

Kiribati Adaptation Project Phase II: Climate Information for Risk Management



Client: Government of Kiribati

Location: Kiribati

Duration: 2007 - 2010

Services: Climate and coastal extreme analysis, infrastructure design conditions, climate change and sea-level rise assessment, development of risk-based tools, training and capacity building

The Kiribati Adaptation Program – Phase II (KAPII) was funded by the World Bank, Ausaid and NZAid. Phase II was developed to be the Pilot Implementation phase of the Program, and was implemented from 2006 to 2011. It aimed to demonstrate a systematic diagnosis of climate-related problems, design and implement cost-effective adaptation measures and continue the integration of climate risk awareness and responsiveness into economic and operational planning.

NIWA were involved with one component of Phase II, to develop design parameters for extreme rainfall, drought and coastal conditions and how these extreme conditions may change over the period to 2100 due to different climate change scenarios to support risk-based infrastructure design and development planning.

For the meteorological aspects, the project involved the analysis of all rainfall data collected on the various Kiribati Islands and derivation of high intensity rainfall depth-duration-frequency values. The influence of different climate change scenarios on the intensity of extreme rainfall for future periods was also assessed. For each of the climate records an analysis of drought duration average

recurrence interval was also carried out for each island along with the joint recurrence interval of drought intensity and duration. The information was developed in to a tool to enable the Kiribati Government to easily access, use and apply the information.

For the coastal aspects, detailed joint probability curves of extreme waves and water levels were derived for both lagoon and ocean shorelines using wave and hydrodynamic models. This information was then developed in to a tool which allowed site specific calculations of wave set-up, run-up and overtopping for a range of natural and engineered shorelines on Tarawa and also permitted an assessment of the impact of different climate change scenarios and timeframes on these design conditions.

Training workshops were held in Kiribati to build capacity within Kiribati Government Departments in using the tools and application of the information within adaptation planning. The tools and information derived are now being used to ensure infrastructure is adequately designed to take account of both present day extreme conditions and how these may change over the potential lifetime of the asset.