Harnessing Geospatial Knowledge to Advance Sustainability in the Pacific

SECRETARIAT OF THE PACIFIC REGIONAL ENVIRONMENT PROGRAMME (SPREP)

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Secretariat of the Pacific Regional Environment Programme

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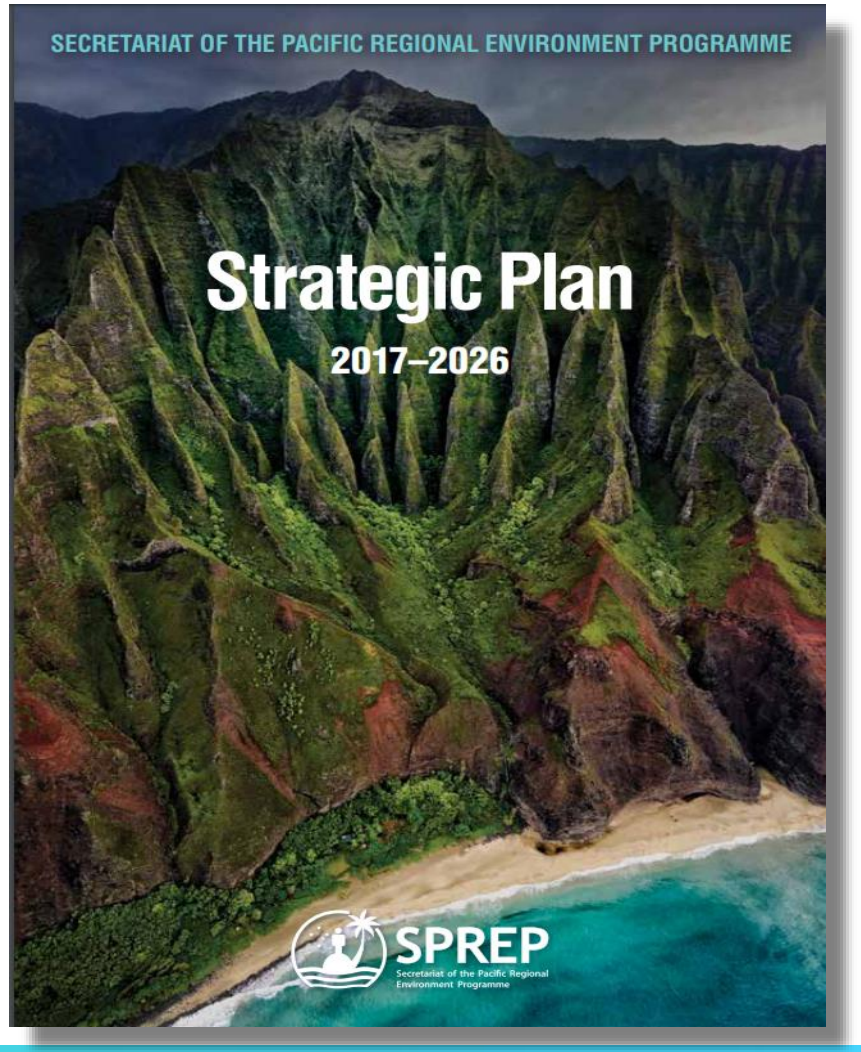
25th November 2024

Strategic Priorities

- **Vision:** A resilient Pacific environment sustaining our livelihoods and natural heritage in harmony with our cultures.
- **Principal Concern**: Climate Change
- **Cross-cutting Theme:** The Ocean

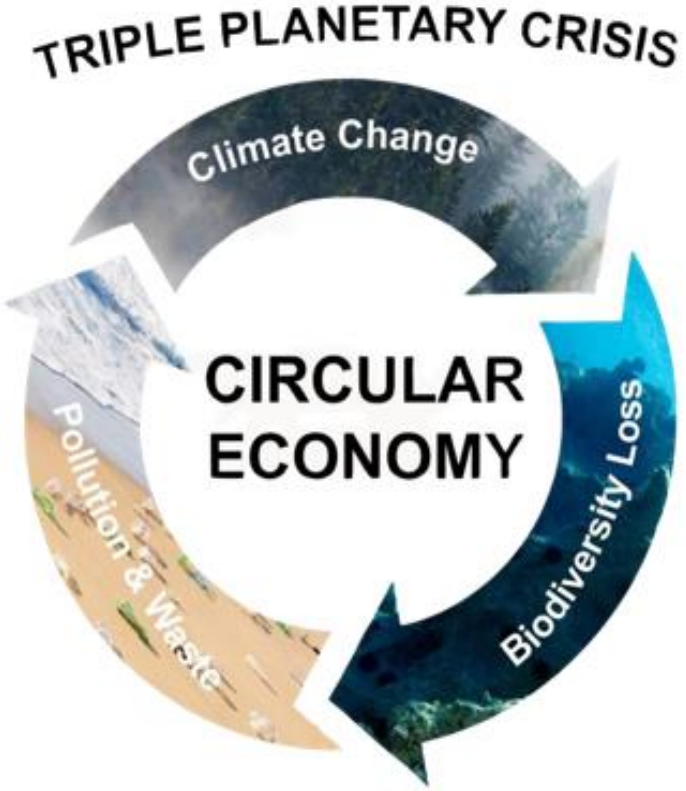
SPREP Strategic Priorities:

✓Climate Change Resilience
✓Islands and Ocean Ecosystem (Biodiversity Protection).
✓Waste Management and Pollution Control
✓Environmental Monitoring and Governance



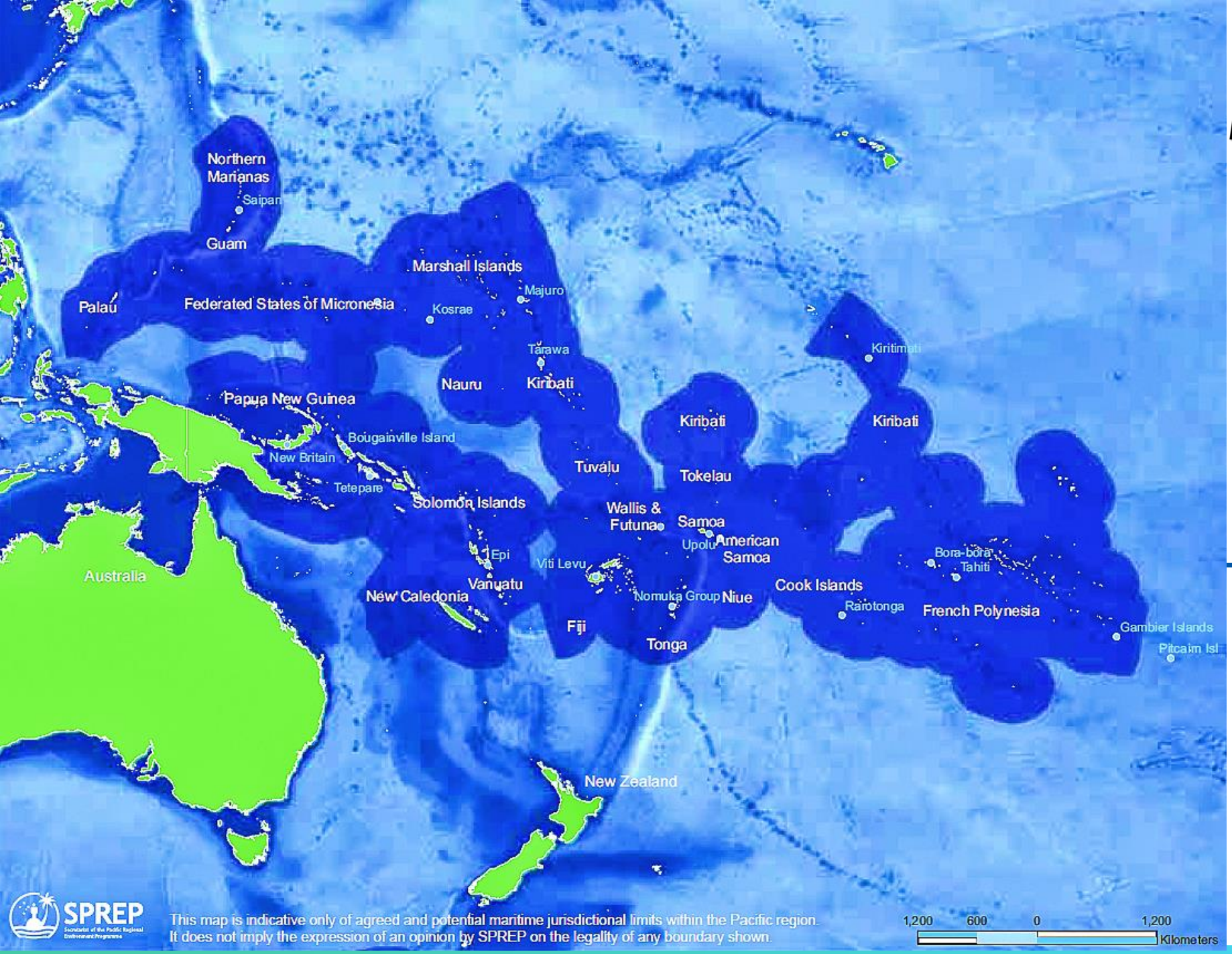
The triple planetary crisis

The triple planetary crisis refers to the three main interlinked issues that humanity currently faces: climate change, pollution and biodiversity loss.



POLICY, PLANNING, MONITORING AND REPORTING

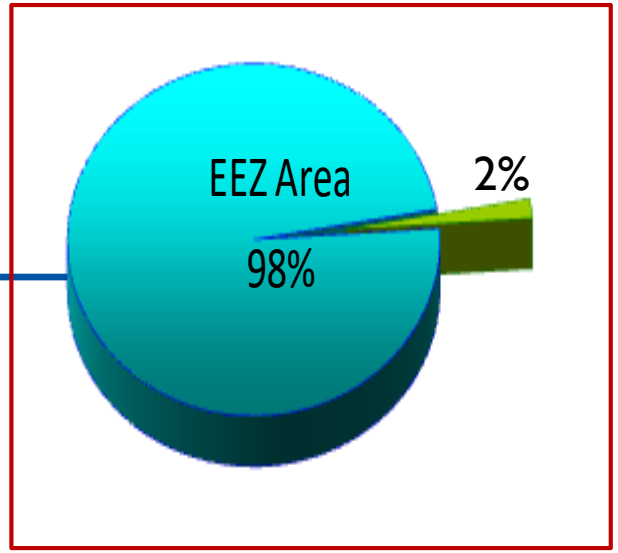
Multilateral Environmental Agreements (MEAs)
Legislation and Policy
Environmental Planning Instruments
Environmental Assessment tools
State of Environment (SOE) Reporting
Data for Decision Making



21 Pacific Island Countries and Territories

***Land Area:* ~553,000 km2 (~30,000 islands)**

***EEZ + Territorial seas area :* 30,000,000 km2 (~10% of the World's Oceans)**



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Key Areas of Work

Technical support provided to PICTs include:

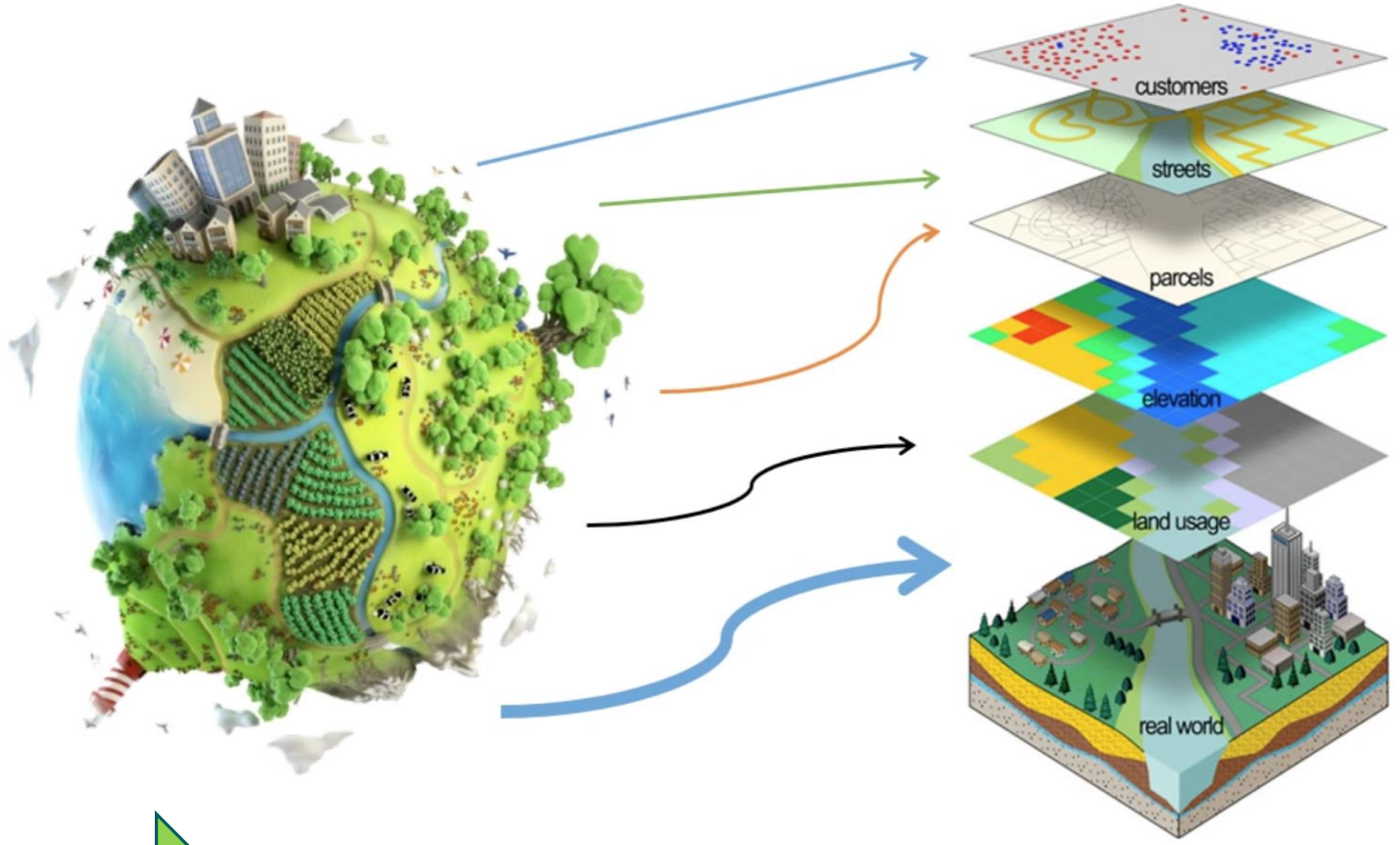
- Capacity building to fulfill commitments to international environmental conventions.
- Regional and national environmental policy development.
- Regional training.
- Strengthening of environmental management programmes for countries.
- Public awareness and communications.
- Implementation of environmental management demonstration projects.
- Support to international negotiations such as the Conference of Parties (COPs – Climate Change COP28 in Azerbaijan, Biodiversity CBD, Intergovernmental Negotiating Committee on plastic pollution – INC 5 currently underway in Korea)

Sustainable Environment Stewardship using GIS

1. **Monitoring and Management** - Efficient tracking of environmental changes.

2. **Informed** Decision-Making - GIS delivers spatial insights for informed conservation planning.

3. **Long-Term Sustainability** - Integrates ecological, social, and economic objectives.



GIS applications for environmental management and conservation.

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1. TECHNICAL GIS SUPPORT

- Waste mapping (disaster, asbestos, marine wrecks)
- Protected areas mapping
- Fisheries mapping
- Nature based solutions
- Loss and Damage

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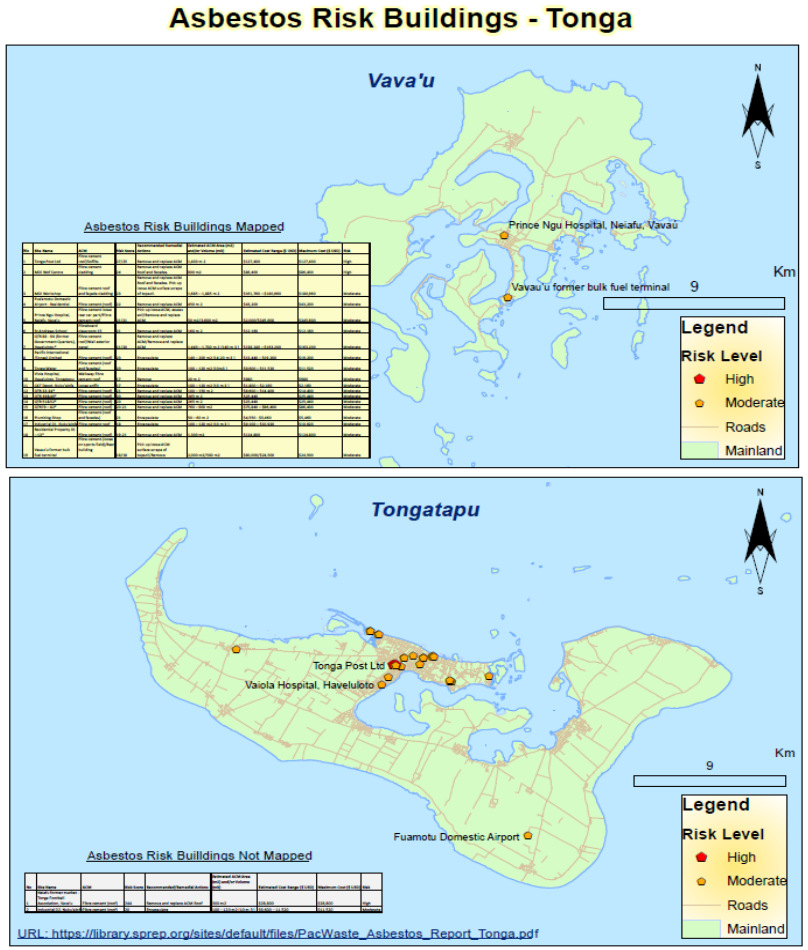
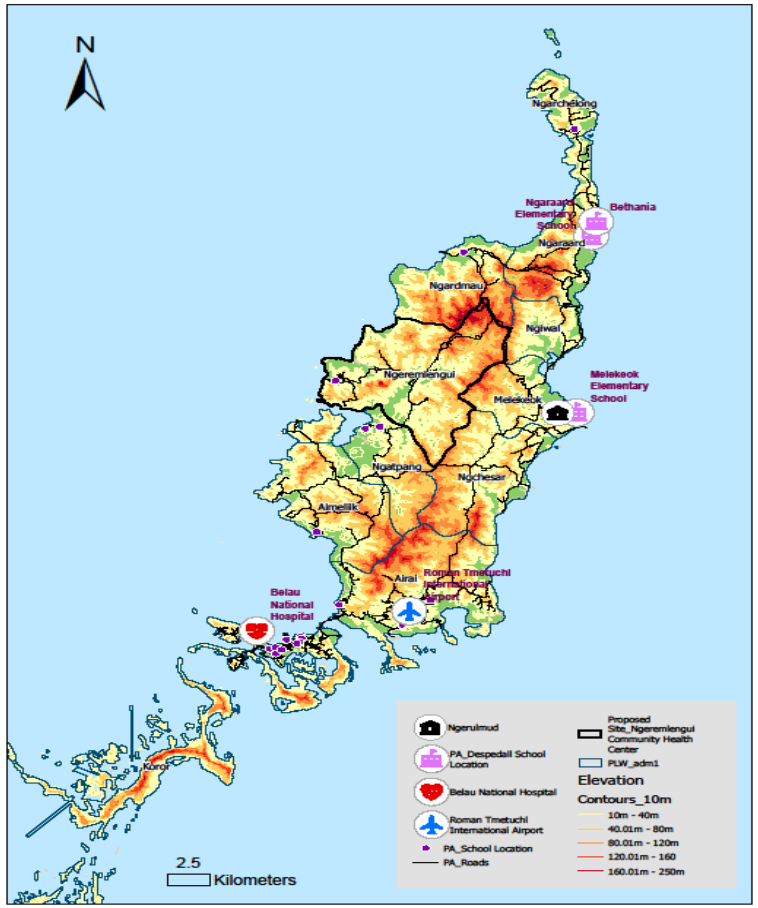
1. TECHNICAL GIS SUPPORT



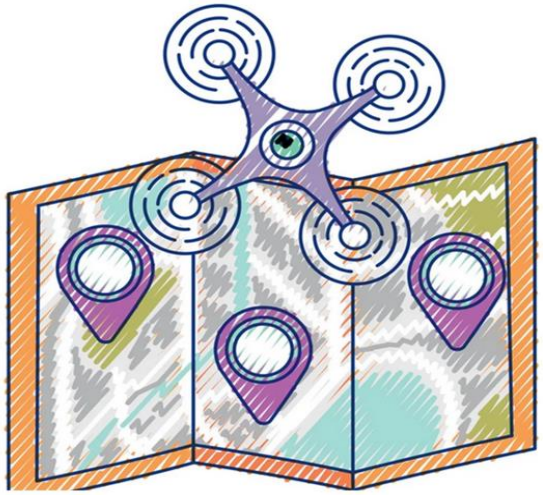
- Asbestos Risk Building – Tonga Asbestos mapping

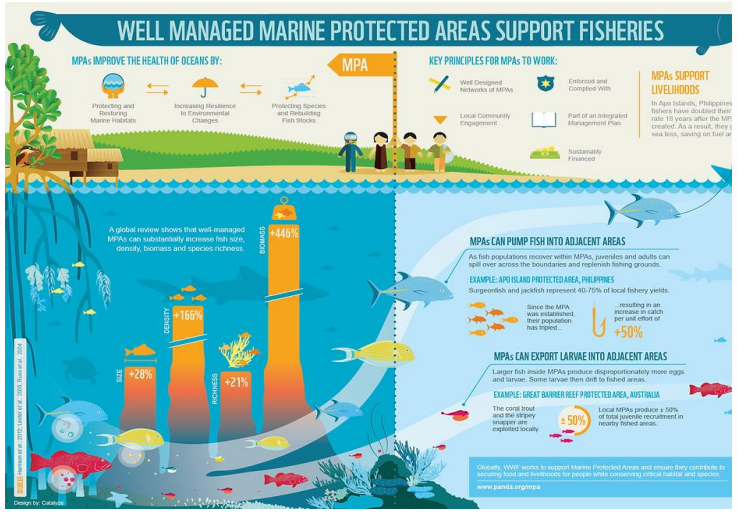
- State of the Environment report – Nauru Land Use



- Palau Coastal Infrastructure - National Adaptation Plan

2. CAPACITY BUILDING





- Drone mapping for topographic surveys, environmental monitoring, and natural resources management.
- Strengthening Fisheries Management in Samoa through Geographic Information Systems (GIS)
- To equip the Solomon Islands Environment and Conservation Department (ECD) professionals with the necessary skills to effectively utilize Geographic Information Systems (GIS) for data capture, analysis, and reporting.
- Enhance the capacity of environmental practitioners to use EIA, GIS, and data management tools for sustainable management and ecosystem-based adaptation.

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TRAINING CONDUCTED BY COUNTRIES

- **SAMOA**
  - Drone Training (Multistakeholder)
  - GIS Training (Multistakeholder)
  - GPS Training and data management
  - Fisheries GIS Training for community-based fish reserve management.

- **SOLOMON ISLANDS**
  - GIS Training (Multistakeholder)
  - KoBo Toolbox Training
  - GIS application for EIA processes.

- **NAURU**
  - GIS Training (Environment Department)
  - Protected Areas management (virtual)

- **VANUATU**
  - GIS Training (Multistakeholder)
  - KoBo Toolbox Training
  - GIS application for EIA processes.

- **FIJI**
  - GIS Training (Multistakeholder)
  - MapsMe Mobile Data Collection Tool
  - GIS application for integrated environmental management.

- **KIRIBATI**
  - GIS Training (Multistakeholder)
  - KoBo Toolbox Training
  - GIS application for integrated environmental management.

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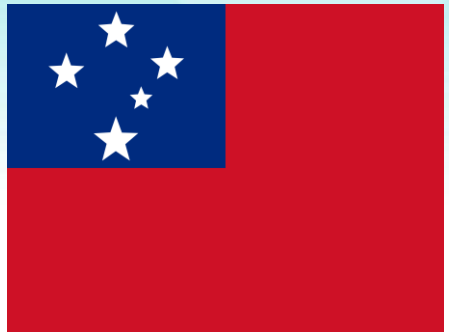
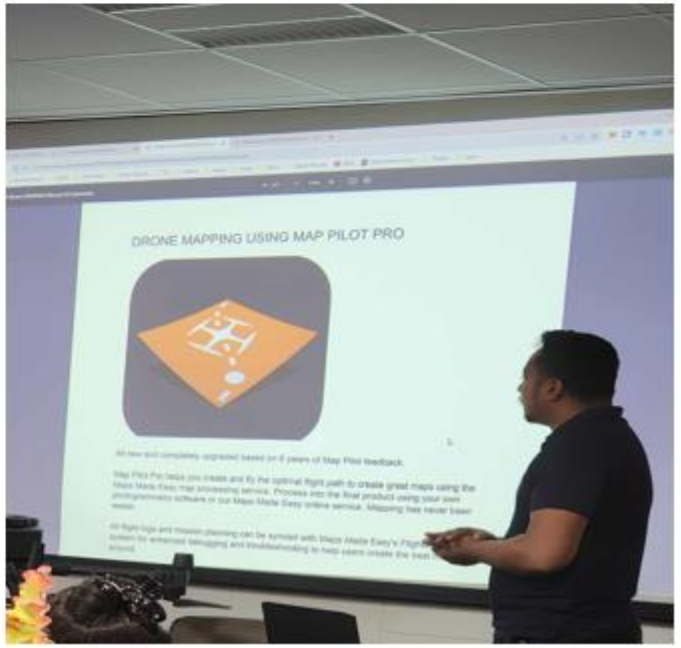
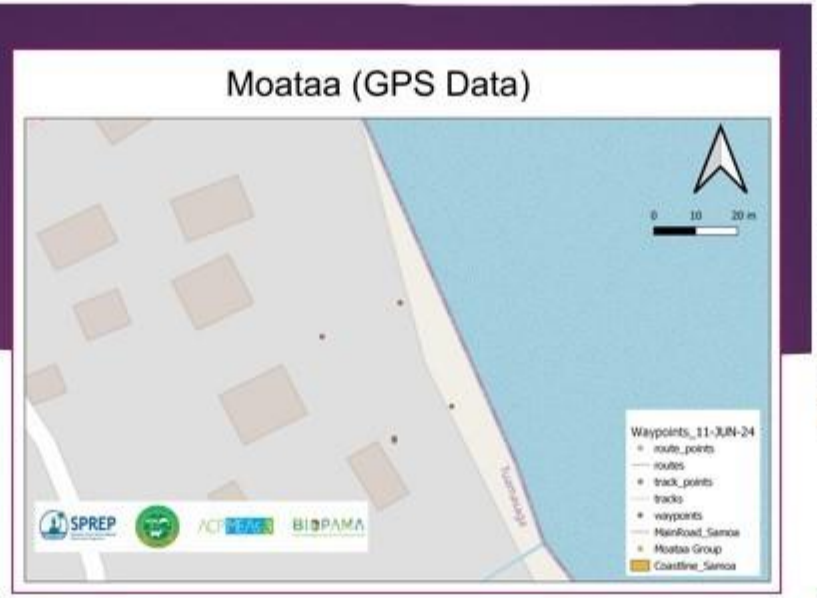


SAMOA GIS TRAINING HIGHLIGHTS

DRONE TRAINING AND GIS MAPPING





Enhancing Fisheries Management in Samoa through Geographic Information Systems (GIS)

Environment Programme

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SOLOMON ISLANDS GIS TRAINING HIGHLIGHTS












Solomon Islands GIS and Data Management Training

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VANUATU GIS TRAINING HIGHLIGHTS

Strengthening Environmental Management Tools for Effective Decision-Making in Vanuatu Training.

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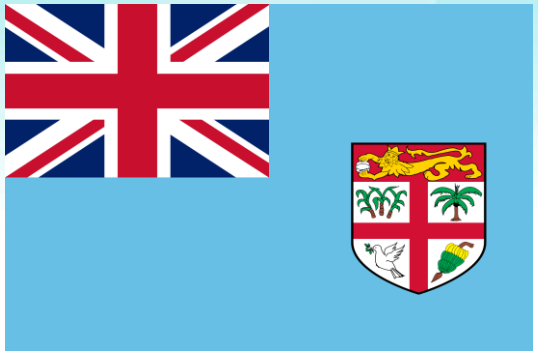

FIJI GIS TRAINING HIGHLIGHTS

Fiji GIS and Integrated Environmental Management Training

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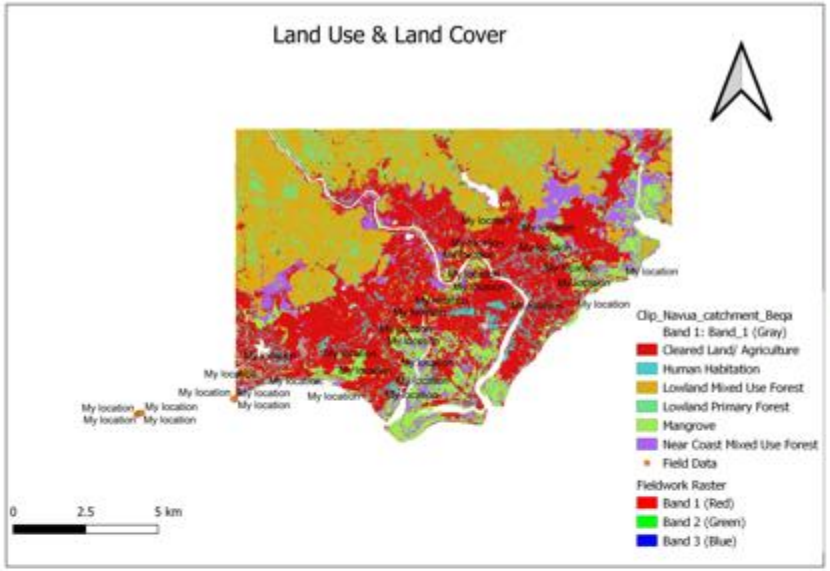
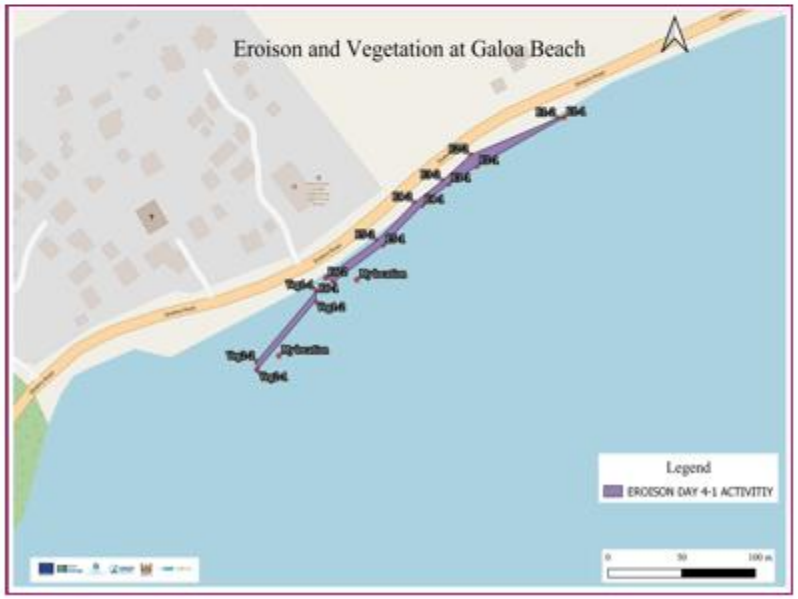
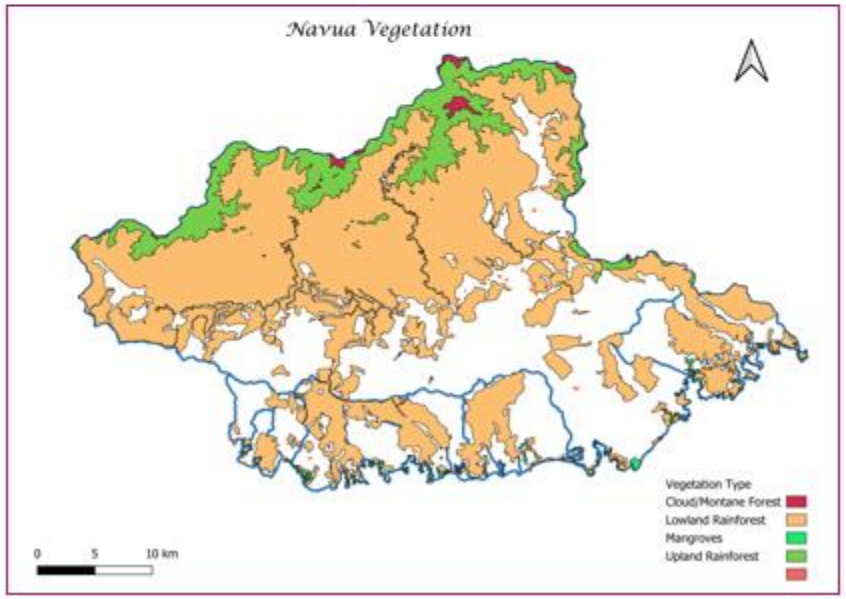
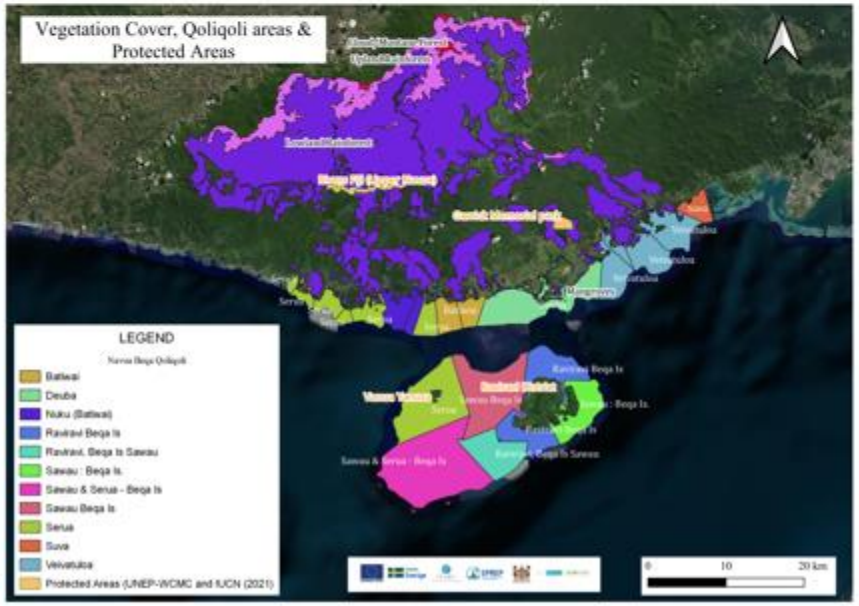
WAINIMABIA SITE 3 COASTAL ZONE
Beach Features
Spring
Waste
Low Dense Vegetation Cover
High Dense Vegetation Cover
Beach Area_Site3
Coastal Erosion
0 10 20 m


Land Use & Land Cover
Clip_Navua_catchment_Bega
Band 1: Band_1 (Gray)
Cleared Land/ Agriculture
Human Habitation
Lowland Mixed Use Forest
Lowland Primary Forest
Mangrove
Near Coast Mixed Use Forest
Field Data
Fieldwork Raster
Band 1 (Red)
Band 2 (Green)
Band 3 (Blue)
0 2.5 5 km


Navua Watershed
Contours
BIEM_Provinces
Protected Areas (UNEP-WCMC and IUCN (2021)
Village Boundaries
Rivers & Creeks
Navua Watershed
0 10 20 km


Eroison and Vegetation at Galoa Beach
Legend
EROESON DAY 4-1 ACTIVITIY


Navua Vegetation
Vegetation Type
Cloud/Montane Forest
Lowland Rainforest
Mangroves
Upland Rainforest
0 5 10 km


Vegetation Cover, Qoliqoli areas & Protected Areas
LEGEND
Batiwai
Deuba
Nuku (Batiwai)
Raviravi Bega Is
Raviravi, Bega Is Sawau
Sawau : Bega Is.
Sawau & Serua - Bega Is
Sawau Bega Is
Serua
Suva
Veivatuloa
Protected Areas (UNEP-WCMC and IUCN (2021)
0 10 20 km

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KIRIBATI GIS TRAINING HIGHLIGHTS

Charting Sustainable Development Pathways in Kiribati Through Strategic Assessment and Spatial Technologies Training.

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TRAINING ON GIS APPLICATION FOR EIA PROCESS

Application of GIS for Environmental Impact Assessment

Environmental Impact Assessment

- EIA principles, processes, and best practices
- Screening, scoping, and impact analysis in EIA
- GIS application in Environmental assessments

EIA Scoping

EIA Screening

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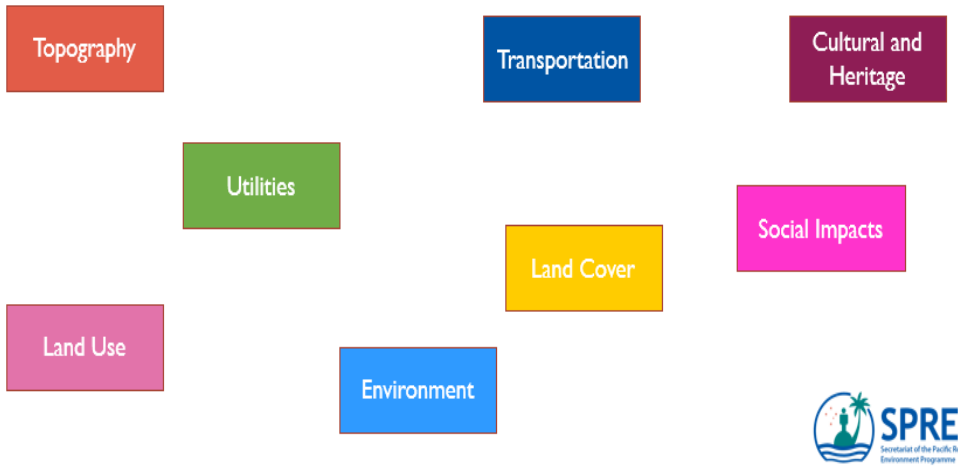
GIS for EIA Screening Process

GIS application in the Screening Process

GIS as a tool, allows project proponents and regulating authorities to determine whether an Environment Impact Assessment is necessary using maps derived from spatial data analysis using existing datasets.



Scenario 1 - Analyzing Socioeconomic Factors

- **Context:** A proposed **development project** in a densely populated area on Efate Island.
- **GIS Application:** Integrating **demographic data, infrastructure, and community services** to evaluate the potential social impacts.
- **Outcome:** Identification of areas that may require additional social infrastructure or services, ensuring community needs are addressed early in the planning process.

Scenario 2 - Identifying Sensitive Ecosystems

- **Context:** A proposed **industrial project** near a coastal area.
- **GIS Application:** Using GIS to overlay the project location with maps of sensitive ecosystems such as **residential, mangroves, coral reefs, and wetlands.**
- **Outcome:** Identifying potential ecological impacts leads to early consideration of alternative sites or mitigation measures.

Scenario 3 - Infrastructure and Accessibility Analysis

- **Context:** A proposed **healthcare facility** on Ambae Island.
- **GIS Application:** Mapping existing **transportation networks, accessibility to key services, and population distribution.**
- **Outcome:** Identification of optimal locations that maximize accessibility and service reach while minimizing environmental impact.

GIS for EIA Scoping Process

Using GIS in the Scoping Process

GIS as a tool assists enforcing authorities to decide of the boundaries of the EIA based on the maps and data collected in the screening stage, including the project area. Using maps, authorities can establish what the EIA will include in accordance with the terms of reference (TOR).

- Topography
- Soil
- Zoning and Planning
- Cultural and Heritage
- Geology
- Land Use/Land Cover
- Protected Areas
- Transportation
- Social Impacts
- Ecology
- Hydrology
- Utilities

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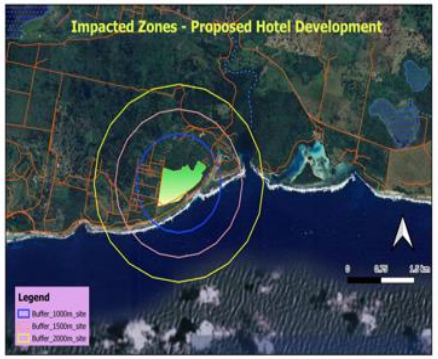
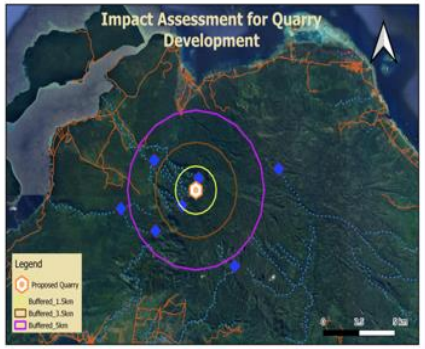
Scenario 1: Air Quality and Noise Impact Zones

Example: GIS can model air quality and noise dispersion by creating buffer zones around project sites.
This helps in identifying the extent of pollution impacts and informing mitigation strategies. Spatial data layers such as land use and population density can be overlaid to assess these impacts.



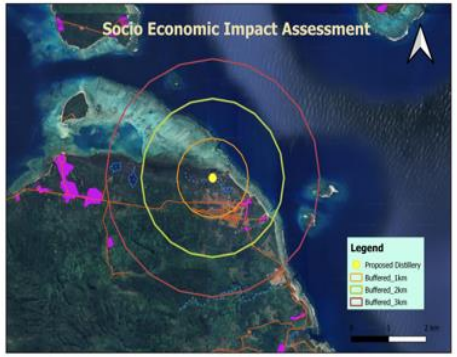
Scenario 2: Hydrological Impact Assessment

Example: Hydrological GIS analysis involves mapping watershed boundaries, analyzing flow patterns, and identifying potential contamination paths.
This is crucial for assessing the impact of projects on water resources. GIS can help visualize and quantify land-use changes and their effects on hydrology.



Scenario 3: Socio-Economic Impact Assessment

Example: Socio-economic GIS analysis includes mapping population distribution, land use, and infrastructure to identify communities potentially affected by development projects.
This helps in planning stakeholder engagement and assessing social impacts.



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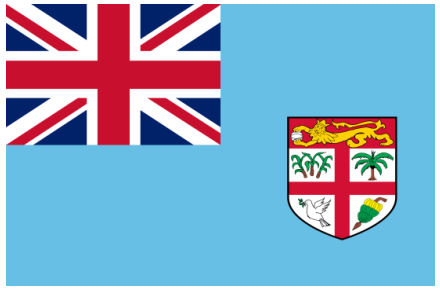
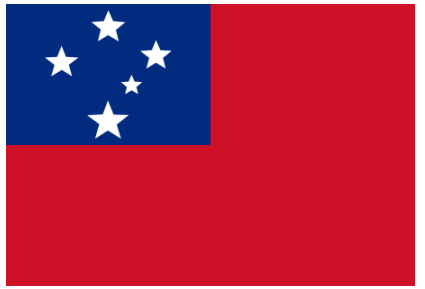
SUPPORT TO INTERNATIONAL NEGOTIATIONS - COP28



CLIMATE COP28 SIDE EVENT, DUBAI

Geospatial Solutions for Climate Challenges: A Focus on Loss, Damage, and Adaptation

CHALLENGES

Challenges identified by the team for GIS training in the Pacific include :

- Funding Constraints
- Capacity Gaps
- Limited Technical Infrastructure
- Data Availability and Accessibility
- Sustainability of Skills
- Geographic Dispersion
- Rapid Technological Change

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FUTURE GOALS AND OPPORTUNITIES FOR ENHANCING GIS CAPACITY

Expand Regional Training Programs and Workshop

Invest in GIS infrastructure

Encourage Sustainable Geospatial Practices

Data sharing and partnerships

Pacific GIS success stories

CONCLUSION

- SPREP empowers Pacific Island countries to address environmental and climate challenges.
- Partnerships in GIS and Earth Observation (EO) provide updated national datasets.
- Geospatial resources enhance information management and MEA reporting.
- GIS supports evidence-based decisions for sustainable development in the Pacific.

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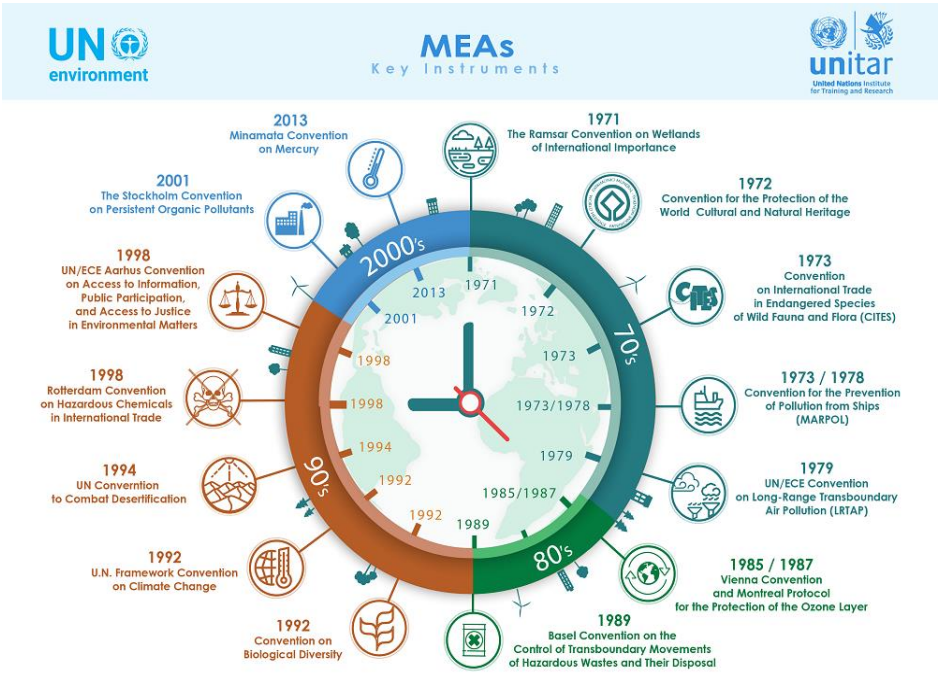

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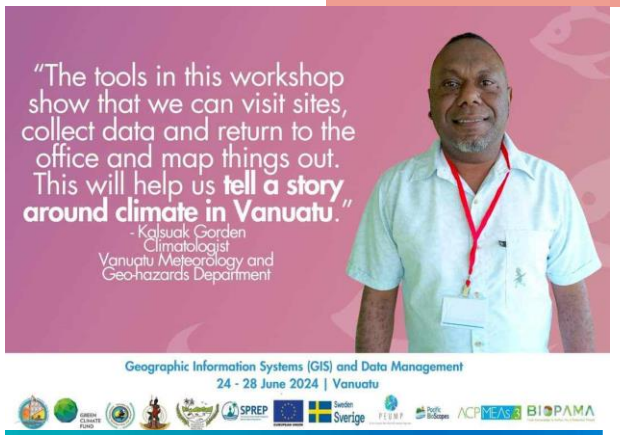
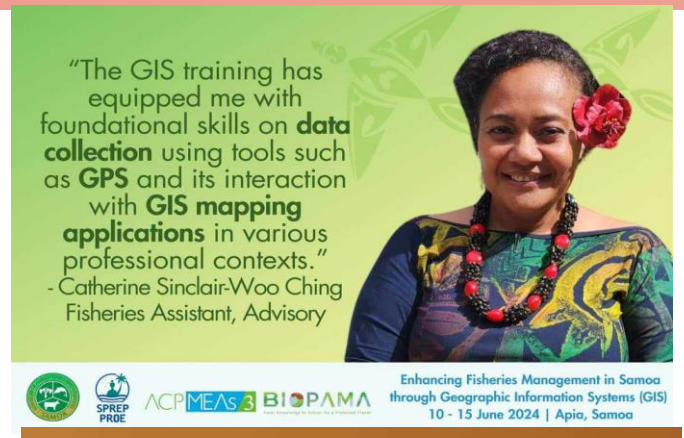
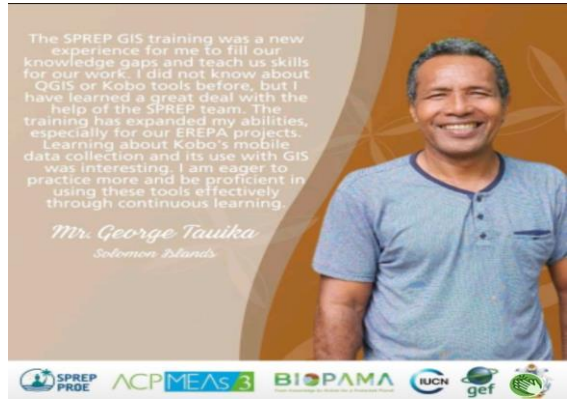
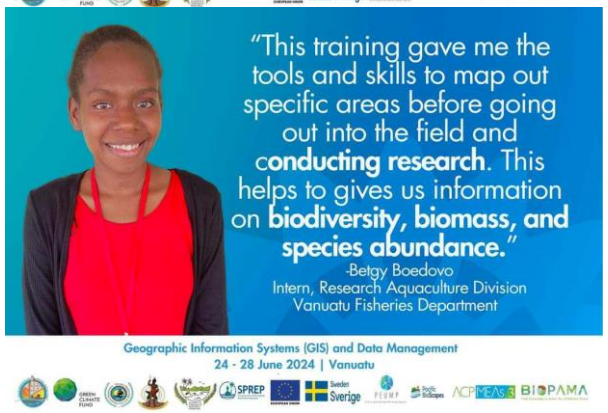
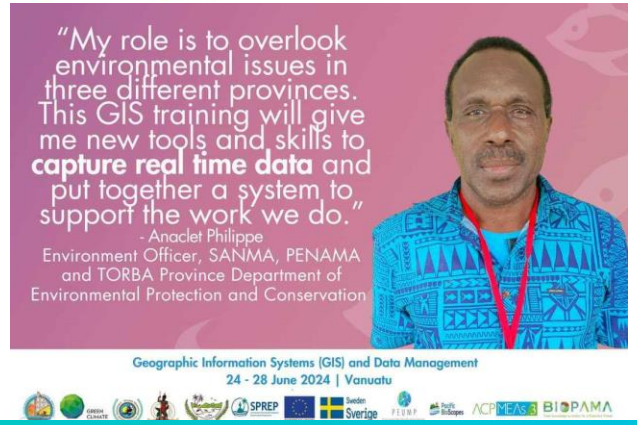
Participants Testimonials

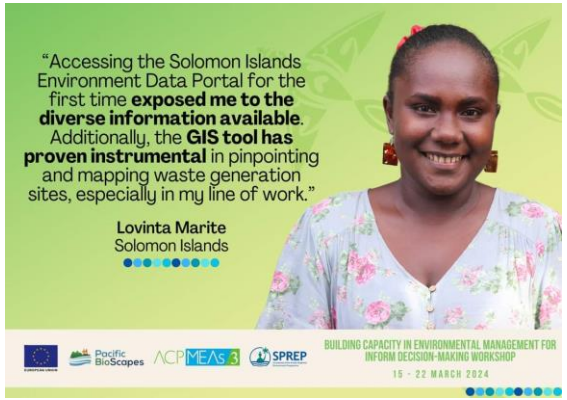


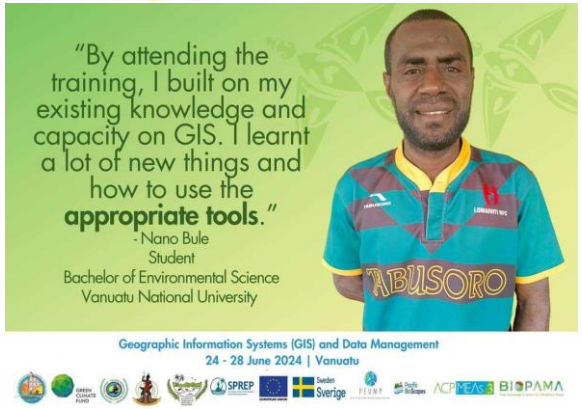












Vinaka