GLOBAL ENVIRONMENT FACILITY (GEF) PACIFIC RIDGE TO REEF PROGRAMME

Developing evidence-based tools for Pacific Island resilience

ENVIRONMENTAL STRESS REDUCTION – SCIENCE AND TECHNOLOGY

BASELINE ASSESSMENTS AND MONITORING

National GEF International Waters (IW) and GEF STAR projects will be generating scientific data through two main processes. Firstly, through monitoring of GEF Focal Area objective indicators and the GEF Tracking Tool system. Secondly, through various national monitoring and evaluation programs. Both processes will contribute knowledge to the national and regional GIS meta-databases and to the development of the State of the Coasts reports.

The GEF Tracking Tool system monitors specific indicators for each of the GEF Focal Areas that project activities will be working to address. In the IW Pilot Projects there are five relevant expected environmental stress reduction results areas shared across the 14 participating countries, highlighted in the table below.

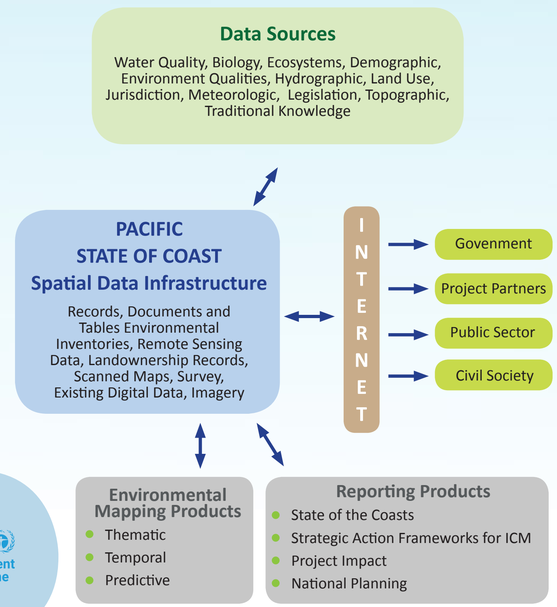
Activity	Focal Area objective	Indicator	Method
Improved onsite sanitation systems, dry-litter piggeries, eco-sanitation toilets	Municipal wastewater pollution reduction	N,P,BOD kg.ha.yr	Salicylate Method (Ammonia), Ascorbic Acid Method (Orthophosphate), 5 Day BOD
Improved onsite sanitation systems, dry-litter piggeries, eco-sanitation toilets	Pollution reduction to aquifers	kg.ha.yr	As above and volume calculations
Revegetation and riparian restoration	Restored habitats, including wetlands	ha restored	Line intercept (quadrat and transect) - % plant cover and species diversity
Coastal and Fisheries Management Plans	Conserved/ protected wetlands, MPA and fish refugia habitat	ha applied	mapping and site assessments
Improved catchment management measures	Catchment protection measures	ha under improved catchment management	Catchment condition indicators, Catchment plan implementation indicators

The Regional Project Coordinating Unit (RPCU) provided technical assistance and supported the development and conduct of baseline assessment and in formulating the monitoring plans of the respective national IW R2R projects. In particular, the RPCU assisted in developing specific data collection and analysis procedures, standardized reporting processes and facilitating technical training where necessary to support timely and harmonized monitoring and reporting.

ENVIRONMENTAL INFORMATION MANAGEMENT SYSTEM

The R2R spatial data infrastructure is all open source and systems can be deployed into any of the national projects with zero license needed, making it cost-effective. The platform is user-friendly for non-technical people and allows multiple users updating one map without the restriction of expensive GIS software. The R2R regional database will be regularly populated with all the necessary R2R datasets and provide easy extraction of data for analyses. The data can also be constantly updated as information becomes available and uploaded. From the outset the GIS platform will be designed as part of the overall information technology architecture of the programme and will include one regional and 14 national sites.

Coupled with a digital map, the platform will allow users to see locations, events, features, and environmental changes, showing layer upon layer of information such as environmental trends, soil stability, at risk coastal sites, water quality data, remediation sites, habitat biodiversity hotspots and land use areas.



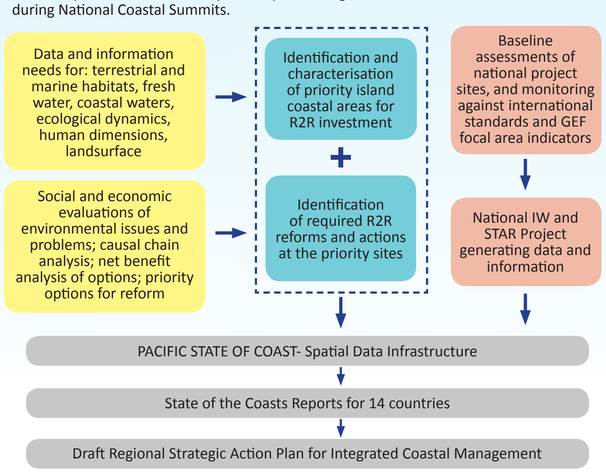
STATE OF THE COASTS

Informing the development of national State of the Coasts reports an evidence-based planning approach that incorporates scientifically and objectively sound procedures for identifying and characterising priority island coastal areas for R2R investment will be developed and demonstrated nationally. The State of the Coasts reports will be used nationally as planning tools and will be also used to inform the development of national inter-ministerially agreed Strategic Action Frameworks for ICM.

The characterisation procedure will identify data and information needs relating to the biological, environmental and socio-economic status of national coastal sites from the perspective of vulnerabilities associated with disaster risk, climate variability, and extremes in weather. Initially an analysis of existing national and regional data will be undertaken and in situ data collection activities conducted where significant gaps in knowledge occur. The process will be fully transparent and comprehensible to all parties, both technical and political, and based as far as possible on objective quantifiable criteria and indicators.

A parallel activity will design and demonstrate a diagnostic approach to guide the identification of required R2R reforms and actions. The developed diagnostic approach will be applied at priority locations to produce diagnostic reports for approval by national Inter-Ministry Committees.

This information in addition to that generated via the 14 national IW and STAR Projects from their respective baseline and monitoring activities will be compiled and managed in one regional and 14 national GIS and meta-databases of coastal area information for longer-term R2R planning. These datasets will be used to inform the national State of the Coasts reports that will be fully developed through national consultations and delivered during National Coastal Summits.



ENVIRONMENTAL STRESS REDUCTION MEASURES AND BENEFITS IN THE GEF IW R2R PILOT PROJECTS

MEASURE	COUNTRY	ESTIMATED BENEFIT
Municipal Waste Pollution Reduction		
Constructed wetland	Nauru	749kg.yr TN
Improved on-site wastewater treatment systems	Niue, Tonga	104kg.yr TN
Improved on-site wastewater treatment systems	Kiribati	955 TN kg/yr
Dry litter piggeries	Tuvalu	6866kg.yr TN
Restored Habitat		
Investigate drought, salt tolerant species Restore riparian buffer zones Revegetate watersheds Establish endemic plant species nursery	Nauru, Samoa, Vanuatu	4258ha
Catchment Protection Measures		
Improved catchment management	Cook Islands, FSM, Niue, PNG, Marshalls, Fiji, Solomons, Palau	2295ha
Conserved or Protected Wetland		
Protected fish refugia and wetlands	Solomon Islands, Tonga	290ha

STRESS REDUCTION MEASURES TRIALLED IN THE GEF STAR R2R PROJECT

MEASURE: Biodiversity Conservation

- Biodiversity baseline surveys of terrestrial and marine fauna & flora
- Establish indicator species monitoring program
- Rapid Ecosystem Services Assessments

MEASURE: Sustainable land use practices

- Baseline studies on agriculture related impacts on aquatic and inshore marine ecosystems (Cook Islands)
- Sustainable land use practices for sediment and pollutant control
- Revegetation with suitable hardwood, fruit tree species and local crop species (Tuvalu, Fiji)

MEASURE: Species conservation plans

- Assessment and prioritisation of keystone species
- Species recovery plans and species management plans

MEASURE: Improved protected area management (marine and terrestrial)

- Ecosystem zoning system for terrestrial and inshore marine areas (CI)
- Analysis of economically important lagoon and reef species (CI)
- Resource uses and habitat maps
- Baseline assessments for socioeconomic, biophysical, biodiversity, and potential threats
- Fisheries resource assessment

MEASURE: LMMA

- Science based prioritisation of sites and/or site expansion
- Marine ecosystem and coral reef health assessments
- Inshore resource utilisation and catch surveys (Nauru)
- Locally appropriate marine conservation techniques
- Formalised marine management plans with M&E and enforcement

MEASURE: Land Use Planning

- Biophysical, demographic and socioeconomic assessments
- Identification and definition of sensitive habitat areas
- Land, water and resource indicators developed and assessments conducted

MEASURE: Water quality, use and supply protection

- Rainwater harvest systems
- Improved solid waste removal and storage
- Algal bloom assessment and remedial action
- Flood protection measures

MEASURE: Integrated Landscape Management

- Land cover characterisations and land use mapping (Nauru, Fiji)
- Land use capability assessments (Fiji)

MEASURE: Revegetation of coastal wetlands

MEASURE: Good management practices applied in existing forests

- Priority conservation value forest identified and protected
- Reforestation and enrichment planting

MEASURE: Restoration and enhancement of carbon stocks in forests and non-forest lands

- Restoration of damaged forests and farmlands