



The Commonwealth

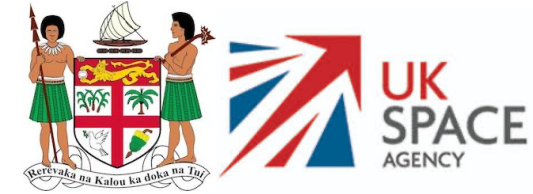


Commonwealth
**CLIMATE
FINANCE
ACCESS
HUB**

**Finance and Technology Day
The Commonwealth
Role of earth observation data and tools
for improving flows of climate
finance: experiences from Fiji, Solomon
Islands and Vanuatu
4 November 2021**



Implementing Partners:



- CommonSensing is implemented by a Consortium of International partners lead by the United Nations Institute for Training and Research (UNITAR)



United Nations Operational Satellite Applications Programme (UNOSAT)



United Nations Institute for Training and Research (UNITAR)



Met Office

UK Meteorological Office

sensonomic

Sensomic

CATAPULT
Satellite Applications

Spatial Days

Spatial Days



The Commonwealth

Commonwealth Secretariat



UNIVERSITY OF PORTSMOUTH

University of Portsmouth

devex
Do Good. Do It Well.™

Devex



Goal: Help build Disaster Resilience, enhance Food Security and Support Climate Finance Applications



Geospatial and climate
Data and decision-support
Tools



Capacity building of:

Technical staff
Specialised analysts
Decision makers



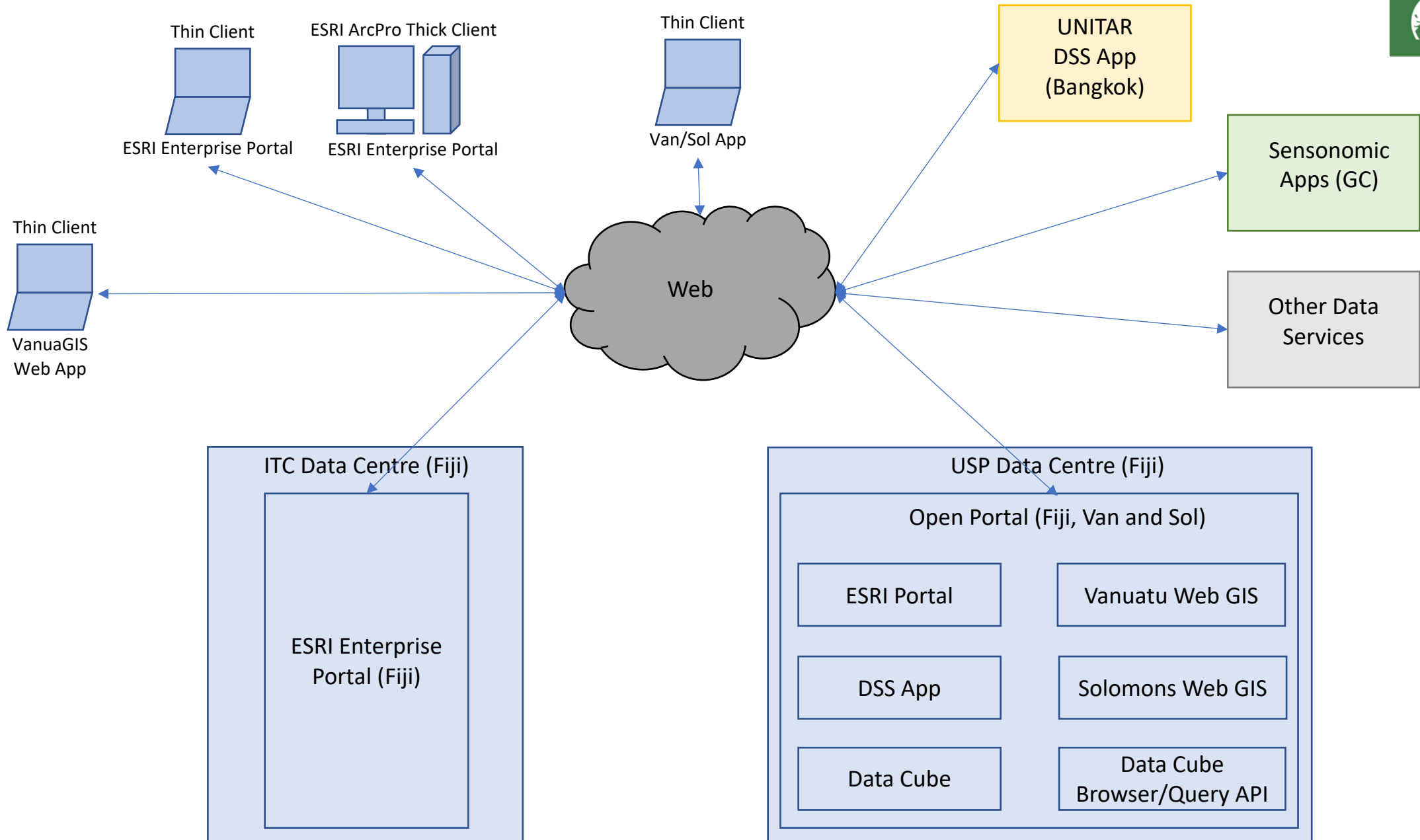
Data

- **Collated** datasets from various sources (including MLMR, NDMO, FRA, HDX, HOTOSM, PacGeo, UNEP, SPREP, JRC, JAXA, PopGIS, World Bank, Census and Facebook).
- **Created** the following datasets:
 - Climate Models (ERA5, ERA5 Land, CMAP, GPCP, TRMM, CRU, NCEP/NCAR, ENSO + Pacific Climate Finance)
 - Digital Elevation Models (30m and 12.5m resolution)
 - Elevation Zones
 - Slope Classes
 - Relative Bathymetry
 - Mangrove Forests
 - Sugar Plantations
 - Cube ARD Products (Sentinel-1, Sentinel-2, Landsat 4, 5, 7 and 8, SPOT 1 to 5, Water Masks, Geomedian)
 - Cube On-Demand Products (Geomedian, S-1 Median, Fractional Cover, Water Change, Water Permanency, Water Quality, Coastline Extraction, Mosaic Indices, NDVI Anomaly, Vegetation Change, Land Change).



Tools

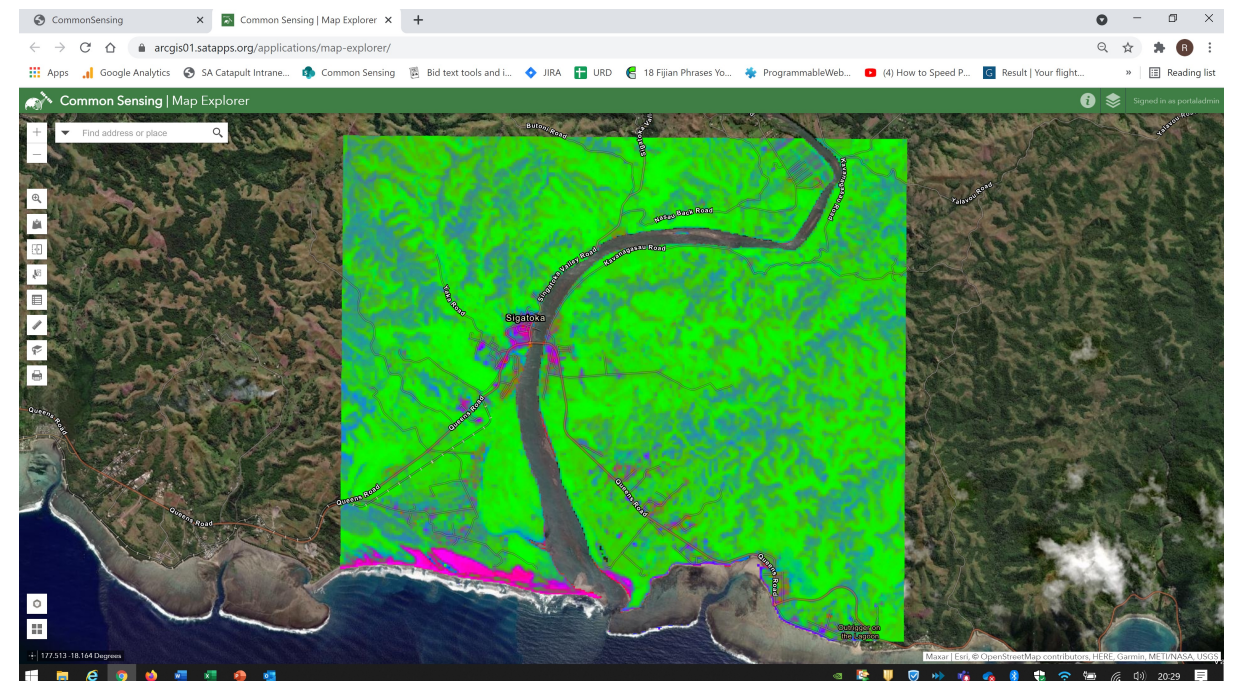
- **ESRI Enterprise Portal for Fiji** complete with a Sites homepage, a Data Catalogue and Apps including:
 - Climate Information Application
 - Map Explorer Application
 - Risk Information Application (with 3D Scene Viewer)
- **ESRI ArcOnline Decision Support System (DSS) for Fiji, Vanuatu and Solomon Islands**
- **Open Source Data Cube for Fiji, Vanuatu and Solomon Islands**
- **Bespoke Agriculture Apps for Fiji, Vanuatu and Solomon Islands**
- **Open Portal with Apps for Fiji, Vanuatu and Solomon Islands** including:
 - Open Source Vanuatu Web GIS
 - Open Source Solomon Islands Web GIS
 - Open Source Data Cube Browser
 - Open Source Data Cube Query API





Capacity Building

- Remote and on-site training of Technical users in the CommonSensing data and tools
- Remote and on-site training of Government decision-makers and Climate Finance Advisors in appropriate use of CommonSensing data and tools
- Ongoing support of Technical users in the CommonSensing data and tools
- User Guides, Operations Manuals, online resources





Application to Climate Finance

- CS Data and Tools can be used at **all stages** of a Climate Finance Project:
- **Pre-Feasibility Stage:** collation of on-the-shelf GIS datasets to see if data evidences the Project rationale, to inform decisions, to identify data gaps.
- **Proposal Stage:** on-the-shelf GIS datasets and data processing to produce new or improved datasets for context mapping, feature mapping, spatial/temporal planning, multi-criteria analysis, spatial queries, inputs into engineering models, environmental/visual impact assessment etc.
- **Implementation Stage:** baseline establishment, ongoing unbiased monitoring (construction, or environmental impact).
- **Monitoring Stage:** baseline establishment, ongoing unbiased monitoring of improvements/benefits and environmental impact, justification for further work or similar Projects.



The Commonwealth

Fiji



Commonwealth
**CLIMATE
FINANCE
ACCESS
HUB**



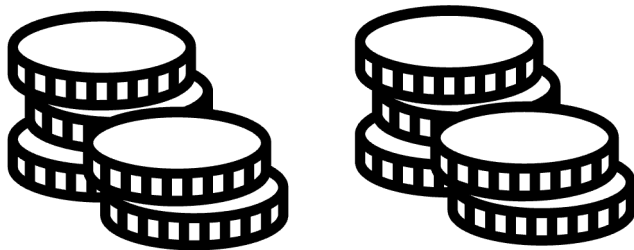
Climate Finance Needs Versus Access

LDCs: 20.5% of Reported Climate Finance

SIDS: 3% of Reported Climate Funds. Pacific SIDS only 1%

~ *Oxfam Climate Finance Shadow Report 2020*

- The total amount allocated and spent amounts fall short of at least **FJD\$3.28 billion** Fijian dollars in annual climate finance needs, as determined by available estimates. Underpinning an urgent need for increased climate finance in Fiji.
- SIDS are ‘underrepresented’ throughout the stages of project pipeline development, **with only 12 per cent of the funding proposal pipeline in the Green Climate Fund (GCF) by October 2020.**



Setting the context and need for EO data

- Securing funding from the major international and regional climate funds can be difficult. **Consuming and complex access, formats, justification, evidence climate rationale**
- **Major climate funds – GEF, GCF, Adaptation Fund, require strong justification, clear baselines and climate change-focused rationale for approving project proposals.** These funds have been explicit about the role of EO in this in the different ways outlined below
- With technology is the emergence of more and enhanced forms of data from initiatives. **CommonSensing project is an example of the innovative use of EO**
- **Aims to develop national capacities for longer-term provides partner countries with the knowledge and skills sets for institutionalising evidence based decision-making.** USP Students, undergraduate, postgraduate diploma, research (masters and PhD) - earth science, marine management, biology or geography, maths being trained.
- Assists in **coordination financing NDC implementation, but additionally improves evidence-based decision-making in disaster preparedness and response, as well as assessing climate risks**





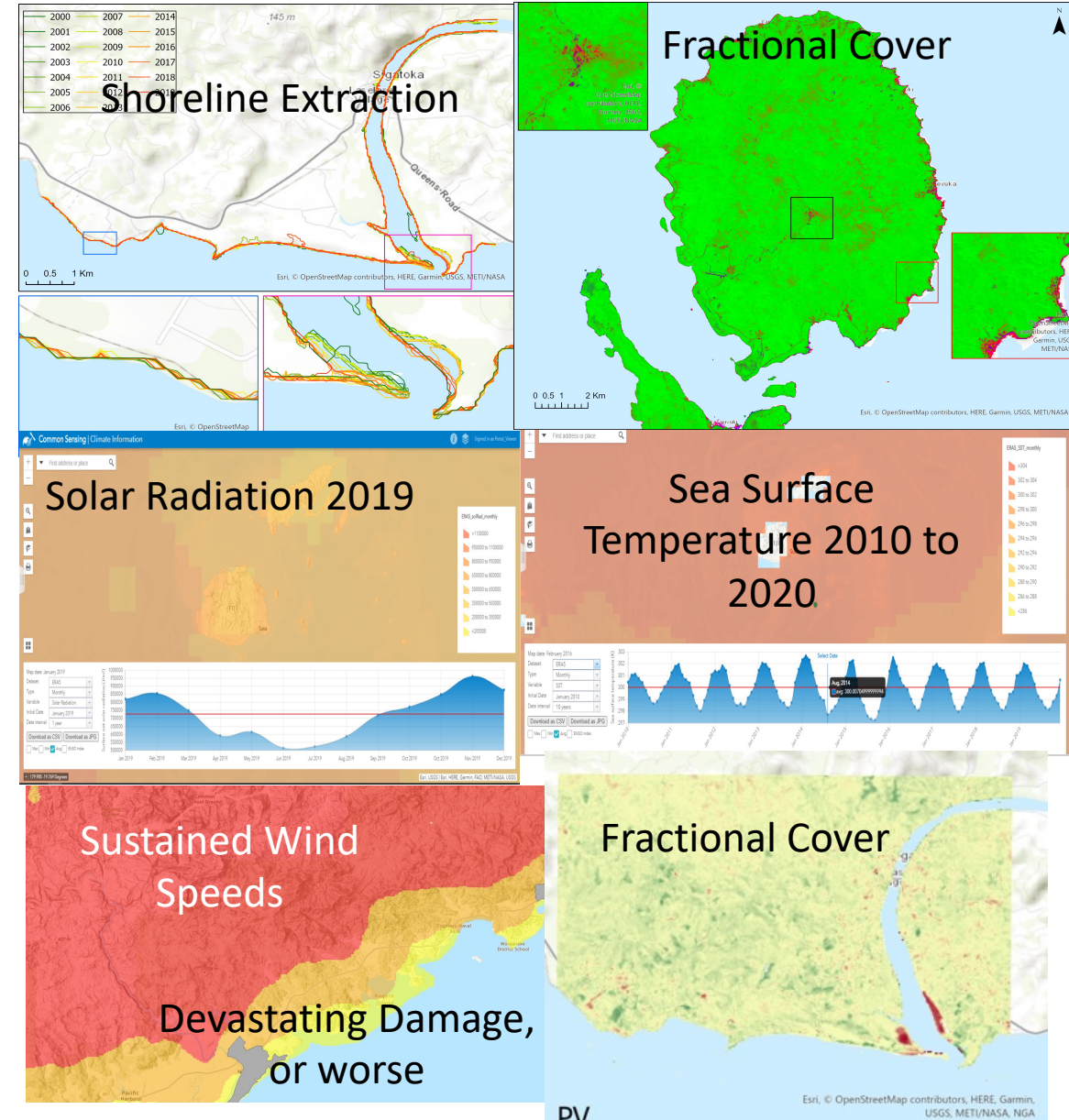
IEU Findings: Access to data

- SIDS have limited access to data
- Historical and baseline data for climate, especially for less populated islands and regions and for slow onset events
- Creates limitation in preparing project proposals
- Compounded with capacity



Commonsensing tools

- CF objective is to use Commonsensing tools to strengthen proposal development
- Defining the need for robust data, use of EO and geospatial data and its role in accessing Climate Finance - donor perspective and EO role in Climate Finance - examples
- CS at Project stages - pre-feasibility, proposal, implementation, monitoring
- Data Cube products can be applied to Adaptation and mitigation project proposals



Devastating Damage, or worse

PV

Practical application of CommonSensing for project pipelines in Fiji

- Currently **working with the MoE, Catapult and UNITAR to build capacity in the practical application and utilisation of EO data to enhance climate finance proposals and scale projects under implementation.**
- **Climate Finance Writeshop training, including practical use of the CommonSensing platform (August 2021 for MoE and FDB staff)**
- **Utilise the CommonSensing platform to assess and add value to live proposals and concepts identified in GCF country programme (and other).**
 - Fiji Rural Electrification Fund (Finance/Mitigation) -MoE
 - Climate Change Relocation (Finance/Adaptation) -MoE
 - Ebus -decarbonisation of public bus transport in Fiji (Finance/ Mitigation) – FDB
- EO can be used for **calculating baselines and reference conditions and for measuring the direction and rate of change for projects relating to sea-level rise, flooding, land degradation, fisheries, coastal protection, food security, exclusive economic zones (EEZs) and marine agreements, for example.**
- Improved use of data can **contribute to turning country priorities and Nationally Determined Contribution (NDC) commitments into climate finance investment plans and projects**, thereby addressing the financing gap where the implementation of many NDCs is conditional on external financing being received.





The Commonwealth

Solomon Islands



Commonwealth
**CLIMATE
FINANCE
ACCESS
HUB**

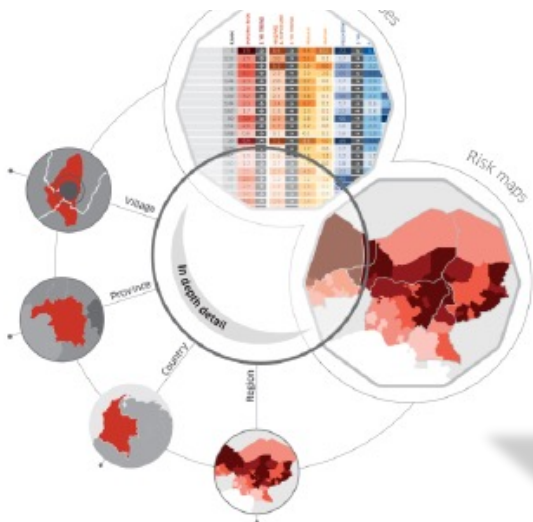




INFORM Index

INFORM is a global, open-source risk assessment for humanitarian crises and disasters. It can support decisions related to prevention, preparedness and response.

The DSS has been deployed at subnational *ward* level and we are awaiting latest census data to have this updated, vetted by government.



- Earth Observation - Satellite Imagery, Aerial survey
- National Census - Population, Housing
- Modelled geospatial data - Hazard models, gridded population
- Baseline geospatial data – Roads, Admin boundaries, critical infrastructure location etc

Data Analytics Driven Support

- What is happening?
- Why is it happening?
- What areas are affected?
- What can we do?

Risk	INFORM																
Dimensions	Hazard & exposure					Vulnerability				Lack of coping capacity							
Categories	Natural		Human			Socio-Economic		Vulnerable groups		Institutional	Infrastructure						
Components	Earthquake	Tsunami	Flood	Tropical cyclone	Drought	Current conflict intensity	Displaced conflict intensity	Relative deprivation (50%)	Inequality (25%)	Aid dependency (25%)	Uprooted people	Other vulnerable groups	DRR	Governance	Communication	Physical infrastructure	Access to health system

Fiji
Unit: Admin 3 level (Tikina)

Solomon Islands
Unit: Admin 3 level (Ward)

Vanuatu
Unit: Admin 2 level (Area Council)



Access the site here:

Solomon Islands - Descriptive (cern.ch)

Home / Solomon Islands - Decision Support System

Decision Support System for Enhanced Disaster Risk Reduction

The Solomon Islands, one of the partner countries of the CommonSensing, is exposed to various natural hazards and the disaster risk is further aggravated through the negative effect of climate change. The Decision Support System will provide contextual analyses of a variety of hazards, risk, vulnerability, and coping capacity data based on INFORM sub-national methodology to improve situational awareness. The users will be taken through a storyline describing where is the risk? why there is a risk? and what can be done to reduce the risk?



Decision Support System for - Enhanced Disaster Risk Reduction

CommonSensing: Building climate resilience with small island nations

CommonSensing intends to build Disaster Risk Reduction (DRR) and Climate Change Resilience (CCR) through informed decision-making provided by Earth Observation and geospatial information technologies. The CommonSensing project is delivered by providing geospatial and climate information, decision-making tools and capacity development for various levels of government staff ranging from technical experts to decision-makers. The partner countries (Fiji, Vanuatu and Solomon Islands) are exposed to various climate-related hazards, and climate change can increase disaster risk, namely through changing exposure patterns and the increase in frequency and intensity of hazard events. Climate variability could further aggravate uncertainties related to the geographic distribution of weather-related hazards, which may lead to new patterns of risk thereby potentially rendering traditional coping capacities less effective. Thus, one of the key application domains of the CommonSensing project is disaster risk reduction (DRR).

This platform will inform decision-makers on disaster risk and its elements to bring real impact towards reducing disaster risk and increasing resilience to climate change.



Descriptive Analytics

The descriptive analytics presents the INFORM risk index at the sub-national level, where users can easily recognise the relative risks of different administrative units.

LAUNCH TOOL



Diagnostic Analytics

The diagnostic analytics breaks down the INFORM risk index into exposure to hazard, vulnerability, and lack of coping capacity indexes for selected sub-national levels.

LAUNCH TOOL



MCDA

The Multiple Criteria Decision Analysis tool allows decision-makers to find an optimal disaster risk reduction measure based on multiple factors.

LAUNCH TOOL



Data Quality Assessment

The Data Quality Assessment shows OSM map coverage by comparing the number of OSM object counts (number/km²) to the local population density (population/km²).

LAUNCH TOOL

Country Specific Decision Support System

Supporting decision-makers in answering the critical questions related to climate change resilience



Fiji

EXPLORE TOOL



Solomon Islands

EXPLORE TOOL



Vanuatu

EXPLORE TOOL

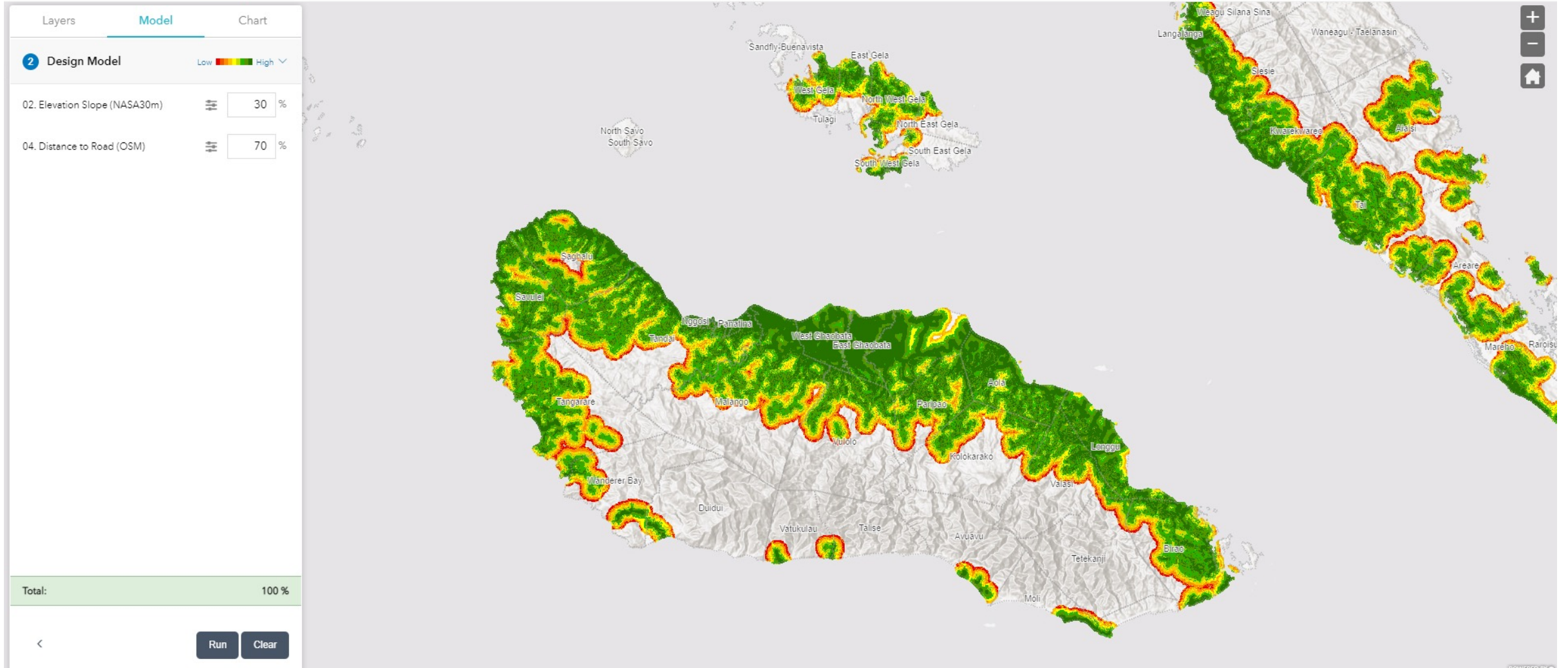


Multi Criteria Decision Analysis (Demonstration)



Decision Support System
for Enhanced Disaster Risk Reduction

Q Descriptive Diagnostic **Multiple Criteria Decision Analysis** Data Quality Assessment





Multi Criteria Decision Analysis (Demonstration)



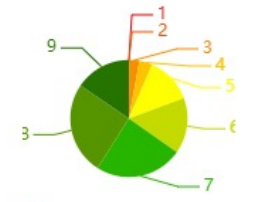
Decision Support System
for Enhanced Disaster Risk Reduction

Descriptive Diagnostic **Multiple Criteria Decision Analysis** Data Quality Assessment

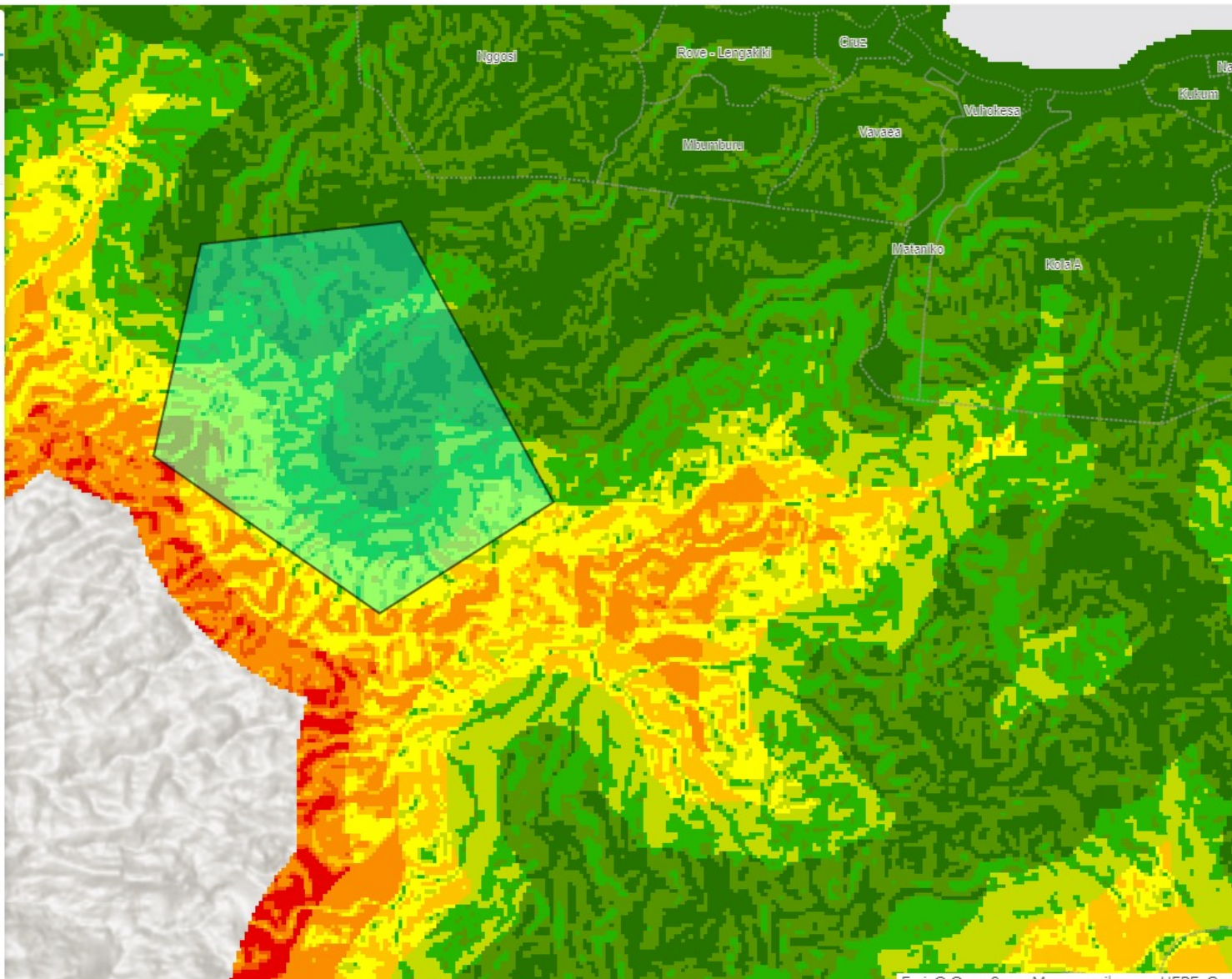


Layers Model **Chart**

Features Clear



Level	Description	Percentage
1	Extremely Low	0.03%
2	Very Low	0.01%
3	Low	2.85%
4	Low Medium	3.59%
5	Medium	12.86%
6	High Medium	15.40%
7	High	24.24%
8	Very High	25.53%
9	Extremely High	15.48%



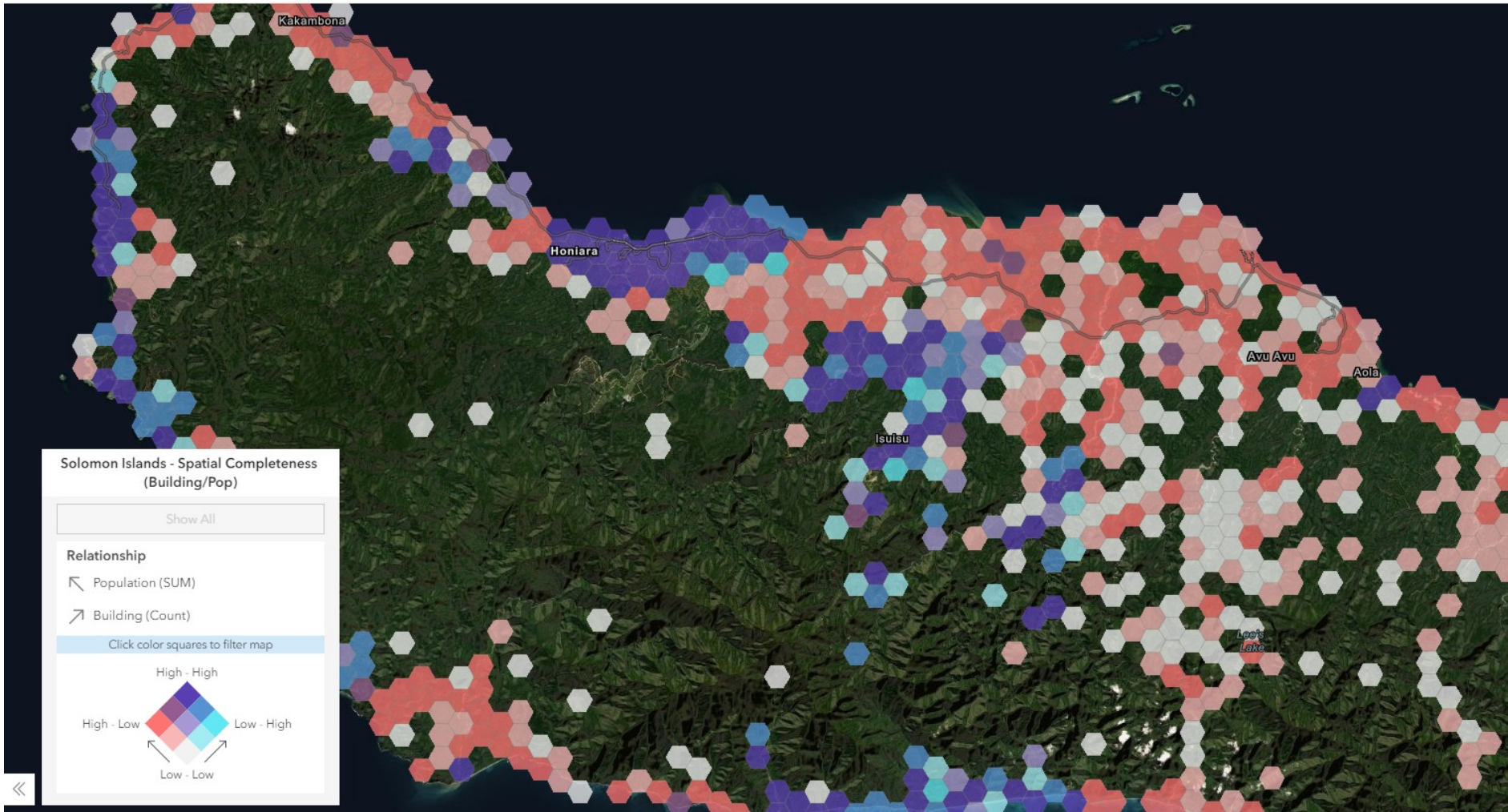


Data Quality Assessment Tool



Decision Support System
for Enhanced Disaster Risk Reduction

Descriptive Diagnostic Multiple Criteria Decision Analysis Data Quality Assessment



The Data Quality Assessment shows OSM map coverage by comparing the number of OSM object counts (number/km²) to the local population density (population/km²).



Data Quality Assessment Tool



The Data Quality Assessment shows OSM map coverage by comparing the number of OSM object counts (number/km²) to the local population density (population/km²).



The Commonwealth

Vanuatu



Commonwealth
**CLIMATE
FINANCE
ACCESS
HUB**





Rank by Risk

INFORM Risk Index	
1	Luganville
2	South East Santo
3	Central Malekula
4	North Santo
5	South Santo
6	North Pentecost
7	West Santo
8	Erakor
9	Eton
10	Canal - Fanafo

Rank by Dimensions

Exposure to Hazard	Vulnerability	Lack of Coping Capacity
1 Luganville	1 Luganville	1 Middle Bush Tanna
2 East Santo	2 East Ambae	2 West Santo
3 South Santo	3 Erakor	3 North Santo
4 Port Vila	4 Mota	4 Merelava
5 North Erromango	5 Central Malekula	5 Mota
6 South East Santo	6 South East Santo	6 South West Tanna
7 Whitesands	7 North West Malekula	7 Giasa
8 Canal - Fanafo	8 Tongariki	8 North West Malekula
9 Central Malekula	9 North East Malekula	9 Torres
10 Eratap	10 North Pentecost	10 Ureparapara

CS Decision Support System Tool

Awareness Raising

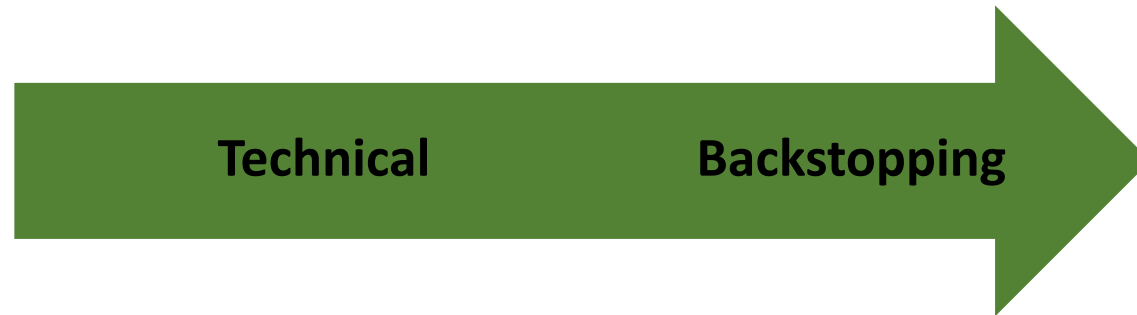


Technical Training



Technical

Backstopping





The Commonwealth

Vinaka!



Commonwealth
**CLIMATE
FINANCE
ACCESS
HUB**





The Commonwealth

Background – IPP CommonSensing

- There is significant scope to improve access to and use of EO data in accessing climate finance
- The CommonSensing project is an example of the innovative use of EO. It focuses on developing national capacities for longer-term sustainability and business continuity by providing partner countries with the knowledge and skills sets for institutionalising evidence based decision-making. This can help to co-ordinate financing for implementing NDC aims, but additionally the project seeks to improve evidence-based decision-making in disaster preparedness and response, as well as assessing climate risks



Commonwealth
**CLIMATE
FINANCE
ACCESS
HUB**

Background – IPP CommonSensing

- There is significant scope to improve access to and use of EO data in accessing climate finance
- The CommonSensing project is an example of the innovative use of EO. It focuses on developing national capacities for longer-term sustainability and business continuity by providing partner countries with the knowledge and skills sets for institutionalising evidence based decision-making. This can help to coordinate financing for implementing NDC aims, but additionally the project seeks to improve evidence-based decision-making in disaster preparedness and response, as well as assessing climate risks



Climate Information



The Commonwealth

Food Security



Disaster Risk



Climate Finance

Thematic focus areas:

- The overall aim of CommonSensing is to improve national resilience towards climate change in small island developing states through the use of geospatial and climate information technologies for better decision making
- Using data to make evidence-based decisions now more important than ever: limited climate funds and need to ‘build back better’ from the economic shock of COVID-19.
- EO technology and related applications are most effective when applied alongside other interventions - need to leverage use this technology through capacity building interventions.



IPP COMMON SENSING

<https://www.commonensing.org.uk/>

Commonwealth CLIMATE FINANCE ACCESS HUB

The Commonwealth Secretariat through its Commonwealth Climate Finance Access Hub (CCFAH) is providing technical assistance to Fiji, Solomon Islands and Vanuatu in utilising the geospatial based CommonSensing platform for enhanced access to climate finance.

<https://thecommonwealth.org/climate-finance-access-hub>

Climate Finance Landscape Reports: An Assessment of Vulnerable Sectors and EO Data Potential in Fiji Solomon Islands and Vanuatu

