (2021) Global Crises: Gendered Vulnerabilities of Structural Inequality, Environmental Performance, and Modern Slavery. *Human Arenas*, 4, pp. 391-412.; IOM (2016) Coelho, S., The Climate Change-Human Trafficking Nexus, Regional Office for Asia and the Pacific, Bangkok, Thailand, 12 pp., https://publications.iom.int/system/files/pdf/mecc_infosheet_climate_change_nexus.pdf
- 190 World Health Organization, & World Bank (2011) World Report on Disability, WHO, Geneva, Switzerland, 350 pp., https://www.who.int/disabilities/world_report/2011/report.pdf
- 191 International Disability Alliance, 'Disability Inclusive Climate Action', accessed 25.06.2021, <https://www.internationaldisabilityalliance.org/climate-change>
- 192 OCHCR (2021) op. cit.; Human Rights Council (2020) Analytical study on the promotion and protection of the rights of persons with disabilities in the context of climate change, Report of the Office of the United Nations High Commissioner for Human Rights, UN General Assembly, 17 pp., https://reliefweb.int/sites/reliefweb.int/files/resources/A_HRC_44_30_E.pdf
- 193 Overseas Development Institute (2018) Twigg, J., Kett, M. & Lovell, E., Disability Inclusion and Disaster Risk Reduction - Overcoming barriers to progress, briefing note, 12 pp., cdn.odi.org/media/documents/12324.pdf
- 194 UN Special Rapporteur on Extreme Poverty and Human Rights (2019) Climate change and poverty, Human Rights Council, Geneva, Switzerland, 19 pp., <https://undocs.org/A/HRC/41/39> on climate change and poverty, Report, 25 June 2019, UN Doc. A/HRC/41/39
- 195 IPCC (2018) op. cit.
- 196 World Bank (2020) Jafino, B.A. et al., Revised Estimates of the Impact of Climate Change on Extreme Poverty by 2030, Policy Research Working Paper, No. 9417, World Bank, Washington, DC, USA, 17 pp., <https://openknowledge.worldbank.org/handle/10986/34555>
- 197 UNICEF (2021) op. cit.
- 198 Ibid.
- 199 Ibid.
- 200 Ibid.; Anderko, L. et al. (2020) Climate changes reproductive and children's health: a review of risks, exposures, and impacts. *Pediatric Research*, 87, pp. 414-419.; Philipsborn, R.P. & Chan, K. (2018) Climate Change and Global Child Health. *Pediatrics*, 141 (6), e20173774.
- 201 UNICEF (2021) op. cit.
- 202 Williams, P.A. et al. (2020) Large contribution from anthropogenic warming to an emerging North American megadrought. *Science*, 368, pp. 314-318.
- 203 U.S. Drought Monitor, 02.07.2021, 'West', accessed 02.07.2021, <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?west>
- 204 Office of Governor Gavin Newsom, 10.05.2021, 'Governor Newsom Expands Drought Emergency to Klamath River, Sacramento-San Joaquin Delta and Tulare Lake Watershed Counties', accessed 12.05.2021 <https://www.gov.ca.gov/2021/05/10/governor-newsom-expands-drought-emergency-to-klamath-river-sacramento-san-joaquin-delta-and-tulare-lake-watershed-counties/>
- 205 Note: the world record of 134°F (57°C) was recorded in Death Valley National Park California. See: Gonzalez, P. et al., USGCRP, Southwest in USGCRP (2018) Reidmiller, D.R. et al. (eds.), Fourth National Climate Change Assessment - Volume II: Impacts, Risks and Adaptation in the United States. US Global Change Research Program, Washington, D.C., USA, pp. 1102-1184, <https://nca2018.globalchange.gov/chapter/25/>
- 206 EPA (2016) What climate change means for California. US Environmental Protection Agency, Washington, D.C., USA, 2 pp. <https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-ca.pdf>
- 207 Interview conducted by EJE, June 2021 (same applies to following cited statements in this case study)
- 208 Gonzalez et al. in USGCRP (2018) op cit.
- 209 EPA (2016) op cit.
- 210 Migration Policy Institute (2018) 'Profile of the Unauthorized Population: California', <https://www.migrationpolicy.org/data/unauthorized-immigrant-population/state/CA>
- 211 Ibid.
- 212 PPIC (2017) Hill, L.E. & Hayes, J., Undocumented Immigrants in California. Public Policy Institute of California, San Francisco, USA, <https://www.ppic.org/publication/undocumented-immigrants-in-california/>
- 213 Ibid.
- 214 Ibid.
- 215 PPIC (2011) Hill, L.E. & Johnson, H.P. Unauthorized immigrants in California: Estimates for counties. Public Policy Institute of California, San Francisco, USA, 32 pp., https://www.ppic.org/content/pubs/report/R_711LHR.pdf
- 216 Ibid.
- 217 California Health Report (2018) Boyd-Barrett, C., After Massive Fires, California Considers Doing More to Help Undocumented Victims, <https://www.calhealthreport.org/2018/09/11/massive-fires-california-considers-help-undocumented-victims/>
- 218 Méndez, M., Flores-Haro, G. & Zucker, L. (2020) The (in)visible victims of disaster: Understanding the vulnerability of undocumented Latino/a and indigenous immigrants. *Geoforum*, 116, pp. 50-62.
- 219 California Health Report (2018) Boyd-Barrett, C., Wildfires Expose Gaps in Disaster Relief for Undocumented Communities. Published online at: <https://www.calhealthreport.org/2020/01/07/wildfires-expose-gaps-in-disaster-relief-for-undocumented-communities/>
- 220 US Department of Agriculture Forest Service, 'Los Padres officials declare Thomas Fire out', accessed 07.06.2021, <https://www.fs.usda.gov/detail/lpfn/news-events/?cid=FSEPRD582375>
- 221 CAUSE, 'Community Resilience in the Thomas Fire', accessed 04.06.2021, <https://causenow.org/our-work/community-resilience-thomas-fire>
- 222 Data from US Census Bureau Quickfacts, accessed 04.06.2021, <https://www.census.gov/quickfacts/fact/table/venturacountycalifornia,santabarbaracountycalifornia/RHI725219#RHI725219>

223 Mendez, M. & Flores-Haro, G. (2019) Disparate Impacts of Wildfires on Undocumented Immigrants: Lessons on Inclusive Disaster and Climate Adaptation Planning. UC Center Sacramento Policy Brief, 3 (12), <https://uccs.ucdavis.edu/events/2019-november-13-Mendez>

224 CAUSE op cit.

225 Pellow, D. & Vazin, J. (2019) op. cit.; Fothergill, A. & Peek, L. (2004) Poverty and Disasters in the United States. *Nat. Haz.*, 32, pp. 89-110.

226 FAO (2021) Southern Madagascar, Response overview, 3 pp., <https://www.fao.org/3/cb7310en/cb7310en.pdf>; UN News, 23.06.2021, 'Madagascar's hungry 'holding on for dear life', WFP chief warns', accessed 24.06.2021, <https://news.un.org/en/story/2021/06/1094632>

227 DW, 27.06.2021, 'Madagascar: UN warns 400,000 people at acute risk of starvation', accessed 30.06.2021, <https://www.dw.com/en/madagascar-un-warns-400000-people-at-acute-risk-of-starvation/a-58062742>

228 UN News, 21.10.2021, 'Madagascar: Severe drought could spur world's first climate change famine', accessed 22.10.2021, <https://news.un.org/en/story/2021/10/1103712>

229 World Bank (2020) Madagascar economic update: Setting the course for recovery, 32 pp., <https://openknowledge.worldbank.org/bitstream/handle/10986/34935/Madagascar-Economic-Update-Setting-a-Course-for-Recovery.pdf?sequence=1&isAllowed=y>

230 FAO (2021) op. cit.

231 UN World Food Programme, 29.04.2021, op. cit., Global Drought Observatory (GDO) of the Copernicus Emergency Management Service (CEMS) (2021) Drought in southern Madagascar – January 2021, GDO Analytical Report, 12 pp., https://edo.jrc.ec.europa.eu/documents/news/GDODroughtNews202101_Madagascar.pdf

232 IDMC, 'Madagascar', accessed 12.07.2021, <https://www.internal-displacement.org/countries/madagascar>

233 Global Network Against Food Crises & Food Security Information Network (2021) op. cit.

234 Interview conducted by EJJ, June 2021 [same applies to following cited statements in this case study]

235 World Weather Attribution, 01.12.2021, 'Factors other than climate change are the main drivers of recent food insecurity in Southern Madagascar', accessed 02.12.2021, <https://www.worldweatherattribution.org/factors-other-than-climate-change-are-the-main-drivers-of-recent-food-insecurity-in-southern-madagascar/> [Note: The study focuses on the analysis of hydrological drought (severe rainfall deficit)]; Carbon Brief, 01.12.2021, 'Climate change not the main driver of Madagascar food crisis, scientists find', accessed 02.12.2021, <https://www.carbonbrief.org/climate-change-not-the-main-driver-of-madagascar-food-crisis-scientists-find>; IPCC (2021) op. cit.

236 Harvey, C.A. et al. (2014) Extreme vulnerability of smallholder farmers to agricultural risks and climate change in Madagascar. *Biological Sciences, Royal Society*, 369 (1639).

237 UNHCR, 'Acute malnutrition threshold', accessed 29.06.2021, <https://emergency.unhcr.org/entry/32604/acute-malnutrition-threshold>; [Note: according to UNHCR, "Global Acute Malnutrition (GAM) is a measure of acute malnutrition in refugee children aged between 6 and 59 months. GAM provides information on the percentage of all children in this age range in a refugee population who are classified with low weight-for-height and/or oedema. It is obtained by combining the number of children in this age range who have moderate acute malnutrition and severe acute malnutrition."]

238 UN World Food Programme, 29.04.2021, 'Southern Madagascar on brink of famine, warns WFP', accessed 10.05.2021, <https://www.wfp.org/news/southern-madagascar-brink-famine-warns-wfp>

239 FAO (2021) op. cit.

240 United Nations World Food Programme, 12.01.2021, 'Humanitarian crisis looms in Southern Madagascar as drought and pandemic double number of hungry people', accessed 29.06.2021, <https://www.wfp.org/news/humanitarian-crisis-looms-southern-madagascar-drought-and-pandemic-double-number-hungry-people>

241 The World Bank, 31.07.2020, 'The World Bank in Madagascar', accessed 29.06.2021, <https://www.worldbank.org/en/country/madagascar/overview>

242 UNICEF (2020) Multiple deprivations in children in Madagascar, briefing note, October 2020, 16 pp., <https://www.unicef.org/madagascar/media/4421/file/Rapport%20MODA%20Brief%20ENG.pdf>

243 Ibid.

244 UNICEF (2021) The potential impact of the COVID-19 pandemic on children in Madagascar, briefing note, April 2021, 14 pp., <https://www.unicef.org/madagascar/media/5546/file/Briefing%20Note%20on%20COVID-19%20and%20children%20in%20Madagascar.pdf>

245 Rakotoarison, N. et al. (2018) Assessment of Risk, Vulnerability and Adaptation to Climate Change by the Health Sector in Madagascar. *Int. Journ. Env. Res. And Publ. Health*, 5 (12), 2643.

246 UNICEF (2019) Climate Landscape Analysis for Children in Madagascar, Summary Brochure, 24 pp., <https://www.unicef.org/madagascar/media/2211/file/Climate%20landscape%20analysis%20for%20children%20in%20Madagascar.pdf>

247 Global Carbon Project, 'Global Carbon Atlas: country emissions', accessed 30.06.2021, <http://www.globalcarbonatlas.org/en/CO2-emissions>

248 Bales, K. & Sovacool, B.K. (2021) From forests to factories: How modern slavery deepens the crisis of climate change. *Energy Research & Social Science*, 77, 102096.

249 See, for instance: Amnesty International (2021) Stop Burning our Rights, London, UK, 131 pp., <https://www.amnesty.org/download/Documents/POL3034762021ENGLISH.PDF>; OHCHR (2021) op. cit.

250 Markkanen, S. & Anger-Kraawi, A. (2019) op. cit.

251 Broberg, M. & Sano, H.-O. (2018) Strengths and weaknesses in a human rights-based approach to international development – an analysis of a rights-based approach to development assistance based on practical experiences, *The International Journal of human rights*, 22 (5), pp. 664-680.

252 UN Human Rights Council (2019) Resolution adopted by the Human Rights Council on 12 July 2019, Human Rights Council resolution 41/21, <https://undocs.org/A/HRC/RES/41/21>

253 Soergel, B. et al. (2021) op. cit.; Sano, H.-O., How Can a Human Rights-Based Approach Contribute to Poverty Reduction? The Relevance of Human Rights to Sustainable Development Goal One in (2020) Kaltendorf, M. et al. (eds.), *Sustainable Development Goals and Human Rights, Interdisciplinary Studies in Human Rights*, 5, pp. 11-25

254 UNFCCC (2018) Considerations regarding vulnerable groups, communities and ecosystems in the context of the national adaptation plans, Least Developed Countries Expert Group, Bonn, Germany, 42 pp., <https://unfccc.int/sites/default/files/resource/Considerations%20regarding%20vulnerable.pdf>

255 OHCHR (2021) op. cit.

256 UN, 'Universal Declaration of Human Rights', accessed 21.06.2021, <https://www.un.org/en/about-us/universal-declaration-of-human-rights>; OHCHR, 'International Covenant on Economic, Social and Cultural Rights', Adopted and opened for signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966, entry into force 3 January 1976, in accordance with article 27, accessed 21.06.2021, <https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx>

257 Global Network Against Food Crises & Food Security Information Network (2021) 2021 Global Report on Food Crises, GNAFC & FSIN, 307 pp., <http://www.fightfoodcrises.net/grfc-2021/en/>

258 Salm, L. et al. (2020) op. cit.; Global Network Against Food Crises & Food Security Information Network (2021) op. cit.; Fanzo, J. et al. (2018) The effect of climate change across food systems: Implications for nutrition outcomes. *Global Food Security*, 18, pp. 12-19.; Picciariello, A. et al. (2021) The costs of climate change in India: a review of the climate-related risks facing India, and their economic and social costs, ODI Literature review, London, UK, 31 pp., www.odi.org/en/publications/the-costs-of-climate-change-in-india-a-review-of-the-climate-related-risks-facing-india-and-their-economic-and-social-costs; Skoufias, E., Rabassa, M. & Olivieri, S. (2011) The poverty impacts of climate change: a review of the evidence, Policy Research Working Paper 5622, World Bank, Washington, D.C., USA, <https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-5622>

259 FAO, IFAD, UNICEF, WFP & WHO (2021) op. cit.

260 Fan, S. & Rue, C., The Role of Smallholder Farms in a Changing World in (2020) Paloma, S.G. et al. (eds.), *The Role of Smallholder Farms in Food and Nutrition Security*, Springer, Cham, Switzerland, pp. 13-28, https://link.springer.com/chapter/10.1007/978-3-030-42148-9_2; Hoffmann, B. et al. (2020) op. cit.; FAO (2016) State of Food and Agriculture - Climate Change, Rome, Italy, 194 pp., <https://reliefweb.int/sites/reliefweb.int/files/resources/a-i6030e.pdf>; Aryal, J.P. et al. (2021) Climate risks and adaptation strategies of farmers in East Africa and South Asia. *Scientific Reports*, 11, 10489.

261 Lowder, S.K., Skoet, J. & Raney, T. (2016) The Number, Size, and Distribution of Farms, Smallholder Farms, and Family Farms Worldwide. *World Development*, 87, pp. 16-29, <https://doi.org/10.1016/j.worlddev.2015.10.041>

262 Climate Policy Initiative & IFAD (2020) Chiriac, D. & Naran, B., Examining the Climate Finance Gap for Small-Scale Agriculture, 60 pp., <https://www.ifad.org/en/web/knowledge/-/publication/examining-the-climate-finance-gap-for-small-scale-agriculture>

263 Samberg, L.H. et al. (2016) Subnational distribution of average farm size and smallholder contributions to global food production. *Env. Res. Lett.*, 11, 124010.; Harvey, C.A. et al. (2018) Climate change impacts and adaptation among smallholder farmers in Central America. *Agriculture & Food Security*, 7 (57).

264 World Bank Group (2016) Castañeda, A. et al., Who are the poor in the developing world?, Policy Research Working Paper, Washington, D.C., United States, 41 pp., <https://openknowledge.worldbank.org/bitstream/handle/10986/25161/WP57844.pdf?sequence=1&isAllowed=y>; FAO (2019) The State of Food Security and Nutrition in the World, FAO, Rome, Italy, 239 pp., <http://www.fao.org/3/ca5162en/ca5162en.pdf>; Barbier, E.B. & Orchard, J. (2018) op. cit.

265 FAO, IFAD, UNICEF, WFP & WHO (2021) op. cit.

266 Interview conducted by EJJ, September 2020

267 The International Work Group for Indigenous Affairs (2020) Mamo, D. (ed.), *The Indigenous World 2020*, 34th edition, 784 pp., https://iwgia.org/images/yearbook/2020/IWGA_The_Indigenous_World_2020.pdf; World Bank, 'Indigenous Peoples', accessed 10.08.2021, <https://www.worldbank.org/en/topic/indigenouspeoples>

268 International Labour Organization (2017) Indigenous peoples and climate change: from victims to change agents through decent work, ILO, Geneva, Switzerland, 56 pp., https://www.ilo.org/wcmsp5/groups/public/---dgreports/---gender/documents/publication/wcms_551189.pdf

269 United Nations High Commissioner for Human Rights on land and human rights (2014) Report of the United Nations High Commissioner for Human Rights on land and human rights, E/2014/86, 18 pp., <https://undocs.org/E/2014/86>; Minority Rights Group International (2017) No escape from discrimination: minorities, indigenous peoples and the crisis of displacement, 48 pp., https://reliefweb.int/sites/reliefweb.int/files/resources/MRG_Displacement_Report_Dec17.pdf; World Resources Institute, 24.01.2019, 'Land Matters: How Securing Community Land Rights Can Slow Climate Change and Accelerate the Sustainable Development Goals', accessed 21.06.2021, <https://www.wri.org/insights/land-matters-how-securing-community-land-rights-can-slow-climate-change-and-accelerate>; International Indigenous Peoples Forum on Climate Change, 'Key Issues', accessed 05.07.2021, <http://www.iipfcc.org/key-issues>

270 UN Human Rights Council, 24.09.2019, 'Preliminary findings and observations on visit to Tuvalu by UN Special Rapporteur in the Field of Cultural Rights, Karima Bennouna', accessed 03.06.2021, <https://www.ohchr.org/EN/HRBodies/HRC/Pages/NewsDetail.aspx?NewsID=25035&LangID=E>; Adger, W. et al. (2013) Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change*, 3 (2), pp. 112-117.

271 UN (2007) United Nations Declaration on the Rights of Indigenous Peoples, A/RES/61/295, 32 pp., https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

272 UNFCCC (2015) Paris Agreement, UN, Paris, France, 27 pp., https://unfccc.int/sites/default/files/english_paris_agreement.pdf; Chanza, N. & de Wit, A. (2015) Rediscovering indigenous climate knowledge for better responses to climate change: insights from Muzarabani. *The International Journal of Climate Change: Impacts and Responses*, 6, pp. 19-35.; ILO (2017) op. cit.

273 Interview conducted by EJJ, November 2020

274 Ebi, K.L. et al. (2012) Hot weather and heat extremes: health risks. *The Lancet, Series Heat and Health*, 398 (10301), pp. 698-708.; Subsidiary Body for Scientific and Technological Advice (2017) Human health and adaptation: understanding climate impacts on health and opportunities for action, Synthesis paper by the secretariat of the UNFCCC, 31 pp., <https://unfccc.int/sites/default/files/resource/docs/2017/sbsta/eng/02.pdf>

275 OHCHR (2021) op. cit.

276 Sendai Framework for Disaster Risk Reduction (2015) Sendai Framework for Disaster Risk Reduction 2015-2030, UN, Geneva, Switzerland, 37 pp., https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf; Germanwatch (2021) op. cit.

277 Zhao, Q. et al. (2021) Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: a three-stage modelling study. *The Lancet Planetary Health*, 5 (7), e415-425.

- 278 UK Met Office, 09.11.2021, 'One billion face heat-stress risk from 2°C rise', accessed 09.11.2021, <https://www.metoffice.gov.uk/about-us/press-office/news/weather-and-climate/2021/2c-rise-to-put-one-in-eight-of-global-population-at-heat-stress-risk>
- 279 Romanello, M. et al. (2021) The 2021 report of the Lancet Countdown on health and climate change: code red for a healthy future. *The Lancet*, [https://doi.org/10.1016/S0140-6736\(21\)01787-6](https://doi.org/10.1016/S0140-6736(21)01787-6)
- 280 Zhang, Y. et al. (2007) Climate Change and Disability-Adjusted Life Years. *Journal of Environmental Health* 70 (3), pp. 32-38.
- 281 WHO (2014) Hales, S. et al. (eds.), Quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s, Geneva, Switzerland, 128 pp., <https://apps.who.int/iris/rest/bitstreams/597386/retrieve>
- 282 Schwerdtle, P.N. et al. (2020) Health and migration in the context of a changing climate: a systematic literature assessment. *Env. Res. Lett.*, 15 (10), 103006.
- 283 IPCC (2018) op. cit.
- 284 United Nations Office for Disaster Risk Reduction, 13.10.2020, '#DRRday: UN Report charts huge rise in climate disasters', accessed 25.08.2021, <https://www.unrrr.org/news/drrday-un-report-charts-huge-rise-climate-disasters>
- 285 Markandya, A. & González-Eguino, M., Integrated assessment for identifying climate finance needs for loss and damage: a critical review in R. Mechler et al. (eds.) (2018) Loss and damage from climate change. Concepts, methods and policy options, Springer, pp. 343-362.
- 286 Climate Action Network Pacific et al. (2021) How the theme of Adaptation and Resilience marginalizes Loss and Damage and why we must focus on addressing loss and damage, briefing, 6 pp., <https://reliefweb.int/report/world/how-theme-adaptation-and-resilience-marginalizes-loss-and-damage-and-why-we-must-focus>
- 287 The Conversation, 14.11.2021., 'COP26 deal: how rich countries failed to meet their obligations to the rest of the world', accessed 15.11.2021, <https://theconversation.com/cop26-deal-how-rich-countries-failed-to-meet-their-obligations-to-the-rest-of-the-world-171804>
- 288 Stamp out Poverty, Heinrich Böll Stiftung et al. (2021) Why do developing countries need support to address loss and damage? Unpacking Finance for Loss and Damage, paper 2, 8 pp., <https://us.boell.org/en/2021/04/06/why-do-developing-countries-need-support-address-loss-and-damage>
- 289 Internal Displacement Monitoring Centre & Norwegian Refugee Council (2021) op. cit.; Kam, P.M. et al. (2021) Global warming and population change both heighten future risk of human displacement due to river floods. *Environ. Res. Lett.*, 16 (04026), <https://iopscience.iop.org/article/10.1088/1748-9326/abd26c>; IOM (2019) World Migration Report 2020, Switzerland, Geneva, 498 pp., https://publications.iom.int/system/files/pdf/wmr_2020.pdf; Foresight (2011) Migration and Global Environmental Change, Final Project Report, The Government Office for Science, London, UK, 234 pp., <https://environmentalmigration.iom.int/migration-and-global-environmental-change-future-challenges-and-opportunities>; Uexkull, N. & Buhaug, H. (2021) Security implications of climate change: A decade of scientific progress. *Journal of Peace Research*, 58 (1); United Nations, 23.02.2021, 'Climate Change 'Biggest Threat Modern Humans Have Ever Faced', World-Renowned Naturalist Tells Security Council, Calls for Greater Global Cooperation', accessed 31.05.2021, <https://www.un.org/press/en/2021/sc14445.doc.htm>; Desai, B. et al. (2021) Addressing the human cost in a changing climate. *Science*, 372 (6548), pp. 1284-1287.
- 290 Internal Displacement Monitoring Centre & Norwegian Refugee Council (2021) op. cit.
- 291 Internal Displacement Monitoring Centre (2021) Internal displacement: Mid-year update 2020, Geneva, Switzerland, 60 pp., <https://www.internal-displacement.org/sites/default/files/publications/documents/2020%20Mid-year%20update.pdf>; IFRC, 16.03.2021, 'New report: Alarming levels of climate-related displacement', accessed 14.5.2021, <https://media.ifrc.org/ifrc/press-release/new-report-alarming-levels-of-climate-related-displacement/>; The World Bank (2018) Rigaud, K. et al., Groundswell - Preparing for Internal Climate Migration, Washington, D.C., USA, 256 pp., https://openknowledge.worldbank.org/bitstream/handle/10986/29461/WBG_ClimateChange_Final.pdf
- 292 Internal Displacement Monitoring Centre & Norwegian Refugee Council (2021) op. cit.
- 293 The World Bank (2021) Clement, V. et al., Groundswell Part 2: Acting on Internal Climate Migration. World Bank, Washington, D.C., USA, 362 pp., <https://openknowledge.worldbank.org/handle/10986/36248>
- 294 Ibid.
- 295 Interview conducted by EJF, January 2021
- 296 Climate Security Expert Group (2020) Rüttinger, L., Climate Change in the United Nations Peacebuilding Commission and Fund, Adelphi, Climate-Fragility Policy Paper, Berlin, Germany, 14 pp., https://climate-security-expert-network.org/sites/climate-security-expert-network.com/files/documents/csen_climate_fragility_policy_paper_-_climate_change_in_the_un_peacebuilding_commission_and_fund.pdf
- 297 Ash, K. & Obradovich, N. (2020) Climatic stress, internal migration, and Syrian civil war onset. *Journal of Conflict Resolution*, 64 (1), pp. 3-31.; Vesco, P. et al. (2021) Climate variability, crop and conflict: Exploring the impacts of spatial concentration in agricultural production. *Journal of Peace Research*, 58 (1), pp. 98-113.; Vesco, P. et al. (2020) Natural resources and conflict: A meta-analysis of the empirical literature. *Ecological Economics*, 172 (June), 106633.
- 298 Internal Displacement Monitoring Centre & Norwegian Refugee Council (2021) op. cit.
- 299 UNEP, 06.03.2013, '40% of conflicts linked to use of natural resources', accessed 31.05.2021, <https://reliefweb.int/report/world/40-conflicts-linked-use-natural-resources>
- 300 Kent, A. & Behrman, S., Mind the gap: Addressing the plight of climate refugees in international law in Heinrich Böll Stiftung (2020) Ahmad, A.N. & the Heinrich Böll Foundation (eds.) Climate Justice and Migration Mobility, Development, and Displacement in the Global South, Heinrich Böll Stiftung Democracy, 57, 164 pp., https://www.boell.de/sites/default/files/2020-12/Climate_Justice_and_Migration.pdf; OCHCR (2020) OCHCR's Key Messages on Human Rights, Climate Change and Migration, 3 pp., <https://www.unhcr.org/events/conferences/5a1812a87/ohchrs-key-messages-human-rights-climate-change-migration.html>
- 301 UNFCCC (2019) Report of the Conference of the Parties on its twenty-fourth session, held in Katowice from 2 to 15 December 2018, UNFCCC, 46 pp., [https://ejf.org/reports/beyond-borders](https://undocs.org/en/FCCC/CP/2018/10/ADD.1; OHCHR (2020) op. cit.</p>
<p>302 EJF (2017) Beyond borders: our changing climate - its role in conflict and displacement, London, UK, 48 pp., <a href=)
- 303 Displacement Solutions, 'The Bangladesh HLP initiative', accessed 02.06.2021, <https://displacementsolutions.org/ds-initiatives/climate-change-and-displacement-initiative/bangladesh-climate-displacement/>
- 304 Kulp, S.A. & Strauss, B.H. (2019) New elevation data triple estimates of global vulnerability to sea-level rise and coastal flooding. *Nature Communications*, 10 (4844).
- 305 The World Bank, 09.10.2016, 'Bangladesh: Building Resilience to Climate Change', accessed 25.10.2021, <https://www.worldbank.org/en/results/2016/10/07/bangladesh-building-resilience-to-climate-change>; Kisinger, C. & Matsui, K. (2021) Responding to Climate-Induced Displacement in Bangladesh: A Governance Perspective. *Sust.*, 13, 7788.
- 306 Interviews conducted by EJF, 2017 (same applies to following cited statements in this case study)
- 307 The World Bank (2018) Rigaud, K.K., et al., Groundswell: Preparing for Internal Climate Migration, Washington, D.C., USA, 256 pp., <http://hdl.handle.net/10986/29461>
- 308 Chen, J. & Mueller, V. (2018) Coastal climate change, soil salinity and human migration in Bangladesh. *Nature Climate Change*, 8, pp. 981-985.
- 309 General Economic Division (2015) Accelerating Growth, Empowering Citizens, The 7th Five Year Plan 2016-2020, Government of Bangladesh, Dhaka, Bangladesh, 726 pp., <https://policy.asiapacificenergy.org/node/2443>
- 310 ACAPS & Start Network, 21.03.2019, 'Disaster Summary Sheet: Bangladesh - Riverbank Erosion', accessed 02.06.2021, [https://ejf.org/reports/a-nation-under-threat-the-impacts-of-climate-change-on-human-rights-and-forced-migration-in-bangladesh](https://reliefweb.int/report/bangladesh/disaster-summary-sheet-bangladesh-riverbank-erosion-21-march-2019#:~:text=Every%20year%2C%20riverbank%20erosion%20leads,public%20infrastructure%20and%20communication%20systems.; EJF (2012) A Nation Under Threat: The impacts of climate change on human rights and forced displacement in Bangladesh, London, UK, 17 pp., <a href=)
- 311 Cities Alliance, 10.09.2019, 'Climate migration drives slum growth in Dhaka', accessed 02.06.2021, <https://www.citiesalliance.org/newsroom/news/urban-news/climate-migration-drives-slum-growth-dhaka>; Rana, Md M.P. & Ilina, I.N. (2021) Climate change and migration impacts on cities: Lessons from Bangladesh. *Env. Chall.*, 5, 100242.
- 312 Smith, M.D. & Henley-Shepard, S. (2021) Disasters and Displacement in Bangladesh: Re-conceptualising Strategies of Risk Reduction and Resilience, IDMC, 15 pp., https://www.internal-displacement.org/global-report/grid2021/downloads/background_papers/background_paper-bangladesh.pdf
- 313 UN Women, 05.10.2020, 'Climate resilient and empowering livelihoods for women', accessed 02.06.2021, <https://www.preventionweb.net/publications/view/73916>
- 314 UNHCR, 01.04.2021, 'Inside the world's five largest refugee camps', accessed 25.10.2021, <https://www.unrefugees.org/news/inside-the-world-s-five-largest-refugee-camps/>
- 315 Science, 14.12.2021, 'The Arctic is warming four times faster than the rest of the world', accessed 04.02.2022, <https://www.science.org/content/article/arctic-warming-four-times-faster-rest-world>
- 316 NOAA Arctic Program (2020) Ballinger, T.J. et al., Surface Air Temperature. NOAA Arctic Report Card 2020, Washington, D.C., United States, 7 pp., DOI: 10.25923/gcwr8-2206
- 317 Tyler, N.J.C. et al. (2021) The Shrinking Resource Base of Pastoralism: Saami Reindeer Husbandry in a Climate of Change. *Front. Sustain. Food Syst.*, 4, 585685.
- 318 Interviews conducted by EJF, April 2018 (same applies to following cited statements in this case study)
- 319 Sweden, 26.06.2018, 'Sami in Sweden', accessed 22.04.2021, <https://sweden.se/society/sami-in-sweden/>
- 320 Saami council, 2017, 'Tråante declaration', accessed 14.04.2021, <https://www.saamicouncil.net/en/declarations>
- 321 Sweden, 26.06.2018, op. cit.; United Nations Special Rapporteur, 09.08.2016, 'Report of the Special Rapporteur on the rights of indigenous peoples on the human rights situation of the Sami people in the Sapmi region of Norway, Sweden and Finland', accessed 14.04.2021, <https://digitallibrary.un.org/record/847081?ln=en>
- 322 Serreze, M.C. & Barry R.G. (2011) Processes and impacts of Arctic amplification: A research synthesis. *Global and planetary change*, 77 (1-2), pp. 85-96.; Pithan, F. & Mauritsen, T. (2014) Arctic amplification dominated by temperature feedbacks in contemporary climate models. *Nat. Geosci.*, 7, pp. 181-184.; Bowen, J.C. et al. (2020) Arctic Amplification of Global Warming Strengthened by Sunlight Oxidation of Permafrost Carbon to CO₂. *Geophysical Research Letters*, 47 (12), e2020GL087085.
- 323 NASA, 28.05.2018, 'Arctic amplification', accessed 14.04.2021, <https://climate.nasa.gov/news/927/arctic-amplification/>
- 324 Hansen, B.B. et al. (2011) Climate, icing, and wild arctic reindeer: past relationships and future prospects. *Ecology*, 92 (10), pp. 1917-1923.
- 325 Descamps, S. et al. (2017) Climate change impacts on wildlife in a High Arctic archipelago - Svalbard, Norway. *Global change biology*, 23, pp. 490-502.
- 326 ArcticToday, 23.03.2020, Nilsen, T., 'Starvation deaths loom for reindeer as huge amount of snow piles up over icy crust', accessed 20.05.2021, <https://www.arctictoday.com/starvation-deaths-loom-for-reindeer-as-huge-amount-of-snow-piles-up-over-icy-crust/>; Joly, K., Jandt, R.R. & Klein, D.R. (2016) Decrease of lichens in Arctic ecosystems: the role of wildfire, caribou, reindeer, competition and climate in north-western Alaska. *Polar research*, 28 (3), pp. 433-442.; Bartsch, A., Kumpula, T., Forbes, B.C. & Stammer, F. (2010) Detection of snow surface thawing and refreezing in the Eurasian Arctic with QuickSCAT: implications for reindeer herding. *Ecological applications*, 20 (8), 2346-2358.
- 327 Tolvanen, A. et al. (2019) Mining in the Arctic environment - a review from ecological, socioeconomic and legal perspectives. *J. Environ. Manage.*, 233, pp. 832-844.; Saami Council, 16.06.2021, 'Saami Council publishes Open Letter on Sweden ignoring decision from UN Treaty body regarding discrimination in Swedish legislation', accessed 07.07.2021, <https://www.saamicouncil.net/news-archive/sweden-ignores-decision-from-un-treaty-body-on-discrimination-in-swedish-legislation>
- 328 Kivinen, S. et al. (2010) Effects of modern forest management on winter grazing resources for reindeer in Sweden. *Ambio*, 39 (4), pp. 269-278.
- 329 United Nations Special Rapporteur on the Rights of Indigenous Peoples, 09.08.2016, op. cit.; Sveriges Riksdag, 'Rennäringslag (1971:437)', accessed 20.05.2021, [http://archive.ipu.org/splz-e/chiapas10/saami.pdf](https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/rennaringslag-1971437_sfs-1971-437; Josefson, E. (2010) The Saami and the national parliaments: channels for political influence. Resource centre for the rights of indigenous peoples, IPU & UNDP, 28 pp., <a href=)

- 330 Note: recent court cases and policy reviews are part of a reassessment of Sami reindeer-husbandry legislation, including the Sami right to reindeer herding, fishing, and hunting; see e.g., Allard, C. (2021) *Girjas Reindeer Herding Community v. Sweden: Analysing the Merits of the Girjas Case*. Arctic Review on Law and Politics, 12, pp. 56-79.; Hofverberg, E., 01.06.2021, 'Sweden: Government Tasks Sami Parliament with Investigating Sameby Legal Construct and Membership Rules', accessed 13.07.2021, <https://www.loc.gov/item/global-legal-monitor/2021-06-01/sweden-government-tasks-sami-parliament-with-investigating-sameby-legal-construct-and-membership-rules/>; Vars, L.S., 18.03.2021, 'The Indigenous World 2021: Sápmi', accessed 13.07.2021, <https://www.iwgia.org/en/sapmi/4248-iw-2021-sapmi.html>
- 331 Park, J. et al. (2018) Households and heat stress: estimating the distributional consequences of climate change. *Environment and Development Economics*, 23 (3), pp. 349-368.; King, A.D. & Harrington, L.J. (2018) The Inequality of Climate Change From 1.5 to 2°C of Global Warming. *Geophysical Research Letters*, 45 (10), pp. 5030-5033.
- 332 IEA, 20.07.2021, 'With only 2% of governments' recovery spending going to clean energy transitions, global emissions are set to surge to an all-time high', accessed 31.08.2021, <https://www.iea.org/news/with-only-2-of-governments-recovery-spending-going-to-clean-energy-transitions-global-emissions-are-set-to-surge-to-an-all-time-high>
- 333 Liu, P.R. & Raftery, A.E. (2021) Country-based rate of emissions reductions should increase by 80% beyond nationally determined contributions to meet the 2°C target. *Communications Earth & Environment*, 2, 29.; UNFCCC (2021) op. cit.; Climate Action Tracker (2020) *Warming Projections Global Update*, September 2020, New Climate Institute & Climate Analytics, Berlin/Cologne, Germany, 26 pp., https://climateactiontracker.org/documents/790/CAT_2020-09-23_Briefing_GlobalUpdate_Sept2020.pdf
- 334 Sauter, C., Grether, J.-M. & Mathys, N. (2016) Geographical spread of global emissions: Within-country inequalities are large and increasing. *Energy Policy*, 89, pp. 138-149.; Knight, K.W., Schor, J.B. & Jorenson, A.K. (2017) *Wealth Inequality and*
- Hubacek K. et al. (2017) *Global carbon inequality*. *Energy, Ecology and Environment*, 2, pp. 361-369.
- 335 Shepherd, M. & Binita, K.C. (2015) Climate change and African Americans in the USA. *Geography Compass*, 9 (11), pp. 579-591.; Diakakis, M. et al. (2015) Hurricane Sandy mortality in the Caribbean and continental North America. *Disaster Prevention and Management: An International Journal*, 24 (1), pp. 132-148.; Hsiang, S. et al. (2017) Estimating economic damage from climate change in the United States. *Science*, 356 (6345), pp. 1362-1369.; WHO (2019) *Environmental health inequalities in Europe*, Second Assessment Report, Copenhagen, Denmark, 164 pp., <https://apps.who.int/iris/bitstream/handle/10665/325176/9789289054157-eng.pdf>
- 336 IPCC (2022) Skea, J. et al. Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva, Switzerland, https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf
- 337 Institute for Policy Integrity (2021) Howard, P. & Sylvan, D., Gauging Economic Consensus on Climate Change, New York, USA, 64 pp., https://policyintegrity.org/files/publications/Economic_Consensus_on_Climate.pdf
- 338 Ivanova, D. & Wood, R. (2020) The unequal distribution of household carbon footprints in Europe and its link to sustainability. *Global Sustainability*, 3, e18.
- 339 Aye, G.C. (2020) *Wealth inequality and CO2 emissions in emerging economies*. WIDER Working Paper 2020/161, 13 pp., <https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2020-161.pdf>
- 340 Oxfam (2020a) op. cit.
- 341 Oxfam Int. & IIEP (2021) *Carbon Inequality in 2030: Per capita consumption emissions and the 1.5°C goal*, Oxford, UK, 12 pp., <https://www.oxfam.org/en/research/carbon-inequality-2030>
- 342 Ibid.
- 343 SEI, IISD, ODI, E3G & UNEP (2021) *The Production Gap, 2021 Report*, 104 pp., <https://productiongap.org/2021report/>
- 344 Ibid.
- 345 Climate Watch, 'Historical GHG Emissions', accessed 25.10.2021, [https://www.climatewatchdata.org/ghg-emissions?end_year=2018®ions=G20§ors=total-including-lucf&start_year=1990](https://www.climatewatchdata.org/ghg-emissions?end_year=2018®ions=G20§ors=total-including-lucf&start_year=1990;); Climate Transparency (2021) *Climate Transparency Report 2021, Highlights Report*, 16 pp., <https://www.climate-transparency.org/wp-content/uploads/2021/10/CT2021-Highlights-Report.pdf>
- 346 Oxfam (2020a) op. cit.; Boden, T.A., Marland, G. & Andres, R.J. (2017) *National CO2 Emissions from Fossil-Fuel Burning, Cement Manufacture, and Gas Flaring: 1751-2014*, Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, https://cdiac.ess-dive.lbl.gov/trends/emis/overview_2014.html; Germanwatch (2021) op. cit. [Note: The data of the assessment is based on Munich Re's NatCatSERVICE.]
- 347 Climate Watch, 'Global greenhouse gas emissions database', accessed 15.06.2021, www.climatewatchdata.org/ghg-emissions?regions=TOP&source=34; Note: Climate Watch uses four different historical emissions data sources with slightly different approaches. Thus, figures might vary depending on the respective dataset.
- 348 UNEP & UNEP DTU Partnership (UDP) (2020) *Emissions Gap Report 2020*, UNEP, Nairobi, Kenya, 128 pp., <https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/34426/EGR20.pdf?sequence=1&isAllowed=y>; Boden, T.A., Marland, G. & Andres, R.J. (2017) op. cit.
- 349 Crippa, M. et al. (2020) *Fossil CO2 emissions of all world countries - 2020 Report*, EUR 30358 EN, Publications Office of the European Union, Luxembourg, https://edgar.jrc.ec.europa.eu/report_2020
- 350 Althos, G., Watson, J.E.M. & Fuller, R.A. (2016) *Global mismatch between greenhouse gas emissions and the burden of climate change*. *Scientific Reports*, 6, 20281.
- 351 Diefenbaugh, N.S. & Burke, M. (2019) *Global warming has increased global economic inequality*. *PNAS*, 116 (20), pp. 9808-9813.
- 352 UN, 'The 17 Goals', accessed 05.06.2021, <https://sdgs.un.org/goals>
- 353 IUCN, 19.03.2021, Manzo, R., 'Climate Equity or Climate Justice? More than a question of terminology', accessed 10.08.2021, <https://www.iucn.org/news/world-commission-environmental-law/202103/climate-equity-or-climate-justice-more-a-question-terminology>
- 354 CDP (2017) Griffith, P., *The Carbon Majors Database: CDP Carbon Majors Report 2017*, CDP Worldwide, 16 pp., <https://www.cdp.net/en/articles/media/new-report-shows-just-100-companies-are-source-of-over-70-of-emissions>
- 355 OHCHR (2021) op. cit.; Seck, S.L., *Climate change and the human rights responsibilities of business enterprises in Amnesty International (2020) Ismailil,*
- D., van der Schaaf, K. & van Troost, L. (eds.), *Climate Change, Justice and Human Rights*, Amnesty International Netherlands, 99 pp., <https://www.amnesty.nl/content/uploads/2020/08/Verkenningen2020-climate-change.pdf?x82206>
- 356 OHCHR (2011) *UN Guiding Principles on Business and Human Rights* New York/Geneva, USA/Switzerland, 42 pp., https://www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf
- 357 Climatewatch, 'Historical GHG Emissions', accessed 16.6.2021, https://www.climatewatchdata.org/ghg-emissions?end_year=2018&start_year=1990
- 358 Friedlingstein, P. et al. (2020) *Global Carbon Budget 2020*. *Earth Syst. Sci. Data*, 12, pp. 3269-3340
- 359 National Energy Administration, 09.04.2021, '打赢低碳转型硬仗', accessed 26.8.2021, http://www.nea.gov.cn/2021-04/09/c_139869435.htm
- 360 IEA (2020) *Key World Energy Statistics 2020*, August 2020, IEA, 80pp., https://iea.blob.core.windows.net/assets/1b7781df-5c93-492a-acd6-01cf90388b0f/Key_World_Energy_Statistics_2020.pdf
- 361 World Resources Institute, 06.02.2020, '4 Charts Explain Greenhouse Gas Emissions by Countries and Sectors', accessed 26.8.2021, <https://www.wri.org/insights/4-charts-explain-greenhouse-gas-emissions-countries-and-sectors>
- 362 IEA (2020) op. cit.
- 363 Endcoal, 'Global Coal Plant Tracker', accessed 17.06.2021, <https://endcoal.org/global-coal-plant-tracker/>
- 364 Greenpeace, 25.08.2021, '24 new coal-fired power projects approved in China in first half of 2021: Greenpeace', accessed 26.08.2021, <https://www.greenpeace.org/eastasia/blog/6815/24-new-coal-fired-power-projects-approved-in-china-in-first-half-of-2021-greenpeace/>
- 365 Center for American Progress, 06.05.2021, 'Assessing China's Energy and Climate Goals', accessed 23.6.2021, <https://www.americanprogress.org/issues/security/reports/2021/05/06/499096/assessing-chinas-energy-climate-goals/>; 中国国家发展和改革委员会组织 (2007) *中国应对气候变化国家方案*, 58 pp., <http://mandalay.china-consulate.org/chn/zt/P020070612691399842585.pdf>; The Central People's Government of the People's Republic of China, 21.08.2012, '节能减排“十二五”规划', accessed 26.08.2021, http://www.gov.cn/zwgc/2012-08/21/content_2207867.htm; The Central People's Government of the People's Republic of China, 13.01.2012, '十二五'控制温室气体排放工作方案', accessed 26.08.2021, http://www.gov.cn/zwgc/2012-01/13/content_2043645.htm
- 366 Fu, L. et al. (2021) *China's Low-Carbon Development Progress and Policy Evaluation Since the 12th Five-Year Plan Period*. National Center for Climate Change Strategy and International Cooperation; Zhu, S. et al. (2020) *A review of China's climate policies and actions since the launch of the 12th Five Year Plan*. *China population, resources and environment*, 30 (4), pp. 1-8.
- 367 Chen F. et al. (2020) *The characteristics of climate changes over Nantong during the period 1951-2018*. *Earth Environ. Sci.*, 569, 012075.
- 368 Cheng, G. & Jin, H. (2013) *Permafrost and groundwater on the Qinghai-Tibet Plateau and in northeast China*. *Hydrogeol.*, 21, pp. 5-23.
- 369 Cheng, H. & Chen, J. (2017) *Adapting cities to sea level rise: A perspective from Chinese deltas*. *Advances in Climate Change Research*, 8 (2), pp. 130-136.
- 370 Aon (2020) *Global Catastrophe Recap, September 2020*, 19 pp., http://thoughtleadership.aon.com/Documents/20200810_analytics-if-september-global-recap.pdf; Christian Aid (2020) *Counting the cost: 2020 A year of climate breakdown*, 26 pp., <https://reliefweb.int/sites/reliefweb.int/files/resources/Counting%20the%20cost%202020.pdf>
- 371 Asian Development Bank (2015) *Addressing climate change risks, disasters, and adaptation in the People's Republic of China*, Asian Development Bank, Mandaluyong City, Philippines, 25 pp., <https://www.adb.org/sites/default/files/publication/177728/climate-change-risks-prc.pdf>
- 372 Wu et al. (2019) *Integrate Risk from Climate Change in China Under Global Warming of 1.5 and 2.0 °C*. *Earth's Future*, 7 (12), pp. 1307-1322.
- 373 National Bureau of Statistics of China, 14.12.2017, '第三次全国农业普查主要数据公报', accessed 30.08.2021, http://www.stats.gov.cn/tjsj/tjgb/nypcgb/qgnypcgb/201712/t20171214_1562740.html
- 374 Ministry of Water Resources, People's Republic of China (2016) *Water Resources in China, 10 pp.*, <http://www.mwr.gov.cn/english/mainsubjects/201604/P020160406508110938538.pdf>
- 375 Zhou, W. (2003) *Review on the study of water resources utilization efficiency in irrigation district in arid and semiarid areas of China*. *Journal of Arid Land Resources and Environment*, 17 (5), pp. 91-96.; Yin, Y. (2019) *Enlargement of the semi-arid region in China from 1961 to 2010*. *Clim Dyn.*, 52, pp. 509-521.
- 376 Ibid.
- 377 Leng, G. et al. (2015) *Climate change impacts on meteorological, agricultural and hydrological droughts in China*. *Global and Planetary Change*, 126, pp. 23-34.
- 378 Ibid.
- 379 Li, Z. et al. (2019) *Ecological Civilization Construction in Ecologically Fragile Poverty-stricken Areas in Western China*. *Strategic Study of Chinese Academy of Engineering*, 21 (5), pp. 80-86.
- 380 The Central People's Government of the People's Republic of China, '中国民族', accessed 30.08.2021, http://big5.www.gov.cn/gate/big5/www.gov.cn/test/2005-07/26/content_17366_3.htm
- 381 Filiberto, D. et al. (2008) *Older People and Climate Change: Vulnerability and Health Effects*. *Generations*, 33 (4), pp. 19-25.
- 382 National Bureau of Statistics of China, 11.05.2021, '第七次全国人口普查主要数据情况', accessed 30.08.2021, http://www.stats.gov.cn/tjsj/zxfb/202105/t20210510_1817176.html
- 383 BBC, 11.05.2021, 'China census: Data shows slowest population growth in decades', accessed 30.08.2021, <https://www.bbc.com/news/world-asia-china-57067180>
- 384 Yang, J. et al. (2021) *Projecting heat-related excess mortality under climate change scenarios in China*. *Nat. Commun.*, 12, 1039.
- 385 Cai, W. et al. (2021) *The 2020 China report of the Lancet Countdown on health and climate change*. *Health Policy*, 6 (1), pp. E64-E81.
- 386 Xiao, J.P. et al. (2016) *Characterizing a large outbreak of dengue fever in Guangdong Province, China*. *Infect. Dis. of Poverty*, 5 (44); Xu, Z. et al. (2020) *Projecting the future of dengue under climate change scenarios: Progress, uncertainties and research needs*. *PLoS Negl Trop Dis*, 14 (3), e0008118.
- 387 National Bureau of Statistics of China, 'Annual Data', accessed 18.06.2021, <http://www.stats.gov.cn/english/Statisticaldata/AnnualData/>; National Bureau of Statistics of China, 11.05.2021, '第七次全国人口普查主要数据情况', accessed 30.8.2021, http://www.stats.gov.cn/tjsj/zxfb/202105/t20210510_1817176.html

- 388 Wang, Y. et al. (2019) Quantifying the response of potential flooding risk to urban growth in Beijing. *Science of The Total Environment*, 705.
- 389 Chen, S. et al. (2015) Urbanization effect on precipitation over the Pearl River Delta based on CMORPH data. *Advances in Climate Change Research*, 6 (1), pp. 16-22.
- 390 Aljazeera, 03.08.2021, 'Death toll in China's Henan floods triples to 302, dozens missing', accessed 30.08.2021, <https://www.aljazeera.com/news/2021/8/3/death-toll-in-chinas-henan-floods-triples-to-302-dozens-missing>
- 391 Asian Development Bank (2015) op. cit.
- 392 China's Ministry of Science and Technology (2015) Third National Assessment Report on Climate Change, Science Press, Beijing, China, 903 pp.
- 393 World Resources Institute (2020) Accelerating the Net-Zero Transition: Strategic Action for China's 14th Five-Year Plan, English highlights, WRI China, Beijing, China, 10 pp., https://files.wri.org/d8/s3fs-public/VISION2050_English_Summary_Corrected.pdf
- 394 UN, 'Universal Declaration of Human Rights', accessed 21.06.2021, <https://www.un.org/en/about-us/universal-declaration-of-human-rights>
- 395 OHCHR (2015) Key messages on climate and human rights, Geneva, Switzerland, and New York, USA, 3 pp., https://www.ohchr.org/Documents/Issues/ClimateChange/KeyMessages_on_HR_CC.pdf
- 396 UNFCCC (2015) op. cit.
- 397 Note: the principle of common but differentiated responsibilities means that all countries have a common responsibility, but different levels of emissions reduction obligations due to significant differences in past emissions and development levels (as formalised at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro).
- 398 Will, U. & Manger-Nestler, C. (2021) Fairness, equity, and justice in the Paris Agreement: Terms and operationalization of differentiation. *Leiden Journal of International Law*, 34 (2), pp. 397-420.
- 399 Representatives of Small Island Developing States (2007) Male' Declaration on the Human Dimension of Global Climate Change, Malé, Republic of Maldives, https://www.ciel.org/Publications/Male_Declaration_Novo7.pdf; UNHRC (2008) Human Rights Council Resolution 7/23. Human rights and climate change. OHCHR, Geneva, Switzerland, 3 pp., https://ap.ohchr.org/documents/E/HRC/resolutions/A_HRC_RES_7_23.pdf
- 400 See e.g., OHCHR, 'Human Rights Council resolutions on human rights and climate change', accessed 02.06.2021, <https://www.ohchr.org/EN/Issues/HRAndClimateChange/Pages/Resolutions.aspx>; UN General Assembly (2019) Special Rapporteur on Human Rights and the Environment, Human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, 25 pp., <https://undocs.org/A/74/161>; UN Special Rapporteur on Extreme Poverty and Human Rights (2019) Climate change and poverty, Human Rights Council, Geneva, Switzerland, 19 pp., <https://undocs.org/A/HRC/41/39> on climate change and poverty, Report, 25 June 2019, A/HRC/41/39; UN General Assembly (2015) Special Rapporteur on the Right to Food, Right to food, New York City, United States, 25 pp., <https://undocs.org/en/A/70/287>; UN General Assembly (2012) Special Rapporteur on the human rights of migrants, Human rights of migrants, 23 pp., <https://undocs.org/A/67/299>
- 401 OCHCR, 16.09.2019, 'Human Rights Law Requires States to Pursue the Highest Possible Ambition in Emissions Cuts', accessed 01.06.2021, <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25011&LangID=E>
- 402 See, e.g.: ETO Consortium (2013) Maastricht Principles on Extraterritorial Obligations of States in the Area of Economic, Social and Cultural Rights, 16 pp., <https://www.etoconsortium.org/en/main-navigation/library/maastricht-principles/>; ETO Consortium, Amnesty International et al. (2021) Written Submission to the European Court of Human Rights in the Case of Duarte Agostinho and Others v. Portugal and Others, EUR 01/4092/2021, 06.05.2021, 11 pp., <https://www.amnesty.org/en/documents/eur01/4092/2021/en/>; Expert Group on Global Climate Obligations (2015) Oslo Principles on Global Climate Change Obligations, Oslo, Norway, 8 pp., <https://climateprinciplesforenterprises.files.wordpress.com/2017/12/osloprincipleswebpdf.pdf>
- 403 Deutsches Institut für Menschenrechte (2021) op. cit.
- 404 Guterres, A. (2020) The Highest Aspiration: A Call to Action for Human Rights, United Nations, António Guterres, United Nations Secretary-General on the occasion of the seventy-fifth anniversary of the United Nations, 14 pp., https://www.un.org/peacebuilding/sites/www.un.org.peacebuilding/files/documents/2020_sg_call_to_action_for_hr_the_highest_aspiration.pdf
- 405 OHCHR (2015) op. cit.; UN (1966a) op. cit.
- 406 UNFCCC, 'New elements and dimensions of adaptation under the Paris Agreement (Article 7)', accessed 12.07.2021, <https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/new-elements-and-dimensions-of-adaptation-under-the-paris-agreement-article-7>; UNFCCC, 18.05.2021, 'The Adaptation Committee Considers Methods to Review the Global Goal on Adaptation', accessed 10.05.2021, <https://unfccc.int/news/the-adaptation-committee-considers-methods-to-review-the-global-goal-on-adaptation>; iied (2021) Progressing the Global Goal on Adaptation - key issues, policy pointers, briefing, 4 pp., <https://pubs.iied.org/sites/default/files/pdfs/2021-01/17773IIED.pdf>
- 407 Power Shift Africa, ACT2025, Consortium and the Institute for Climate and Sustainable Cities et al. (2021) COP26: Delivering the Paris Agreement: A five-point plan for solidarity, fairness and prosperity, 18 pp., <https://powershiftafrica.org/wp-content/uploads/2021/07/COP26-A-five-point-plan-for-solidarity-fairness-and-prosperity.pdf>; ACT Alliance EU (2021) Setting the standard: climate finance from EU and EFTA member states, 19 pp., https://actalliance.eu/wp-content/uploads/2021/01/ACT-Alliance_EU_SettingTheStandard.pdf; Buchner, B. et al. (2019) Global landscape of climate finance 2019, Climate Policy Initiative, London, UK, 38 pp., <https://climatepolicyinitiative.org/wp-content/uploads/2019/11/2019-Global-Landscape-of-Climate-Finance.pdf>; Roberts, J.T. et al. (2021) Rebooting a failed promise of climate finance. *Nature Climate Change*, 11, pp. 180-182.; Climate Finance Independent Expert Group on Climate Finance (2020) Bhattacharya, A. et al., Delivering on the \$100 billion climate finance commitment and transforming climate finance, 70 pp., https://www.un.org/sites/un2.un.org/files/100_billion_climate_finance_report.pdf; Oxfam (2020b) Climate finance shadow report 2020: assessing progress towards the \$100 billion commitment, Oxford, UK, 32 pp., <https://oxfamlibrary.openrepository.com/bitstream/handle/10546/621066/bp-climate-finance-shadow-report-2020-201020-en.pdf>
- 408 Care (2021) Hollow Commitments: An analysis of developed countries' climate finance plans, CARE Denmark & CARE's Climate Change and Resilience Platform, June 2021, 72 pp., https://careclimatechange.org/wp-content/uploads/2021/06/Hollow-Commitments_Final.pdf
- 409 World Resources Institute (2021) Bos, J. & Thwaites, J., A breakdown of developed countries' public climate finance contributions towards the \$100 billion goal, Technical Note, Washington, D.C., USA, 80 pp., <https://www.wri.org/research/breakdown-developed-countries-public-climate-finance-contributions-towards-100-billion>
- 410 OECD (2021) Climate Finance Provided and Mobilised by Developed Countries: Aggregate Trends Updated with 2019 Data, OECD Publishing, Paris, France, 24 pp., <https://doi.org/10.1787/03590fb7-en>
- 411 Vulnerable Twenty Group (V20), 08.07.2021, '1st Climate Vulnerable's Finance Summit Communiqué', accessed 08.07.2021, <https://www.v-20.org/activities/ministerial/1st-climate-vulnerables-finance-summit-communiqué>
- 412 See, e.g.: UN (1966a) op. cit.; UN (1966b) op. cit.; UN (1979) Convention on the Elimination of all forms of Discrimination Against Women (CEDAW), UN General Assembly, New York, USA, 18 December 1979, <https://www.ohchr.org/EN/ProfessionalInterest/Pages/CEDAW.aspx>; UN (1965) International Convention on the Elimination of All Forms of Racial Discrimination, UN General Assembly, New York, USA, adopted and opened for signature and ratification by General Assembly resolution 2106 (XX), 21 December 1965, entry into force 4 January 1969, <https://www.ohchr.org/en/professionalinterest/pages/cerd.aspx>
- 413 See e.g., UNFCCC (2010) 2010 Cancun Agreements, Cancún, Mexico, <https://unfccc.int/process/conferences/pastconferences/cancun-climate-change-conference-november-2010/statements-and-resources/Agreements>; The Office of the United Nations High Commissioner for Human Rights (OHCHR) (2020) Human rights, climate change and migration: key messages, OHCHR, Geneva, Switzerland, 5 pp., <https://www.ohchr.org/Documents/Issues/ClimateChange/materials/KMMigration.pdf>; Amnesty International (2021) op. cit.; OHCHR (2021) op. cit.; Special Rapporteur on human rights and the environment (2018) Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, A/HRC/37/59, UN General Assembly, 20 pp., <https://undocs.org/en/A/HRC/37/59>; Quaker United Nations Office (2016) Elliott, D. & Cook, L.F., Climate justice and the use of human rights law in reducing greenhouse gas emissions, Geneva, Switzerland, 36 pp., https://quano.org/sites/default/files/resources/Climate%20Justice_August_2016.pdf
- 414 International Labour Organization (2015) ILO Guidelines for a Just Transition Towards Environmentally Sustainable Economies and Societies for All, Geneva, Switzerland, 23 pp., http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf
- 415 Bread for the World (2019) Hirsch, T. et al., Climate Finance for Addressing Loss and Damage, Berlin, Germany, 62 pp., https://www.brot-fuer-die-welt.de/fileadmin/mediapool/2_Downloads/Fachinformationen/Analyse/ClimateFinance_LossDamage.pdf; CSO Equity Review (2019) Can climate change fuelled loss and damage ever be fair?, Manila/London/Cape Town/Washington, D.C., CSO Equity Review Coalition, 20 pp., <https://civilsocietyreview.org/report2019/>; iGST (2021) Chhetri, R.P., Schäfer, L. & Watson, C., Exploring loss and damage finance and its place in the Global Stocktake, part of the 'Financing climate action: iGST discussion series', 38 pp., <https://www.climateworks.org/wp-content/uploads/2021/03/Loss-and-Damage-Finance-iGST.pdf>; Markandya, A. & González-Eguino, M. (2018) op. cit.
- 416 Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment (2019) A safe climate: good practices, A/74/161 Annex, UN, 13 pp., <https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/Annualreports.aspx>
- 417 UN (1998) Declaration on the Right and Responsibility of Individuals, Groups and Organs of Society to Promote and Protect Universally Recognized Human Rights and Fundamental Freedoms, adopted by General Assembly resolution 53/144 of 9 December 1998, <https://www.ohchr.org/EN/ProfessionalInterest/Pages/RightAndResponsibility.aspx>; Special Rapporteur on human rights and the environment (2018) op. cit.

“The international community needs to recognise that every person on this planet, no matter where they live, no matter what the colour of their skin, their gender, no matter what, has the right to live in a safe, clean, healthy and sustainable environment. And that right to a healthy environment includes not only clean air, clean water, healthy food, it also includes non-toxic environments where people can live, work, study and play, it includes healthy ecosystems and biodiversity, and it includes the right to a safe climate.”

*David R. Boyd, UN Special Rapporteur
on human rights and the environment*