

# Infrastructure and Settlements

Key findings for the Pacific from the United Nations Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6) on Impacts, Adaptation and Vulnerability



CHANGES



**More heavy rainfall events and severe tropical cyclones** are impacting infrastructure



**Projected increases in extreme sea level events** is putting critical infrastructure at risk



**Incorporating adaptation into national policies**

can reduce infrastructure risk

Adaptation options for



people



infrastructure



coastal ecosystems



**RAISING**

**dwelling and key infrastructure**

can reduce flooding impacts

can help save lives, livelihoods and ecosystems



**Mangrove planting and beach nourishment**

protects coastal infrastructure

**PLANNED INLAND RELOCATION**

**of communities and infrastructure**

will help to reduce future risk



ADAPTATION



## RESPONSE OPTIONS

**Incorporating adaptation into national policies can reduce sectoral infrastructure risk.** For example, developing appropriate planning guidelines for tourism development, coastal setbacks (prohibiting development in high-risk coastal areas) and environmental impact assessments. Enforcing building codes which consider impacts from sea level rise can also help make new developments less impacted by future climate-related risks.

**'Accommodation'<sup>9</sup> measures such as the raising of dwellings and key infrastructure like coastal roads above ground level have been implemented to reduce the impacts of projected climate and disaster risks.** For example, in the most populous islands of the Tuamotu atolls, French Polynesia, where between 48 and 98% of dwellings have already experienced flooding since the 1980s, elevated houses with floors built 1.5 m above ground level are already being implemented as an adaptation strategy.<sup>10</sup>

**Beach nourishment (artificially adding sand to beaches) has been implemented in some small islands to reduce erosion or to protect critical assets (e.g., roads) that are in risk zones.** This, plus nature-based solutions such as mangrove planting can serve as an alternative to hard protection (e.g. seawalls) for coastal protection. However, islands that have limited sand stocks and sediment extraction can aggravate risks and/or accelerate ecosystem degradation if implemented without the necessary precautions. Further, nature-based adaptation responses may become less effective as climate change progresses.<sup>11</sup>

**Migration, including planned resettlement, is increasingly occurring in small islands to intentionally respond to or prepare for climate change impacts.** For example, Kiribati's "Migration with Dignity" strategy supports the planned relocation of citizens abroad. However, strong cultural connection to land and uncertainty about life in receiving countries means that many remain opposed to permanent migration. Migrant agency and choice in decisions about whether to move, where, when and how is an important determinant of success for this strategy. \*\* Furthermore, domestic relocation inland is often preferred over international migration. Two case studies of community relocation in Fiji highlight that including all social groups in the relocation planning process will strengthen adaptation outcomes. Government frameworks can also guide the relocation process and foster success as is seen in the Government of Fiji's relocation framework.

9 Here, 'accommodation' refers to adaptation strategies where infrastructure is modified to co-exist with climate impacts, allowing communities to stay in flood-prone areas. 10 15.5.2  
11 15.5.4  
12 15.5.3

### Future situation

Reduced habitability due to increasing: sea level rise, wave strength, erosion, flooding and storm surges. Impacting on human populations and infrastructure [15.3.4.9.2]



### Ecosystem-based measures



### Hard protection



### Accommodation (e.g. raising of dwellings)



### Planned relocation



### Reactive responses

The Fijian community of Vunidogoloa made the decision to relocate in response to regular inundation during high tides. After 'protect' strategies e.g. constructing seawalls, and 'accommodate' strategies e.g. Raising houses on stilts failed to prevent regular flood damage to buildings and the entire community eventually relocated as a 'last resort' adaptation measure to a site within customary land [15.3.4.6]

### Proactive responses

The Navunievu community in Fiji has mandated that every young adult building their family home in the village should do so upslope rather than on the regularly flooded coastal flat where the existing village is located. Over the next few decades, this will result in the gradual upslope migration of the community, an example of autonomous adaptation. Such creative community-grounded solutions hold great promise for future adaptation on small islands, where they are undertaken inclusively. [FAQ 15.2]