CNMI Climate Change Adaptation Training – Vulnerability Assessment

| TARGET | Current Status of Target (natural/social resources) | Threats (non- climate) | Root Causes of Non- Climate Threats | Climate Events | Exposure | Sensitivity | Potential Impact | Adaptive Capacity | Resource Vulnerability | Community Vulnerability | Actions | Agencies Responsible |
|--------|--|--------------------------------------|---|---|----------|-------------|---------------------|----------------------|---------------------------|----------------------------|---|--|
| | | | | | | | | | | | Support water quality improvement projects | CUC, DEQ, NRCS, DPW, Soil water conservation districts |
| | | | | | | | | | | | protect seagrass areas through spatial planning | NOAA, CRM, DFW, USCG, |
| | 20 years ago: fair 10 years ago: poor Now: fair | Fishing Pressure Water Quality | Population Increase Depressed Economy Unsustainable Coastal Development | 1. Sea Surface Temperature - impact on life cycle, habitat, seagrass ecology, coral bleaching | 1. all | 1. moderate | 1. high | 1. low | 1. high | 1. medium | Support Garapan CAP | CUC, DEQ, NRCS, DPW, Soil water conservation districts, NOAA, CRM, DFW, USCG |
| | | | | 2. rainfall changes - habitat/poor water quality | 2. all | 2. moderate | 2. high | 2. medium | 2. medium | 2. medium | Community outreach - support size matters campaign | NOAA, DEQ, CRM, DFW |
| FISH | | | | 3. extreme weather - damage to coral, poor water quality | 3. most | 3. moderate | 3. high | 3. medium | 3. medium | 3. medium | Implement size restrictions | DFW |
| | | | | 4. ocean acidification- habitat degradation, coral/sea grass life history | 4. all | 4. moderate | 4. high | 4. medium | 4. medium | 4. medium | Ensure gill net ban is enforced | DFW |
| | | | | 5. sea level rise - change in currents, coral can't photosynthesize | 5. most | 5. moderate | 5. high | 5. medium | 5. medium | 5. medium | Improve existing gillnet restrictions and permitting | DFW |
| | | | | | | | | | | | Research how 5 CC threats may influence reef fish life history, biology, physiology | DFW, WESPAC FIN, NOAA |
| | | | | | | | | | | | Future: explore alternative food source, incomes sources | |

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| Coastline | 20 years ago: fair - but constantly changing 10 years ago: poor - but constantly changing Now: fair - but constantly changing Changes due to natural sea level fluctuations and erosion processes, possible influence of removed structures from lagoon | Removal of offshore structures or dredging that impacts sediment budget & transport Intensive recreation | Engineering to aid navigation Possible tourism incentives (aesthetics) | Sea level change Extreme events (storms) | All - 90- 100% | High/Severe - the target area is already impacted by natural climate variations | High - the resource is fully exposed and unprotected and shoreline is highly sensitve | Medium/Low: There is high capacity to inform adaptation actions through research but reahabilitation, relocation and structural solutions are difficult due to: 1) money, and 2) cross jurisidctional decision making. The resource inteself adapts to changes. In the past this has been acceptable and community has adapted. Sea level change could complicate this. | High: Based on anwers to other questions this resource has a high vulnerability. There is potential for adaptive capacity to increase, especially if "soft engineering" solutions look feasible in a 20 year time frame | High: If future changes impact or limit tourism infrastructure there is a high vulnerability | Extensive research and modeling to inform longer term plans There is no recommended action aside from expensive engineering to reduce sensitivtiy. Full exposure cannont be reduced. Engineering could be 20-50 years in the future if change/erosion becomes extreme. Recreational activities can shift to accommodate changes. Crucial is an ongoing conversation between federal, local agencies and hotel association | CRM, Zoning, USACOE, HANMI, SOPAC |

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| | | | | | | | | | | high - due to health hazards | awareness campaign to inform compliance | DEQ, CUC |
| | Now: fair and improving | Age of iil pipes/materials cont Deterioration la Saltwater infiltration stu ju Leaks in Piles sy Misr | lack of funding illegal connections lack of prosecution stuck with judicial system Mismanaged facility | | Moderate | | | | dium medium | | replace degraded pipes with possible new material that is less corrosive | CUC |
| water | | | | | | | | | | | enforce regulation and compliance for sewer hook- ups (legally) | CUC, DEQ |
| ire- waste | | | | sea level rise rain events storms | | severe | high | medium | | | educate the community about what things should look like | CUC, DEQ |
| Infrastructure- wastewater | | | | extreme weather | | | | | | | more capacity in court systems to address violations | CUC, DEQ, NOAA, EPA, AG |
| <u> </u> | | | | | | | | | | | increase funding / collection from new legal sources | CUC |
| | | | | | | | | | | | prepare for possibly more frequent maintence of lifts and other infrastructure (7 instead of 10 yrs) | CUC, OIA, |

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| | now: poor to fair and deteriorating | lack of capacit maintenance sandand water blockages poor design pollution from sewage people see it a: | | | All | moderate | high | medium | medium | medium | educating the community about the stormwater system, "do's" and "don'ts", and reporting | DEQ, DPW |
| stormwater | | | funding | | | | | | | | figure out whose mandate it is for maintainence and ensure funding | DEQ, DPW |
| Infrastructure - s | | | awareness | | | | | | | | add ponding basins to decrease the amount of water that enters the storm pipe | CRM, ACOE, DPW, DEQ |
| Infra | | | people don't see it as a problem | | | | | | | | upgrading infrastructure - above ground surface channels instead of pipes | DPW, DEQ |
| | | | | | | | | | | | adding infiltration areas | Zoning, DPW, DEQ, CRM |

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| tesources | 20 years ago: | exploitation | lack of funding | sea level rise - intrusion due to | trusion due to hanges in vater table torms: amaged | Moderate | high | medium | medium | high | initiate education and outreach focused on water resources of the island | CUC, DEQ, NMC-CREES |
| ding Water R | fair/good 10 years ago: fair/good now: fair/poor | o: theft | theft lack of | changes in water table storms: damaged systems | | rise - frequent | | The resource is not self- adaptive Has a fair amount of adaptive capacity provided there is effective management | | high dependence - everyone needs water - fair/low adaptive capacity | increase support for enforcement on illegal connection on water | CUC, AG, Public Health |
| Drinking | | | | | rainfall - | | | | | | increased enforcement to deal with contamination | DEQ, DPW, AG, Public Health |