

Climate change, migration and mobility, and inequalities

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New Zealand Population Congress 2023

Population Futures in an Uncertain World

Key note session: inequality and climate change

30th August, 2023





Coastal erosion
and relocation:
Alaska

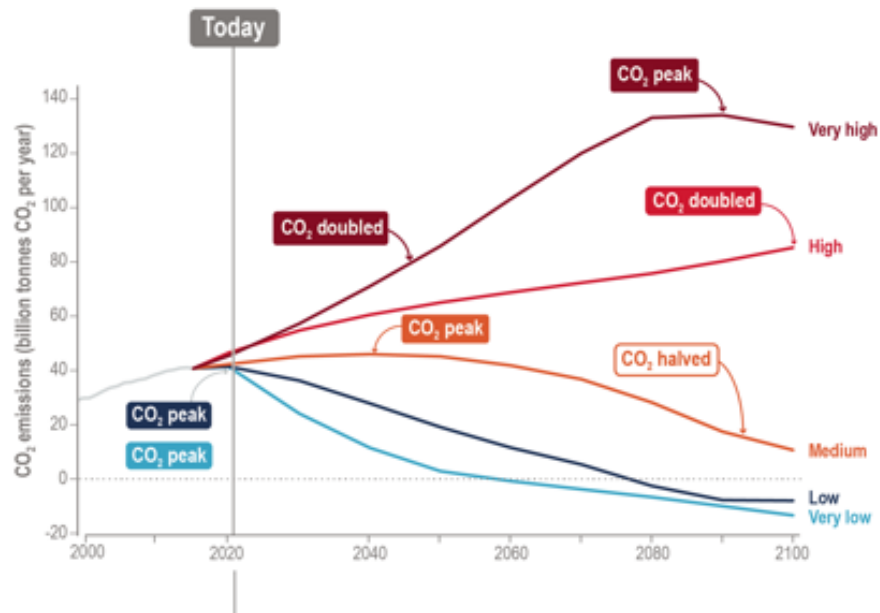




Bushfires and displacement, Australia (2019-20)



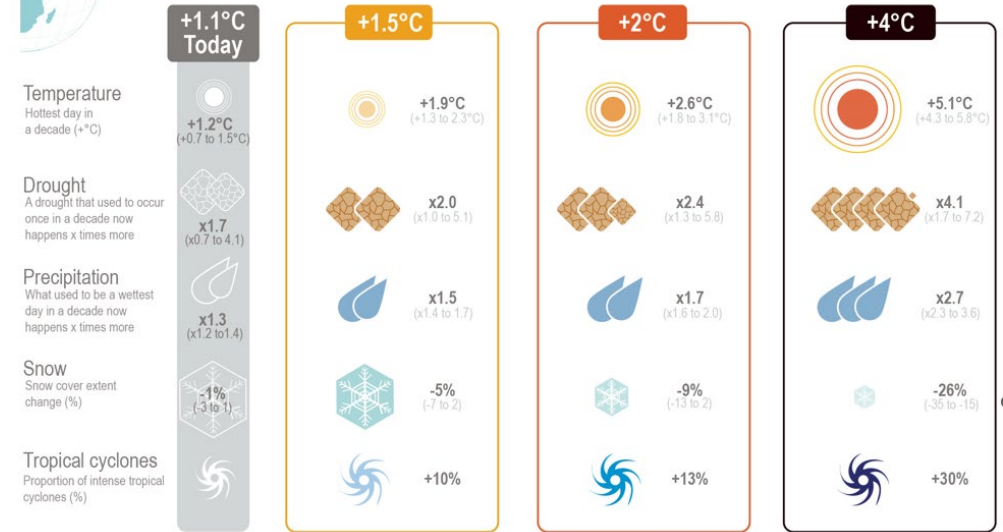
Berrara, NSW, during the bushfire emergency in January 2020. Photograph: Australian Red Cross.



Response of the climate system relative to 1850–1900

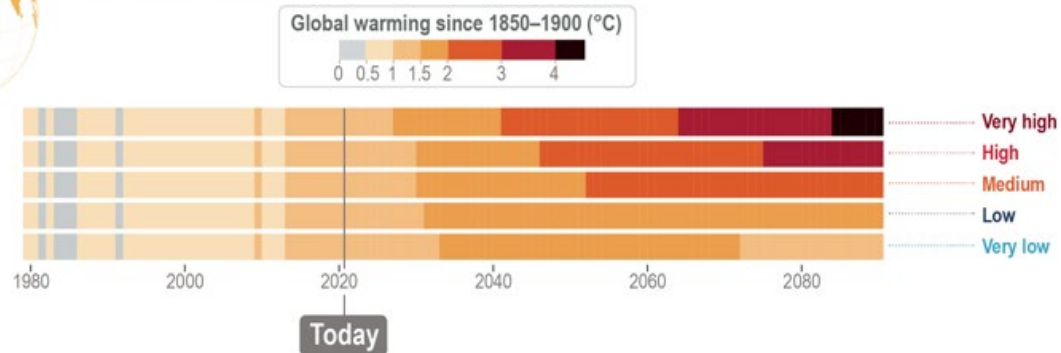
Many aspects of the climate system react quickly to temperature changes.

At progressively higher levels of global warming there are greater consequences (min/max range shown).

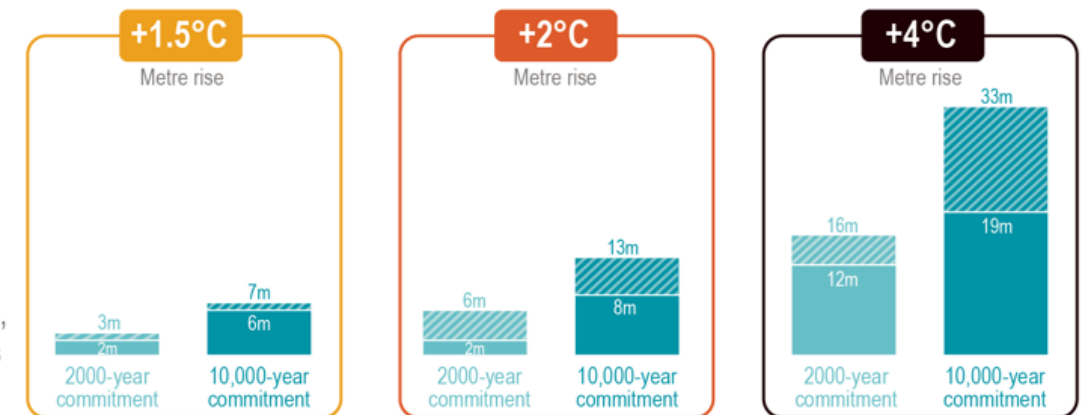


Effect on surface temperature

For temperature to stabilize, CO₂ emissions need to reach net zero.



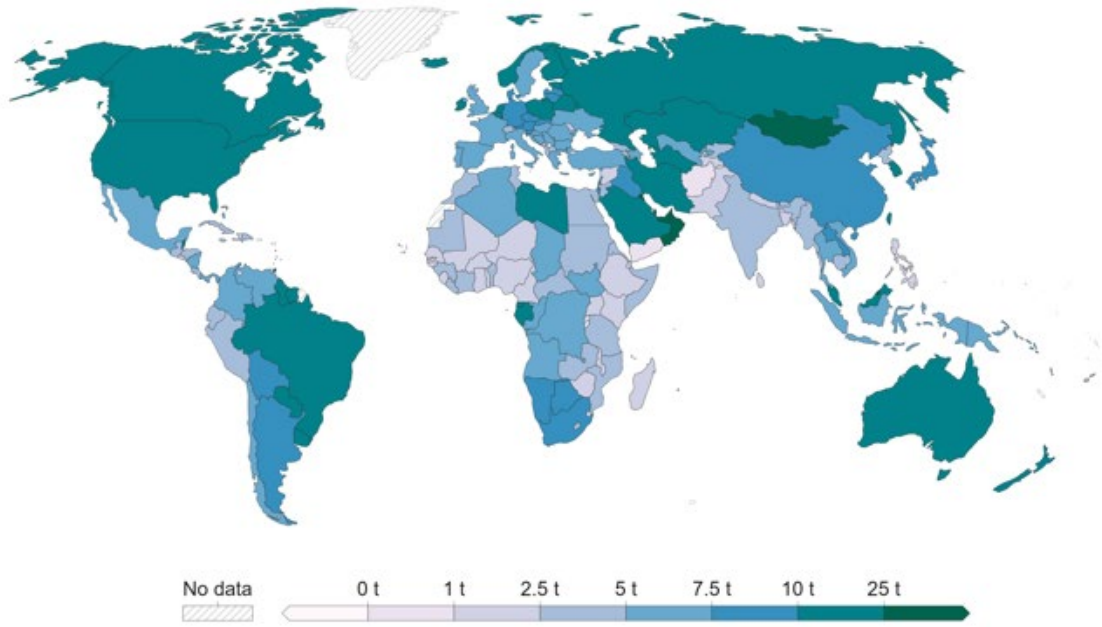
Sea level rise



Inequalities: who causes climate change, and who experiences climate vulnerability

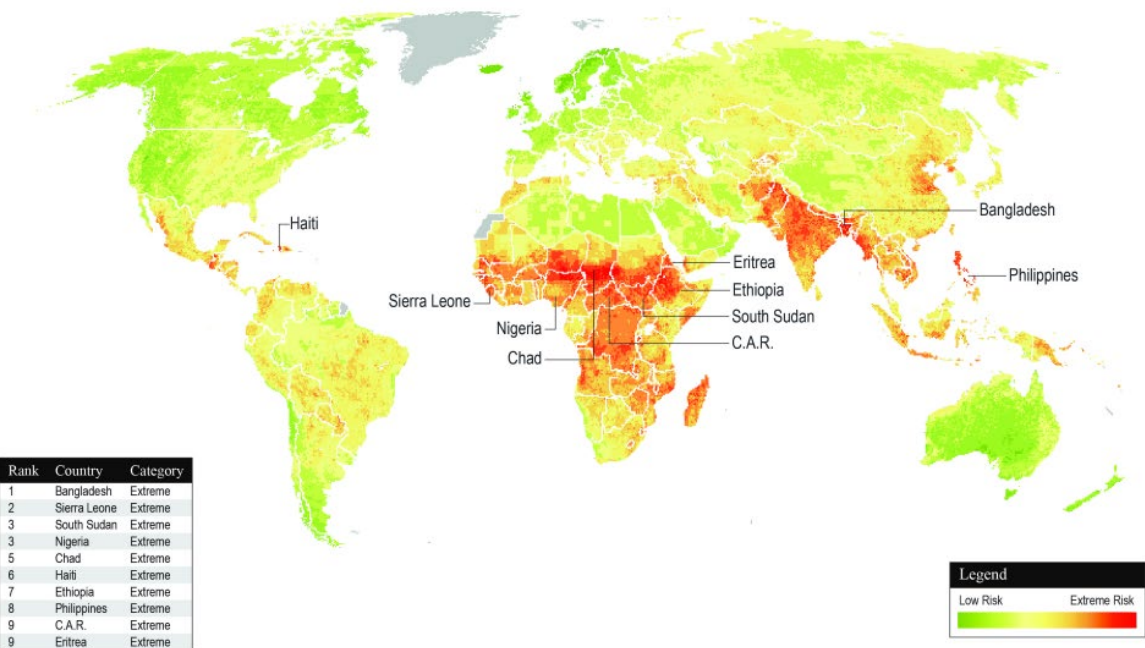
Per capita greenhouse gas emissions, 2021

Greenhouse gas emissions include carbon dioxide, methane and nitrous oxide from all sources, including agriculture and land use change. They are measured in carbon dioxide-equivalents¹ over a 100-year timescale.



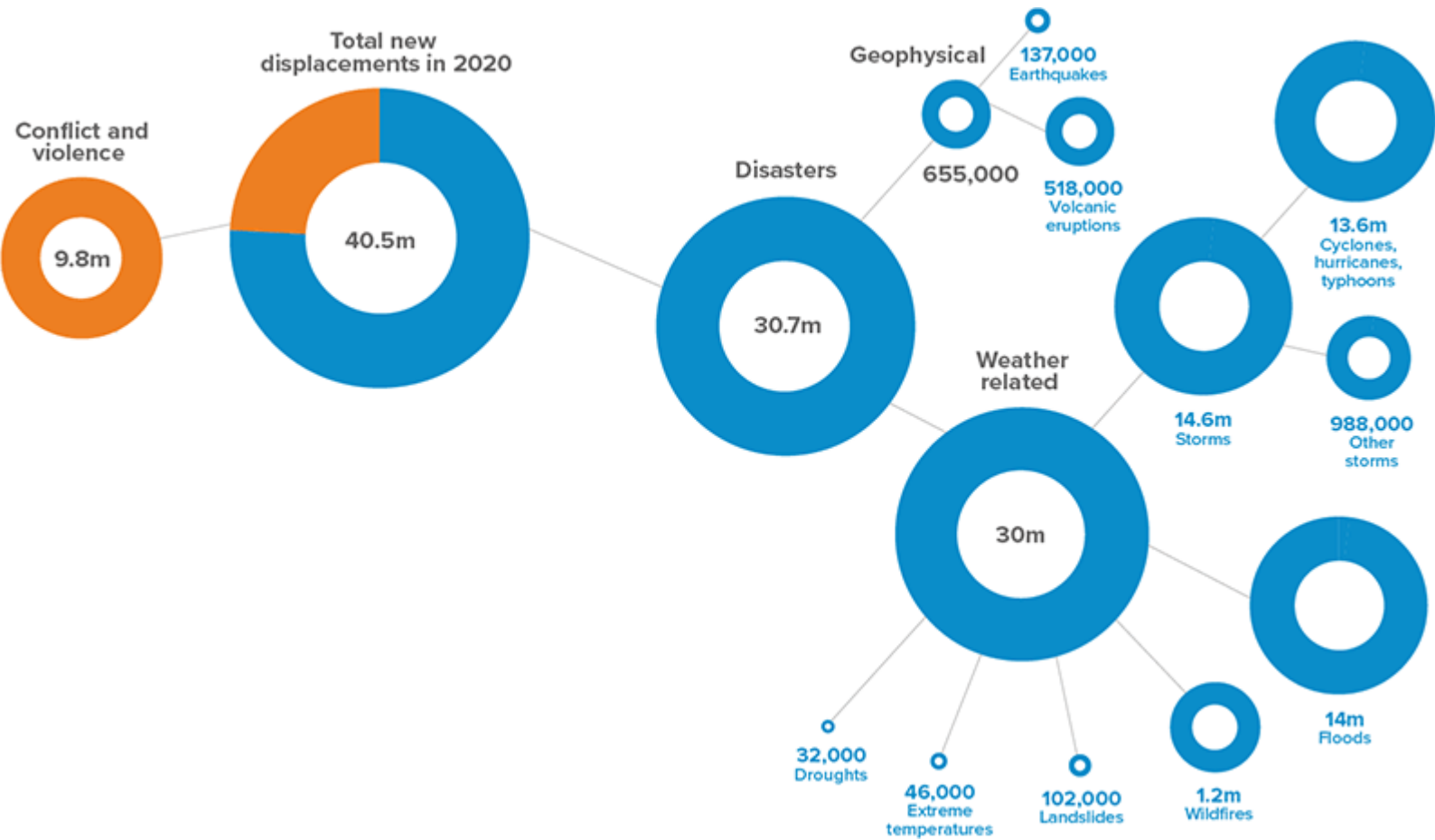
Source: Calculated by Our World in Data based on emissions data from Jones et al. (2023).
Note: Land use change emissions can be negative.
OurWorldInData.org/co2-and-greenhouse-gas-emissions • CC BY

Climate Change Vulnerability Index 2015



Rank	Country	Category
1	Bangladesh	Extreme
2	Sierra Leone	Extreme
3	South Sudan	Extreme
3	Nigeria	Extreme
5	Chad	Extreme
6	Haiti	Extreme
7	Ethiopia	Extreme
8	Philippines	Extreme
9	C.A.R.	Extreme
9	Eritrea	Extreme

Displacement

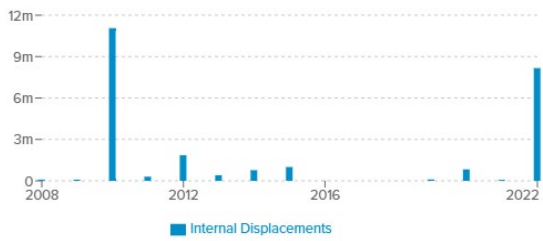


Country Profile

Pakistan

24.8m

Internal Displacements ⓘ (2008 - 2022)

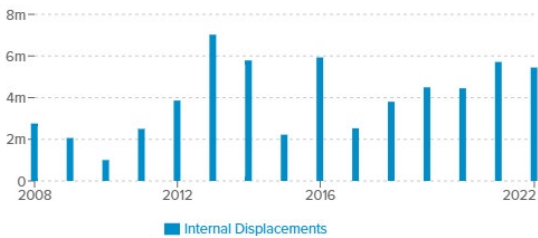


Country Profile

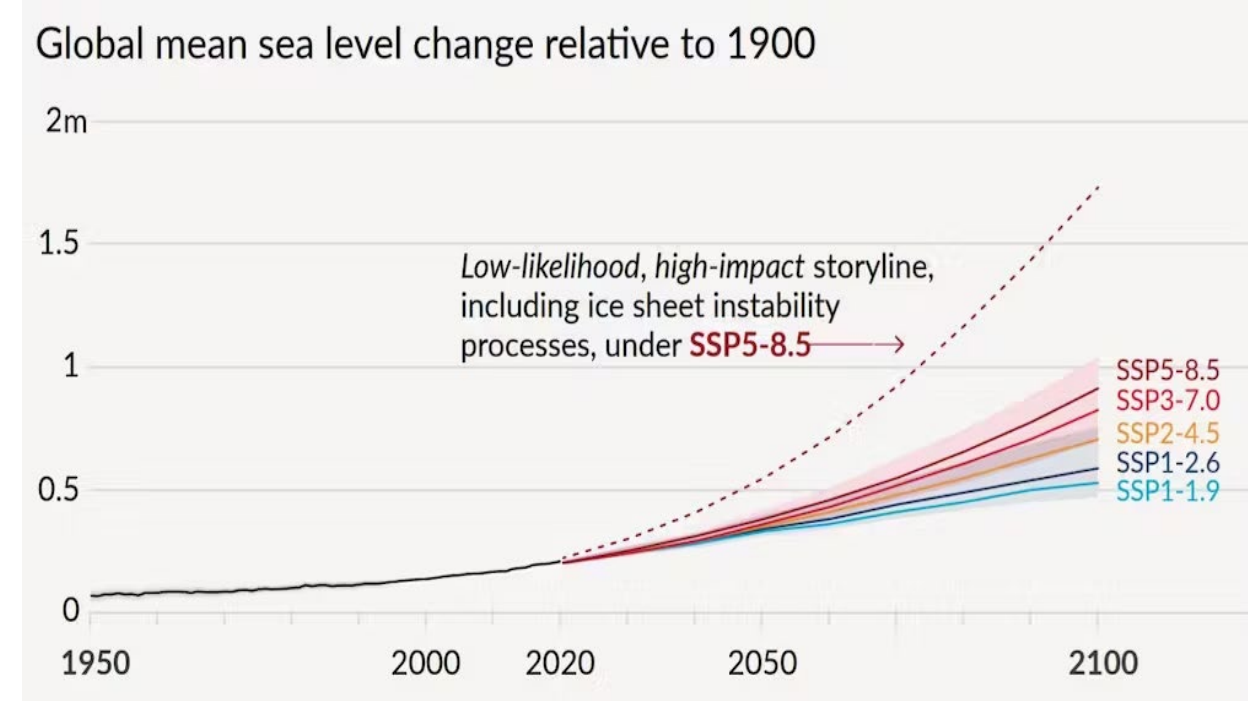
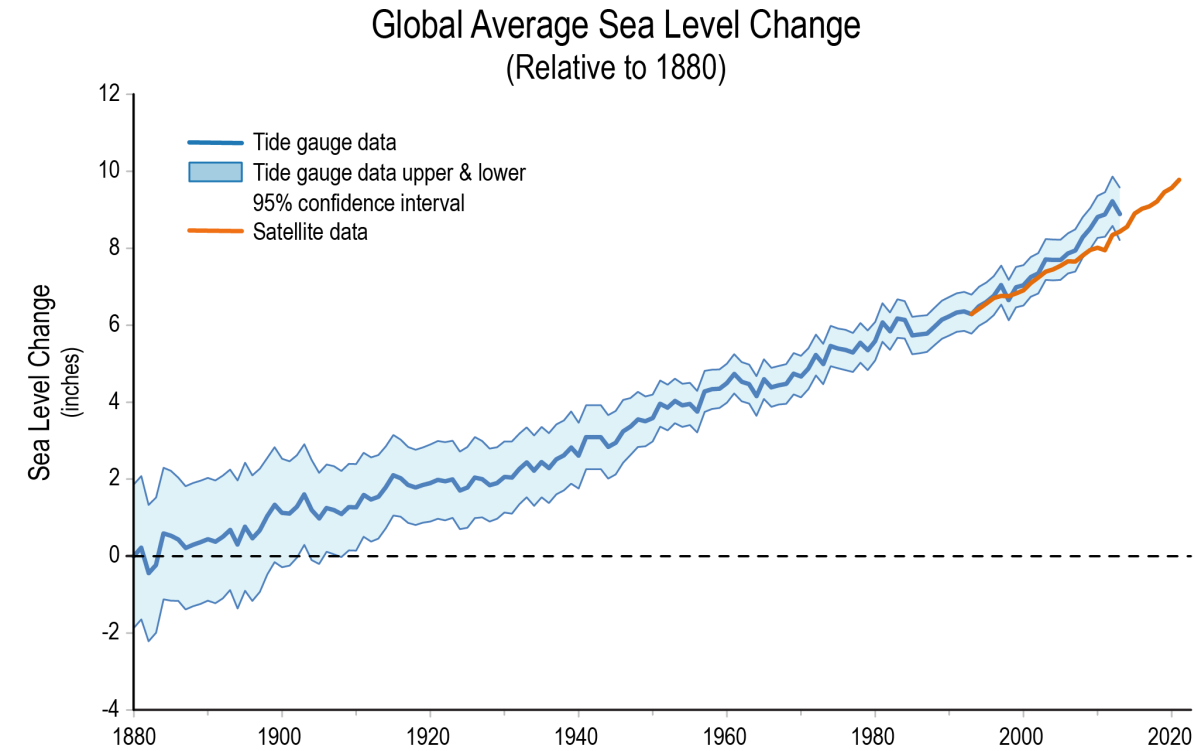
Philippines

59.6m

Internal Displacements ⓘ (2008 - 2022)



SLR assessments and projections



Sea level rise and adaptation

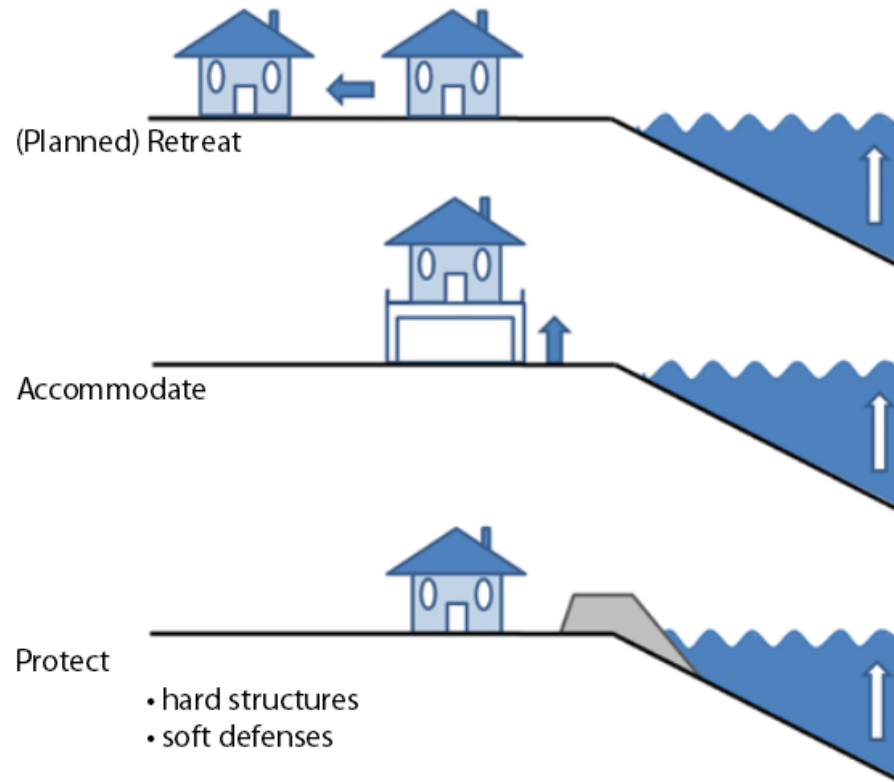
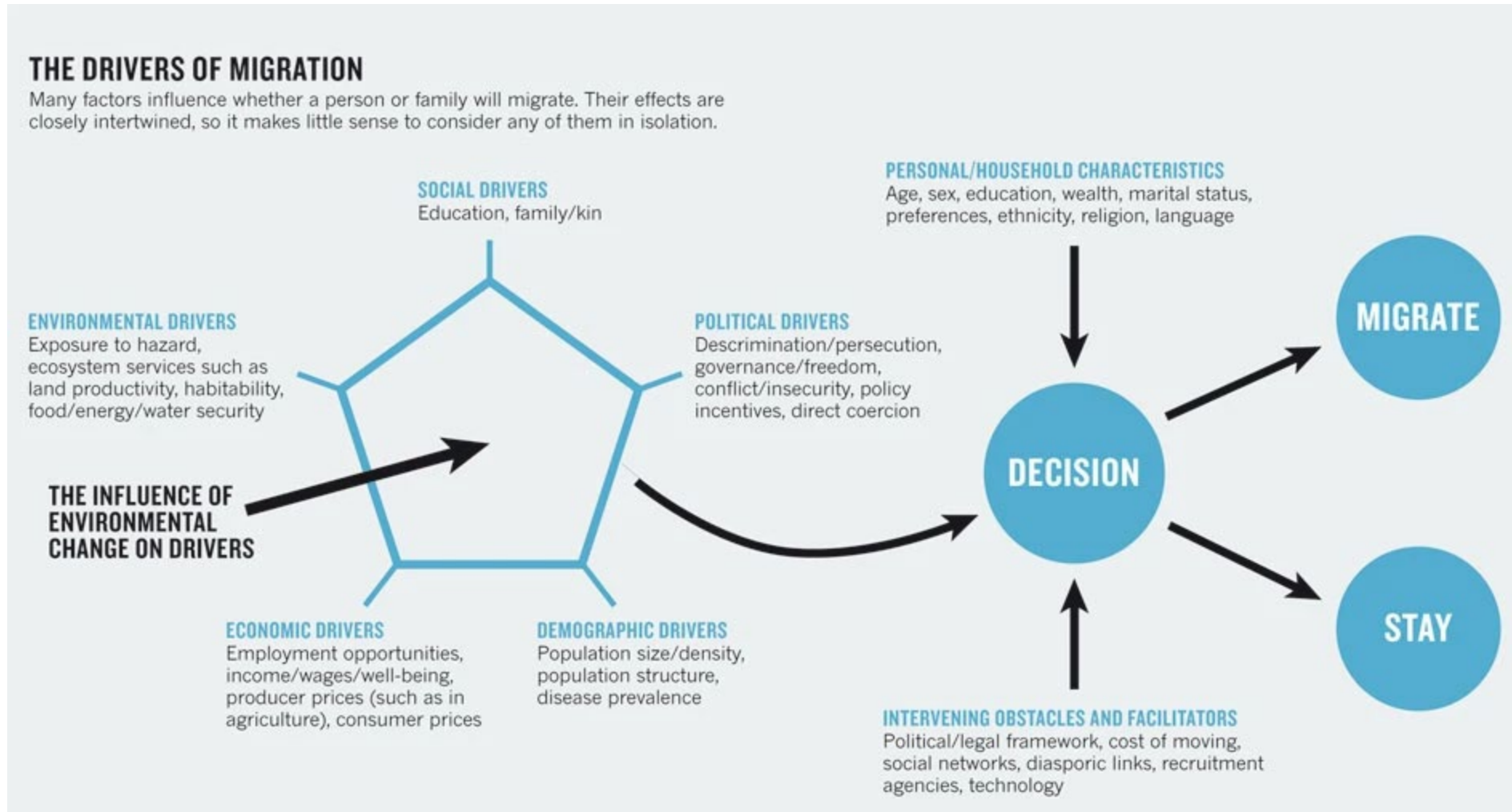


Figure 5. Generic adaptation approaches for sea level rise. After IPCC CZMS (1990)



Why will people move in a warming world?

It's complicated . . .



Who is a 'climate migrant'?

- **Environmental migrant** refers to “persons who, predominantly for reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently.” (IOM, 2014).
- **Climate refugee** is commonly used to describe forced migration in the context of climate and environmental change. However, this is not a legally valid term as the 1951 Refugee Convention does not recognize environmental factors as criteria to define a refugee.



- Ioane Teitiota sought protection in New Zealand from return to Kiribati due to the impacts of climate change
- In January 2020, the UN Human Rights Committee found that NZ did not violate Teitiota's right to life when they deported him
- BUT, they noted that climate change effects may expose individuals to a violation of their rights under the International Covenant on Civil and Political Rights – i.e. Article 6 (right to life) and 7 (prohibition of . . . inhuman or degrading treatment) - thereby triggering non-refoulement obligations of sending States.

<https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25482>

How many 'climate migrants'?

Climate change-related migration is forecast and anticipated rather than observable in migration statistics (Baldwin et al. 2014; Bettini 2017).

Controversial estimates:

- **No point quantifying** – there's no such thing as a climate migrant.
- **50 million** at risk of displacement due to cc by 2050 (El-Hinnawi 1985; Myers 2002).
- **150 million** environmental “refugees” by 2100 (Myers 1993)
- **200 million** by 2050 (The Stern Review 2006)
- **50-200 million** by 2080 (Nicholls 2006)
- **216 million** across six regions by 2100 (& 120 million by 2050) (World Bank, 2021)

Where?

Recent World Bank 'Groundswell' report (2021) states:

The scale of internal climate migration will ramp up by 2050 and then accelerate unless concerted climate and development action is taken.

<https://openknowledge.worldbank.org/handle/10986/29461>

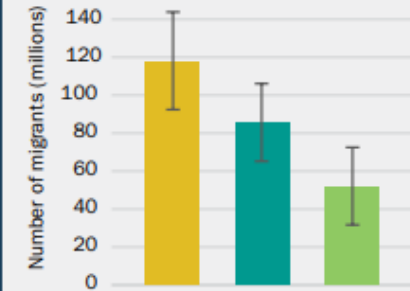
Figure 1: Projected number of climate migrants in Sub-Saharan Africa, South Asia, and Latin America under three scenarios, by 2050

PLAUSIBLE SCENARIOS

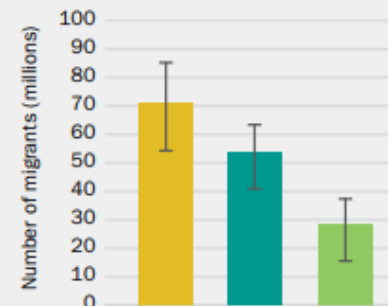
■ Pessimistic (Reference) ■ More Inclusive Development ■ More Climate-Friendly



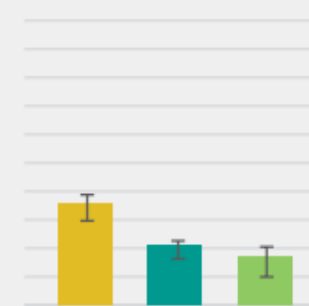
TOTAL FOR THE THREE REGIONS



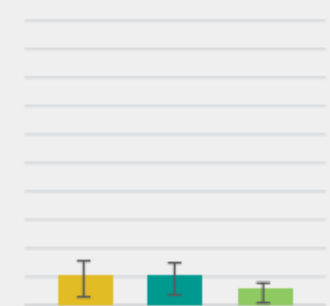
SUB-SAHARAN AFRICA



SOUTH ASIA



LATIN AMERICA



Note: The whiskers on the bars in the charts represent the 95th percentile confidence intervals.

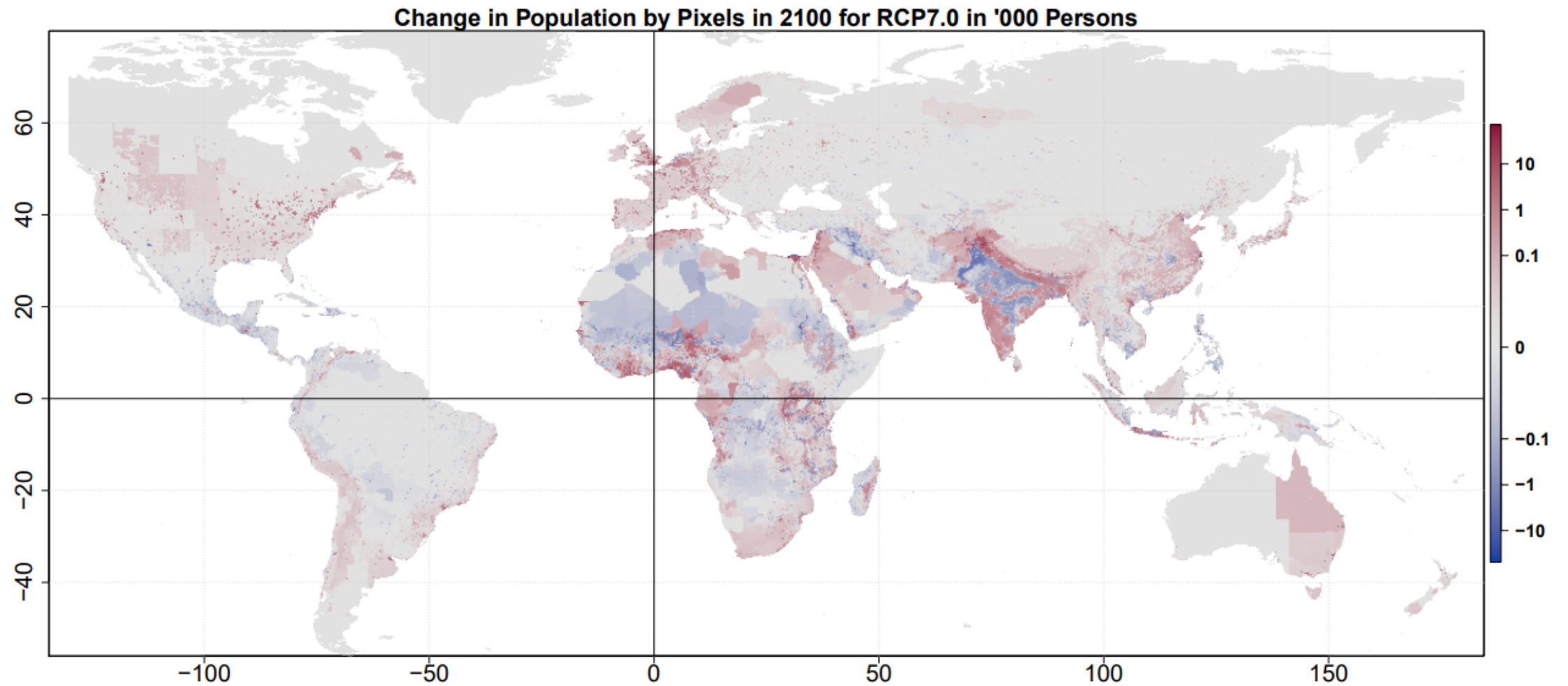


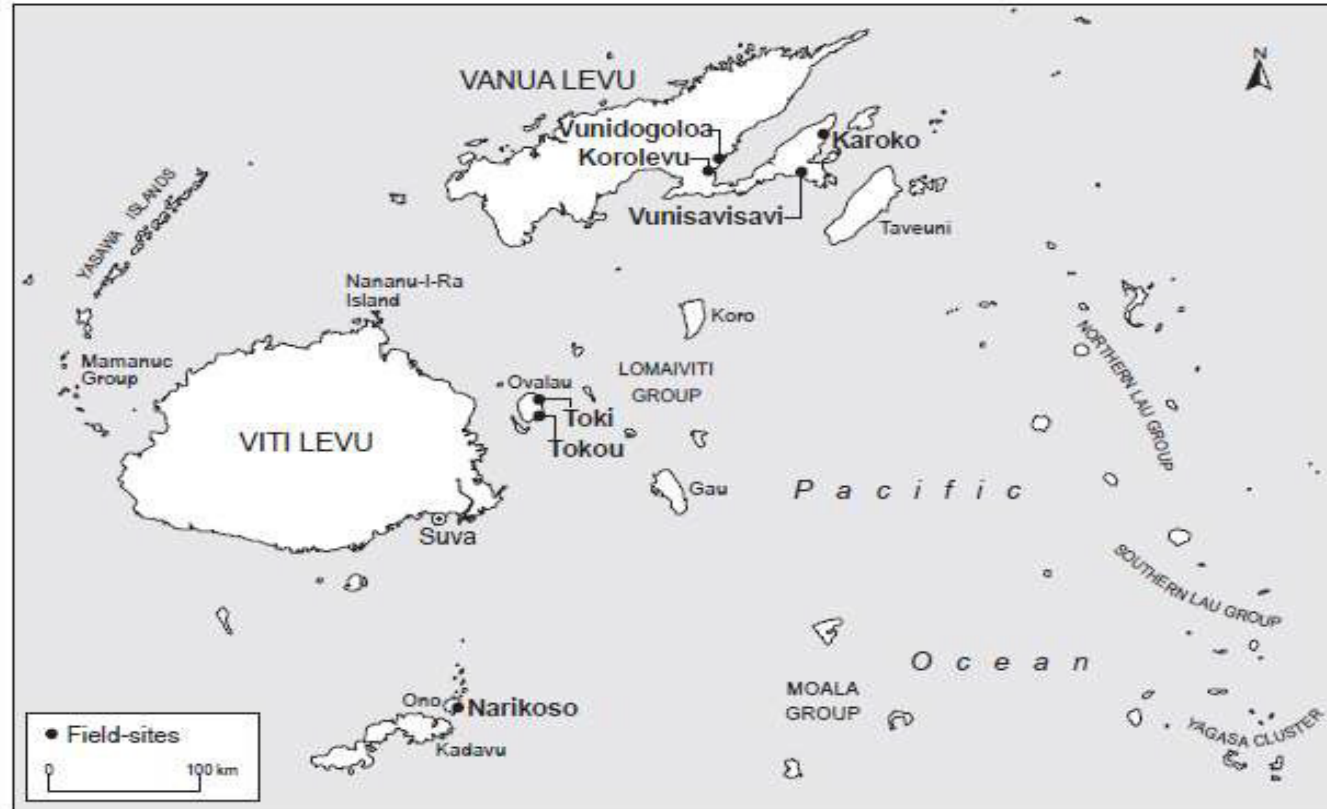
Figure: Change in Population in RCP7.0 in 2100 in '000 People

Crisis or adaptation?



Fiji - research sites

- Vunidogoloa
- Korolevu
- Vunisavisavi
- Karoko
- Narikoso
- Tokou
- Toki
- Nagigi



ACKNOWLEDGEMENTS

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Merewalesi Yee (University of Queensland)

Asaeli Tamanitokula (Cakaudrove Provincial Council)

Turaga ni Koro: Vunidogoloa - Sailosi Ramatu

Planned relocation in Fiji - Vunidogoloa



Old site/new site

Kenani



1. EXPERIENTIAL AND COMMUNICATED RISKS



“Climate change is a natural disaster. We realise that this is happening in our coastal-lying areas; maybe a good option is to relocate”.

2. ADAPTATION OPTIONS

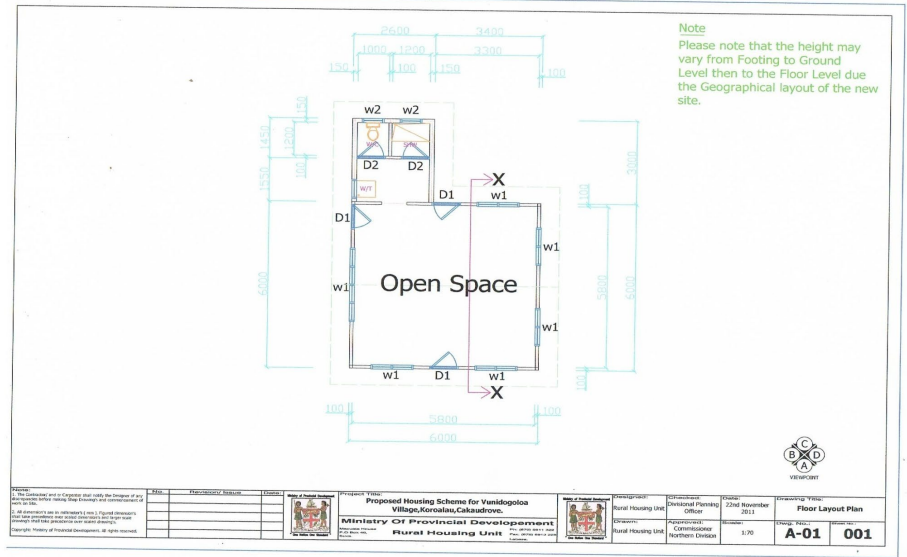


- Forefathers identified inland site
- Histories of mobility
- Relocation accepted as an opportunity, following extensive community discussions
- Co-benefits (near road, closer to schools, closer to health centre, farmland where men work)

3. ASSETS AND RESOURCES

- Bilateral and donor contributions

Agency	Amount (\$)	Component
Ministry of Rural and Maritime Development & DISMAC	310,000	Housing Construction and other materials (30 Houses – 24 x 16)
Ministry of Local Government (Department of Environment)	200,000	Site establishment and preliminary works
Ministry of Agriculture	15,938	Livestock farming and breeding stocks
Ministry of Fisheries & Forestry	60,398	Aquaculture Livelihoods Project
Ministry of Labour	20,082	NEC Volunteers, Pineapples, Copra Drier
Water Authority of Fiji	87,090	Water supply systems
LWRM	54,868	Drainage systems
Sub-total (external)	748,376	
Community Contribution	239,852.89	Timber provided: free issue arrangement
TOTAL	988,228.89	



3. ASSETS AND RESOURCES cont.

- Mataqali land; spring-water; natural resources (old-growth forest; logged to raise funds); labour



4. POLITICAL WILL AND AGENCY

AGENCY ACROSS SCALES

- One lead mataqali (clan) in the village
- Turaga ni Koro (village headman) and village Chief
- Involvement of village committees
- Community consensus (built over time)
- Government ministries and donors; provincial government



Uneven impacts over time (longitudinal insight - 2015-2023)

Benefits: livelihood diversification, access to health services, improved water/sanitation, reduced exposure to environmental risks.

But

- Adverse health impacts (e.g. diet, housing quality)
- 'Loss' of customs and culture
- Eroded place attachment (e.g. no longer close to fishing & burial grounds)
- Men close to farms, women far from sea
- Ongoing logging to raise funds (e.g. church construction)
- Tropical Cyclone risk



Immobility – ‘trapped’ or choosing to stay



Serua village

Impact, Vulnerability & Adaptation

Critical Vulnerable sector/ system	Impacts	Adaptation Options I	Adaptation Options II	Adaptation Option III	Adaptation Option IV	Adaptation V	Difficulties/ barriers to adaptation
Coastal zone	1. Coastal flooding 2. Coastal erosion 3. Salt water intrusion 4. Retreat of shoreline	Identification of setback areas and no-build zone	Managed realignment of coastal structures/ activities	Building of seawalls, beach nourishment	Introduction of new building design and salt tolerant crops	Relocation of population and economic activities	Limited synergies and collaboration amongst line agencies managing resources and developing in the coastal zone
				Vulnerable Communities/ Area	Sector		
				Muaninuku	Potential relocation		
				Kadavu Koro	Potential relocation		
				Narikoso(with CCU)	Potential relocation		
				Waisomo (Tikina Ono)	Potential relocation		
				Suweni	Potential relocation		
				Korotasere	Potential relocation		
				Vatukura	Potential relocation		
				Wailevu	Potential relocation		
				Muani	Potential relocation		
				Naqaravutu	Potential relocation		
				Somosomo	Potential relocation		
				Lamini	Potential relocation		
				Vunivesi	Potential relocation		

<https://www.fijivillage.com/news/Six-communities-in-Fiji-already-relocated-and-42-in-urgent-need-of-moving--Kamikamica-rx5f48/>

Six communities in Fiji already relocated and 42 in urgent need of moving – Kamikamica

By Mansi Chand

Wednesday 17/05/2023



Photo:Fiji Government

Six communities in Fiji have already been relocated and 42 are in urgent need of moving in the next decade because of the climate change threats.

This has been highlighted by Deputy Prime Minister and Minister for Trade, Manoa Kamikamica while speaking at the 2nd European Union and Indo Pacific Forum in Stockholm, Sweden.

The Deputy Prime Minister says we have no choice but to relocate our people which is a painful and costly process that needs careful planning, consultation and coordination.



Planned Relocation Guidelines

A framework to undertake climate change related relocation



Standard Operating Procedures for Planned Relocation in the Republic of Fiji



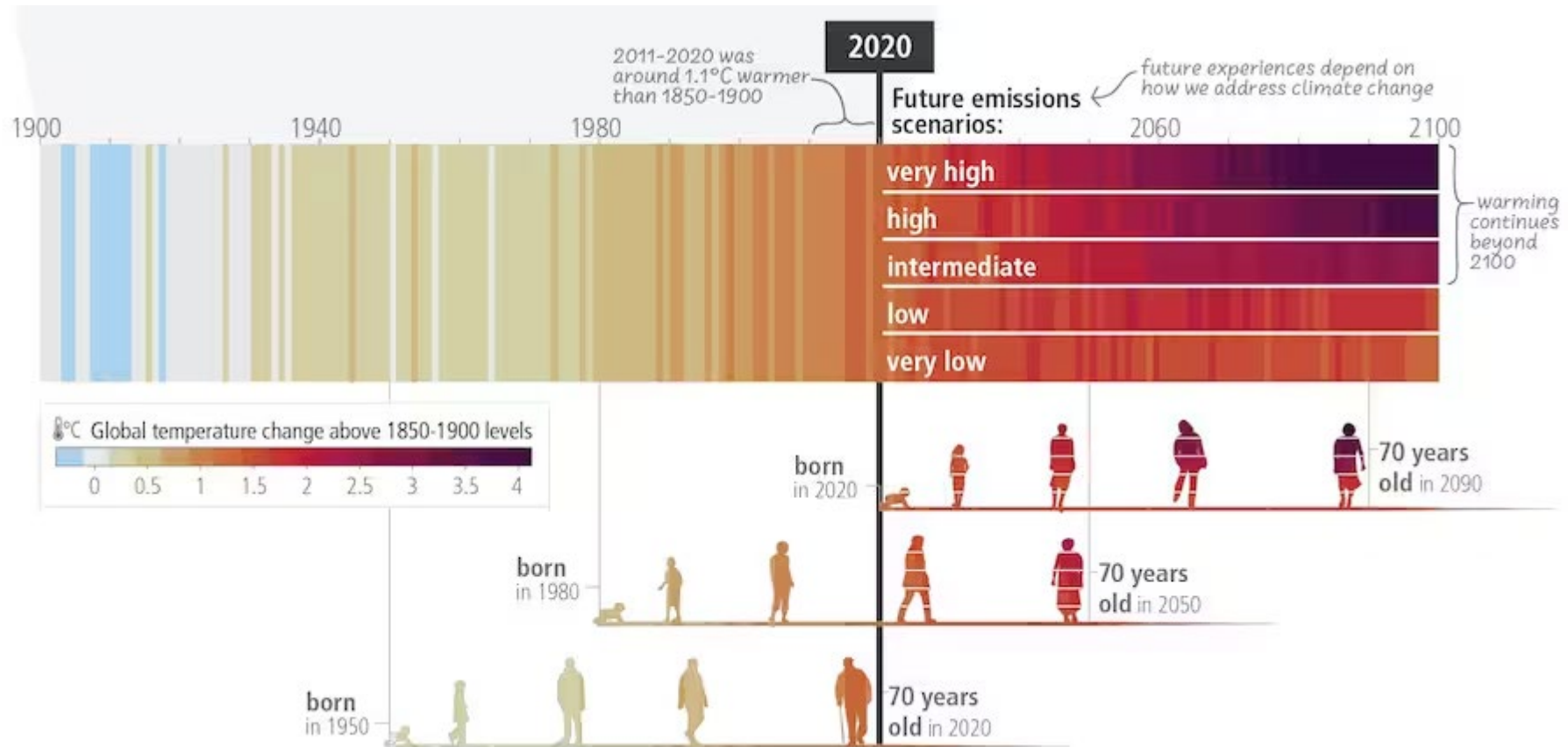
CLIMATE RELOCATION OF COMMUNITIES TRUST FUND

Financial Management Policy Guideline



MARCH 2023

Intergenerational inequalities



1m SLR

CLIMATE
CENTRAL

COASTAL RISK SCREENING TOOL

LAND BELOW 1.0
METERS OF WATER

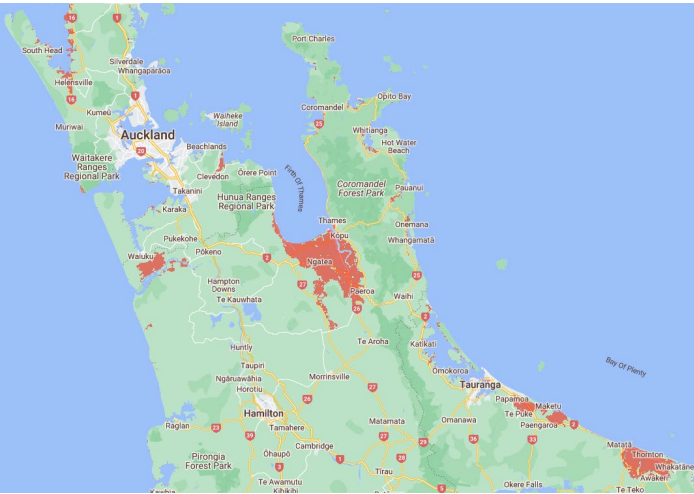
A water level of 1.0 meters above the high tide line could be reached through combinations of sea level rise, tides, and storm surge.

DETAILS AND LIMITATIONS

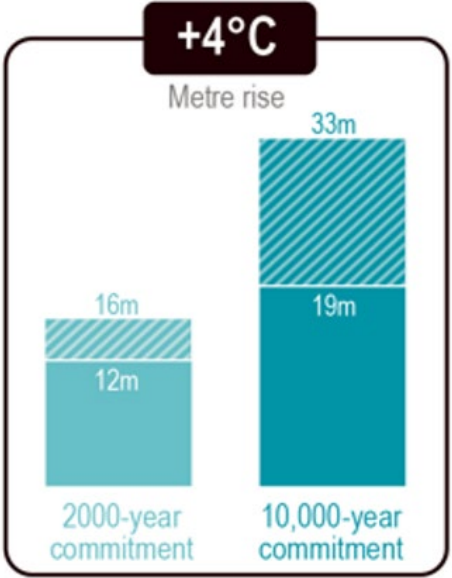
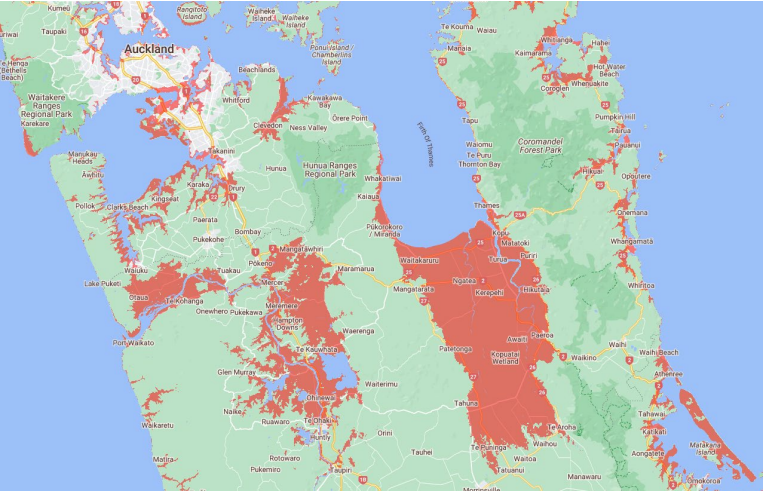
WATER LEVEL

1.0 m

Meters ☒ Feet

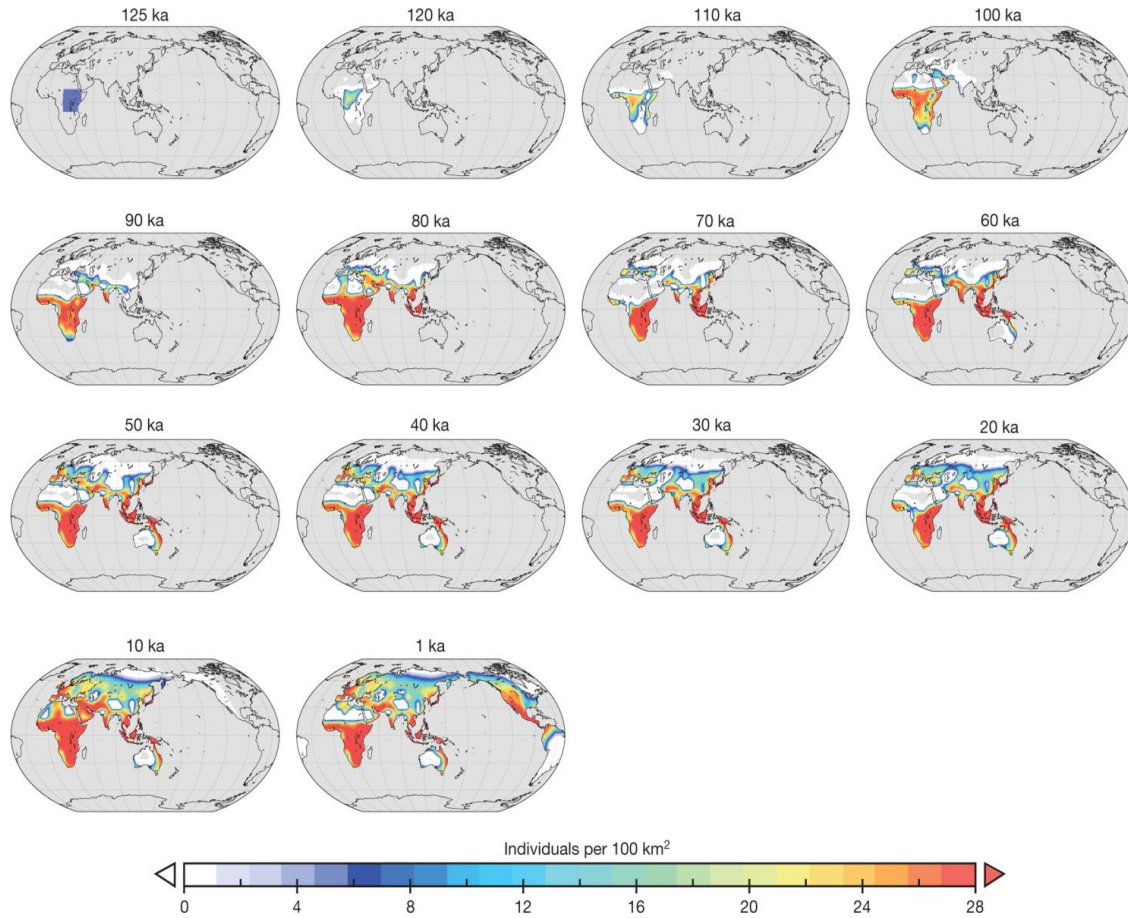


10m SLR?



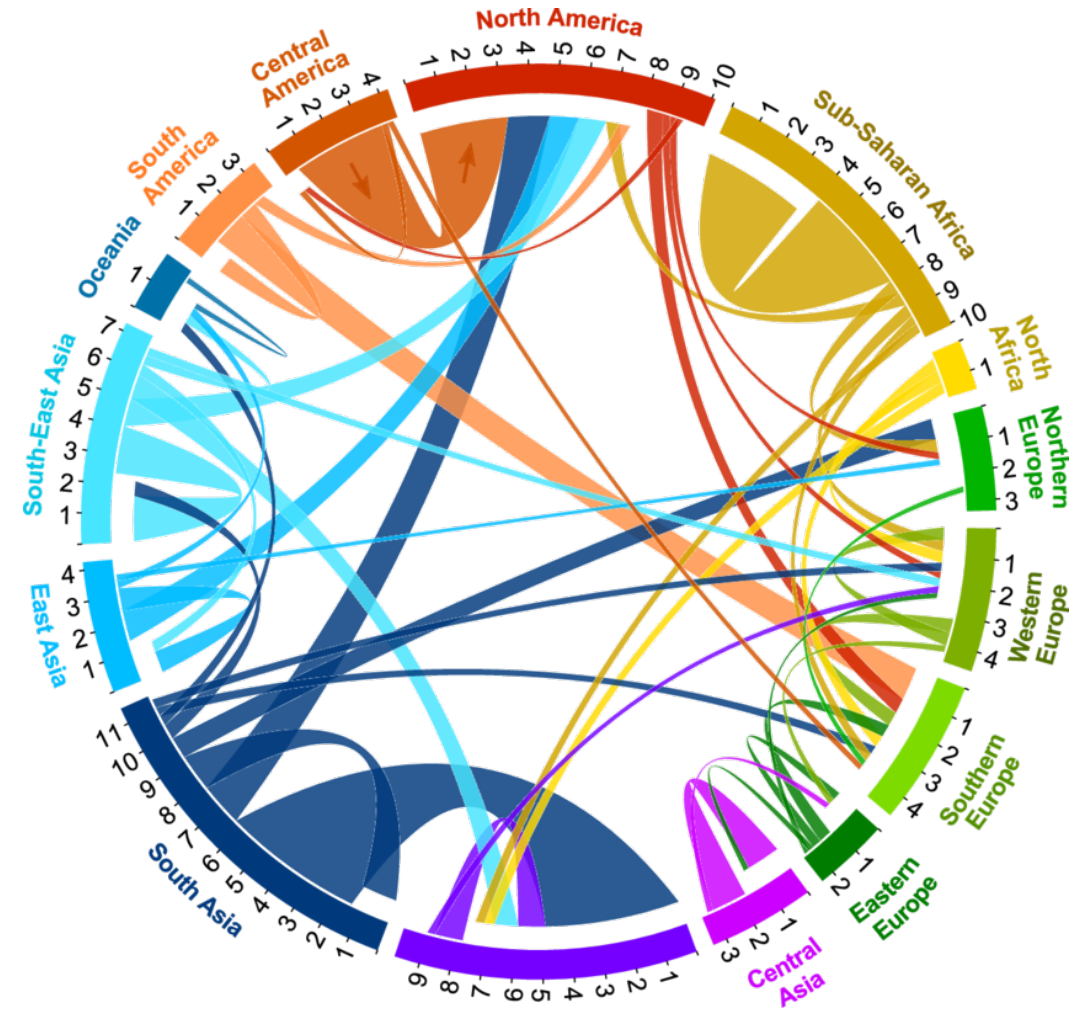
Migration is 'normal' . . .

Late Pleistocene human dispersal



Timmermann et al. (2016) Nature, DOI:[10.1038/nature19365](https://doi.org/10.1038/nature19365)

Global International Migration Flows



Abel & Sander (2014) Science, DOI:[10.1126/science.1248676](https://doi.org/10.1126/science.1248676)

. . . . but there are injustices and inequalities in climate-related mobility and migration

- Global (causes and consequences of climate change)
- Regional (uneven distribution of climate risks and adaptation options/intersection with socioeconomic factors that drive migration)
- Local (diverse experiences of climate-related migration and mobility)
- Intergenerational threats to habitability of places