

Goal of Approach:

The Federated States of Micronesia (FSM) is currently subject to increasing sea-level rise and sea surface temperatures, a development that is expected to increase over the next decades. The Loss and Damage in Vulnerable Countries Initiative funded by the CDKN and coordinate by the United Nations University for Environment and Human Security (UNU-EHS), aims to assess the loss and damage already occurring as a result of climate change in eight countries around the world. Impacts of climate change can differ across the different countries; the focus of this case study is to look at the impacts of coastal erosion.

The case-study of loss and damage on Kosrae, FSM thus aims to assess the **Loss and damage associated with the adverse impacts of coastal erosion on housing in Kosrae, The Federated States of Micronesia**. The research is carried out by means of both quantitative as well as qualitative methods and involves household surveys, in-depth interviews and focus group discussions. The results will provide a thorough understanding of the loss and damage already occurring.

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Main elements of the implementation strategy

Coastal erosion is a significant problem on Kosrae where the majority of the inhabitants live in low-lying areas close to the sea. This study can help address specific areas where households are most prone to suffer from coastal erosion, both the result of extreme weather events and more slow-onset processes. The FSM already acknowledges the increasing negative impacts of climate change. Various recent policy documents in the FSM highlight this fact, such as; the Nationwide Climate Change Policy (2009), the National Energy Policy and State Action Plans (2010), and the National Action Plan to Combat Land Degradation (2011). The state of Kosrae is also the only state in the FSM that has a Climate Change Bill in place. This study can help specify the specific areas where households on Kosrae and the state need support to combat climate change impacts in relation to coastal erosion on people's housing conditions. It also enhances the understanding of what adaptation measures households have already undertaken, and the impacts of those measures.

Targeted beneficiaries

This study will enhance the current knowledge on the loss and damages households on Kosrae suffer as a result of coastal erosion and the adaptation measures they have undertaken. The study will therefore provide a thorough understanding of how vulnerable households and areas of Kosrae can be best supported to combat the impacts of coastal erosion and diminish the loss and damage households suffer in the future. This information can be used to further propose courses of action that need to be undertaken in order to counter these impacts in the future, both by means of national policy-making as potential international support.

Any significant lessons learned

The majority of the survey respondents (86%) on Kosrae indicated that they have experienced coastal erosion over the past 20 years. Of these 86%, 63% indicated this impact was severe and 24% indicated the coastal erosion they had experienced had had a limited impact. The coast-line has retreated, beaches have disappeared, people have suffered loss of land and damage to houses, and coastal roads are at risk of being washed away.

Housing and properties

Of those who have experienced negative impacts of coastal erosion, 39 % reported damage to their house. Residents' houses are often damaged because of floods but also because of gradual coastal erosion. Land has been lost because of coastal erosion and this has increased the impact of storms and floods. The shoreline is often right alongside the house rather than 10 meters away from the house 15 years ago.

Extreme weather events

Besides the more gradual changes, a 60.4 % of the surveyed households have also suffered adverse effects of extreme weather events such as storm surges and 'high tides'. Houses were flooded and damaged, both the exterior as well as inside of the house. Many crops planted and economic trees, such as banana, breadfruit and coconut have died as a result of salt water intrusion.

Adaptation

About half the respondents (50.3 %) indicated they have taken measures to adapt to the threat of coastal erosion. The most popular measures are:

- Building of seawalls
- Elevating housing
- Reinforcing houses with cement walls
- Planting trees along the coastline
- Moving upland

Despite these measures, 95% of those respondents who indicated they face problems of coastal erosion and have carried out adaptation measures still suffer from the consequences of climate change. The respondents indicated that the seawalls they have built are insufficient to protect against ongoing sea level rise, coastal erosion and storm surges. Even when residents build the foundation of their house of cement rather than wood, the continuous flooding will still seriously damage their houses and deteriorate its construction. Survey respondents who did not carry out any adaptation measures indicated that this was mostly a result of lack of financial means (50 %), knowledge (32%), or skills (28%) to do so. Only 2% of the respondents who have suffered from an extreme weather event didn't carry out any adaptation measures because it wasn't considered a priority, which highlights coastal erosion is perceived to be a very serious threat on the island

The case-study findings will be shared (along with the other seven case studies) at the COP 18 in Qatar 2012. The lessons of this case-study will thus be shared with policy makers at the national, regional and international level. It will provide insights into the current state of loss and damage in Kosrae and in addition will help inform decision makers regarding appropriate measures to avoid loss and damage and help those most vulnerable.

Resource requirements

This study has aimed to assess the loss and damage already occurring and the adaptation measures people have carried out. More resources are needed to adequately combat the severe coastal erosion taking place on the island and diminish the impacts of further sea-level rise and increased weather events. Comprehensive capacity building is needed at all levels of Kosrae to further help diminish the loss and damage households' experience.

A large majority of the respondents, 86% indicated they suffer from coastal erosion and approximately half of the respondents have indicated they have taken measures to adapt. Yet, 95% of these respondents indicated these measures were insufficient and they still suffer from coastal erosion. Resources are therefore highly needed to help residents and the island of Kosrae in general carry out adequate measures. In order to do so, a comprehensive study on coastal protection measures, aided by international experts, are necessary for the different areas of Kosrae. This entails expertise from local sources, international coastal engineers and e.g. modeling assessments in order to map current coastal erosion by comparing historical aerial photographs with current satellite images.

Potential for replication or scaling-up

This case-study has strong potential for replication and scaling up. We would wish to see similar studies carried out in islands in the region to help them address the impacts of loss and damage. In addition, this study could be the start of a larger framework to help combat loss and damage of coastal inhabitants on Kosrae.

Any additional information

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