Decision Support System for Disaster Risk Reduction

Building **climate resilience** with small island nations

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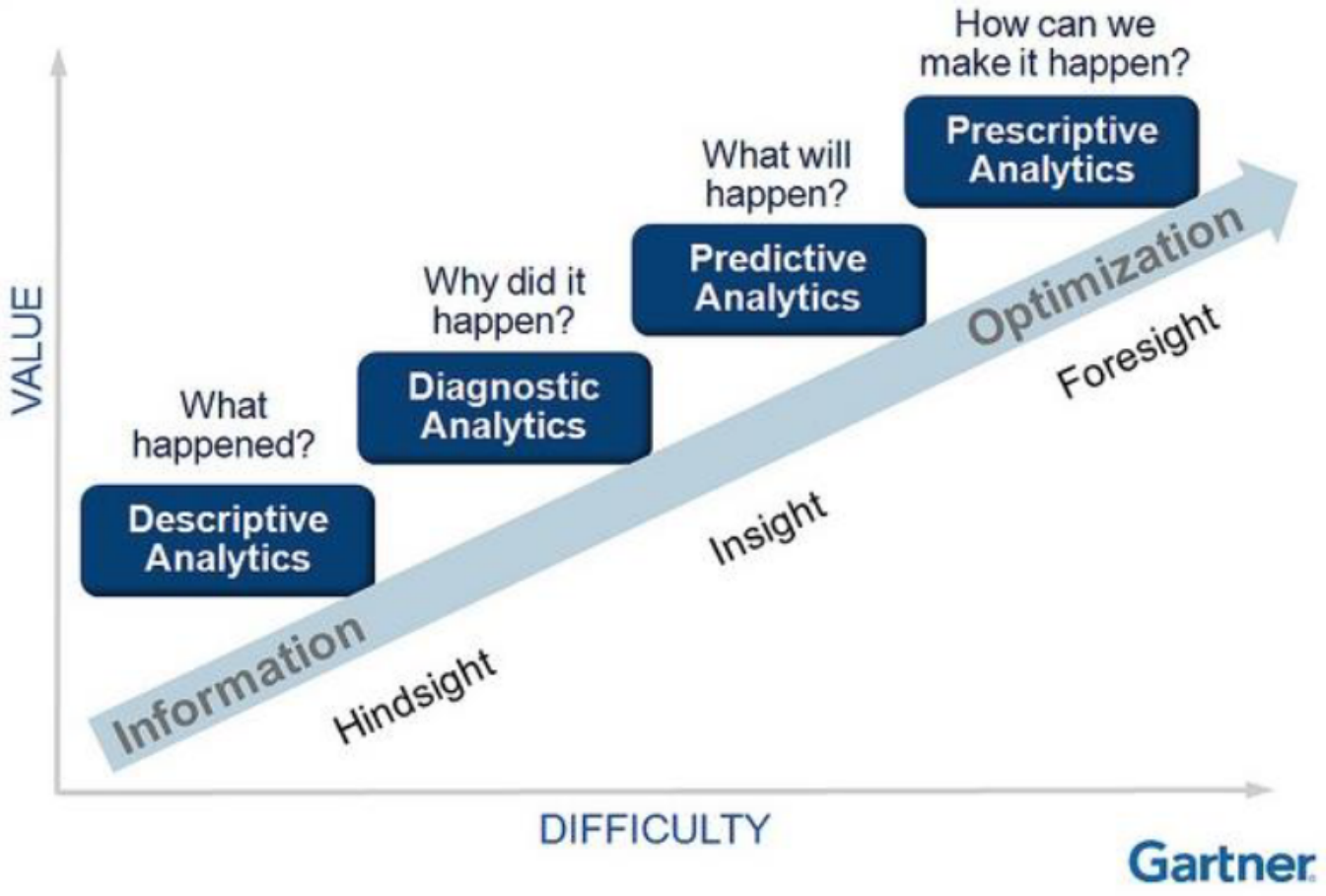
Outline

- Objective of the INFORM Decision Support Platform
- Overview of the descriptive, diagnostic and multi-criteria toolsets

Data-Analytics Driven Decision Support

Support the decision makers in answering the critical question related to resilience building:

- What is happening?
- Why did it happen?
- What will happen?
- What should we do?



Information to Optimisation

Access the site here:

https://unosat-geodrr.cern.ch/portal/apps/sites/#/common-sensing

Home / **Fiji - Decision Support System**

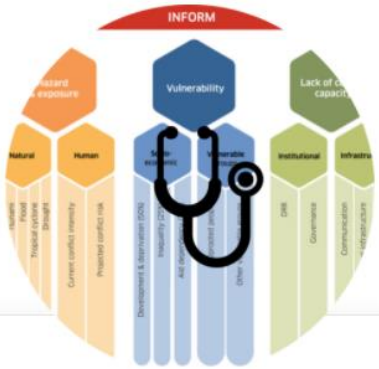
Decision Support System for Enhanced Disaster Risk Reduction

Fiji, 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?

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

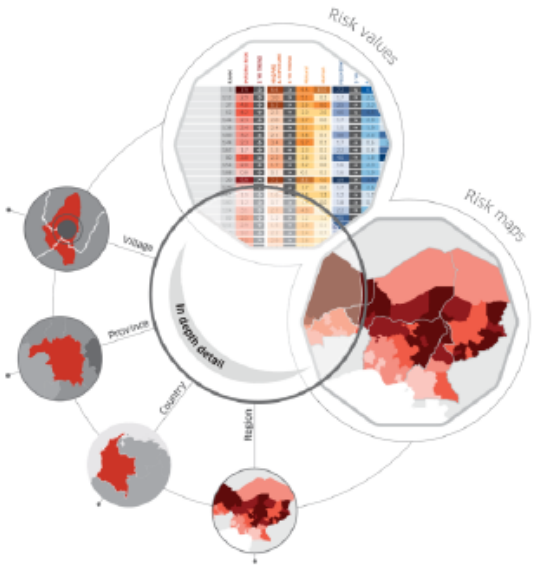
The Data Quality Assessment shows OSM map coverage by comparing the number of OSM object counts (number/km^2) to the local population density (population/km^2).

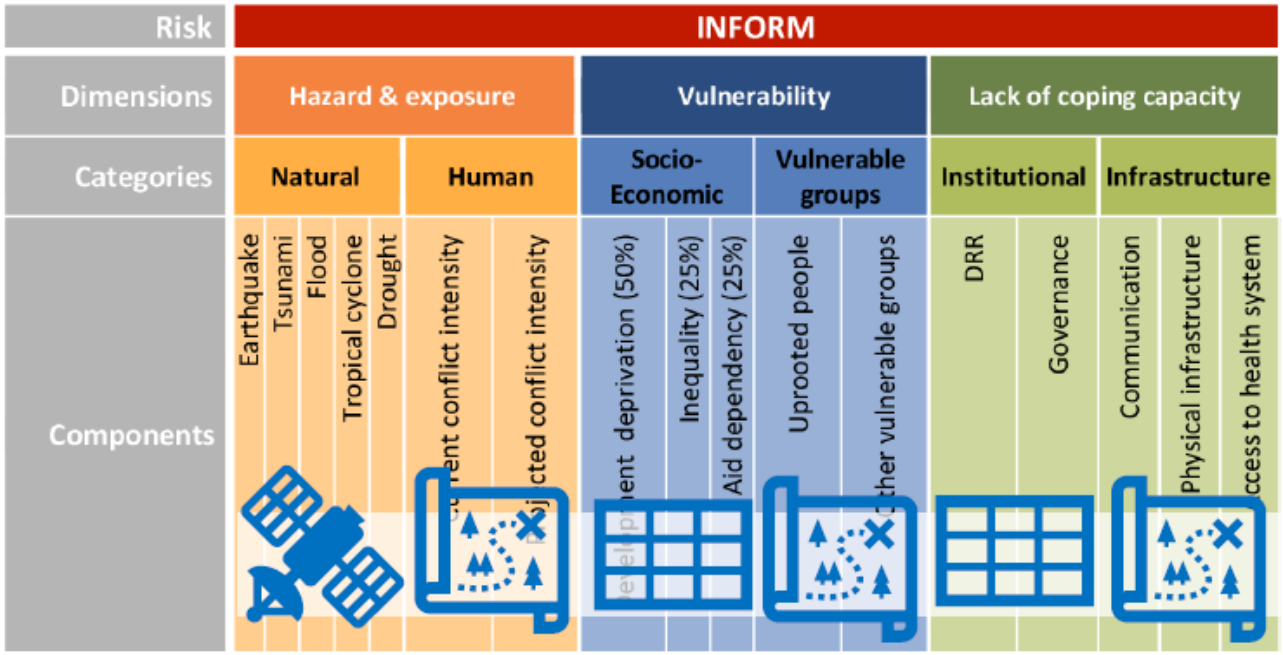
LAUNCH TOOL

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.

Project is in process of developing sub-national INFORM Index



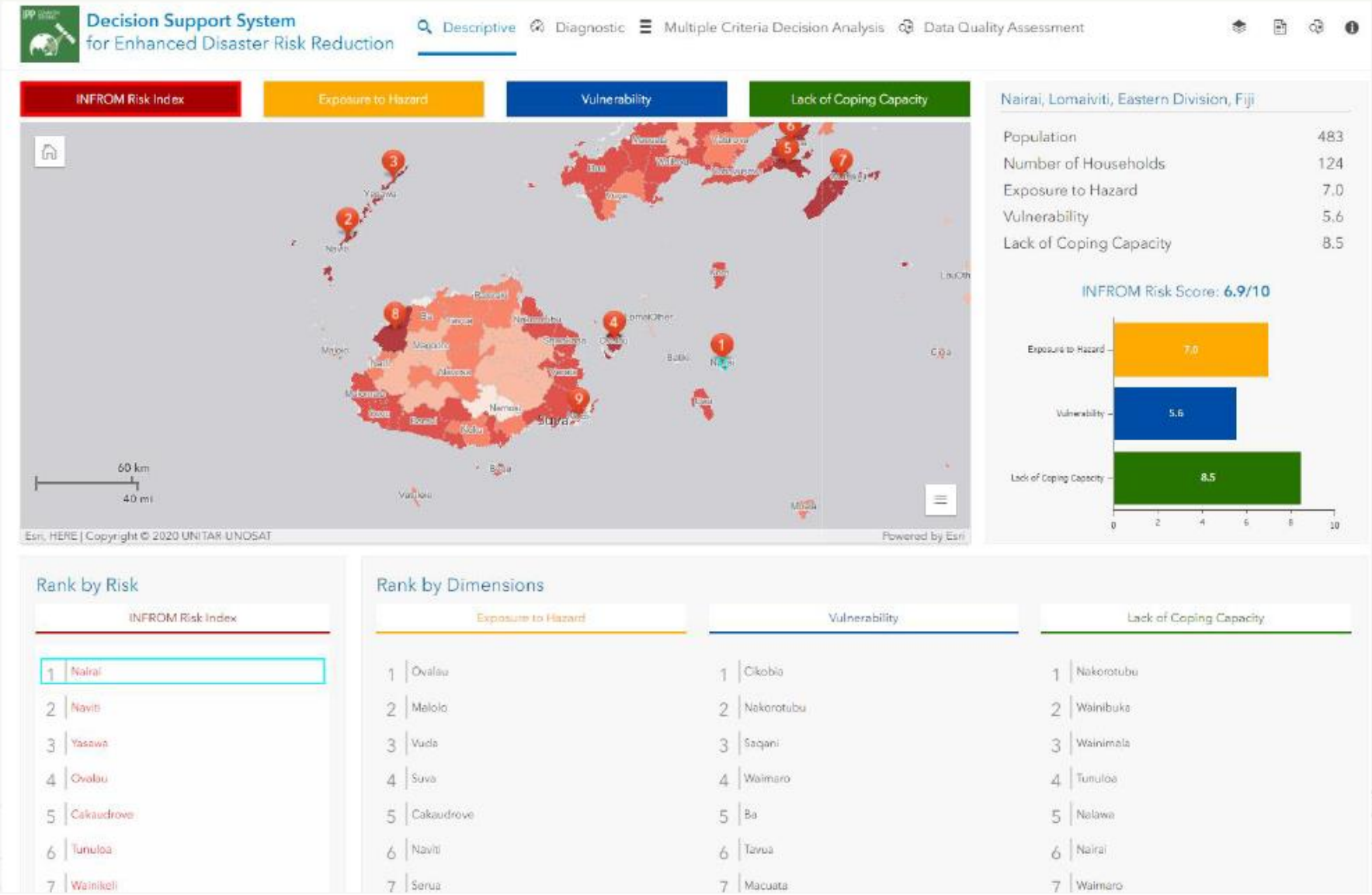


Fiji
Unit: Admin 3 level (Tikina)

Solomon Islands
Unit: Admin 3 level (Ward)

Vanuatu
Unit: Admin 2 level (Area Council)

Descriptive | Diagnostic | Predictive | Prescriptive | Multiple Criteria Decision Analysis



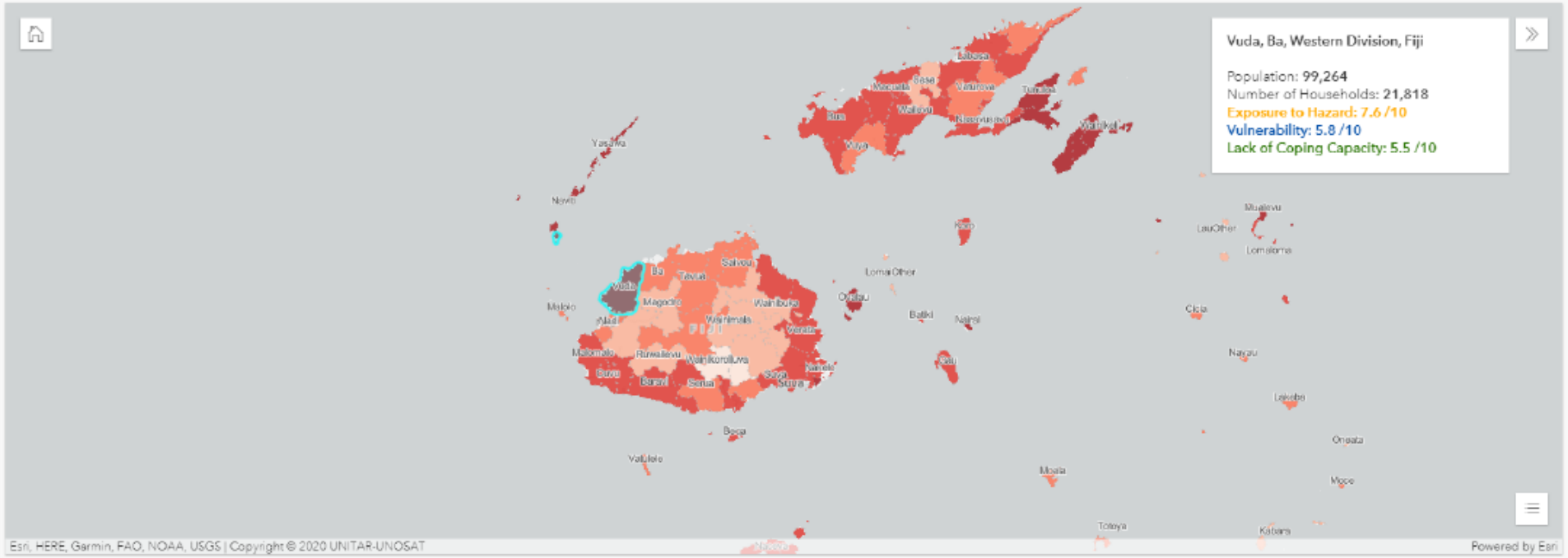
Descriptive | **Diagnostic** | Predictive | Prescriptive | Multiple Criteria Decision Analysis

Decision Support System
for Enhanced Disaster Risk Reduction

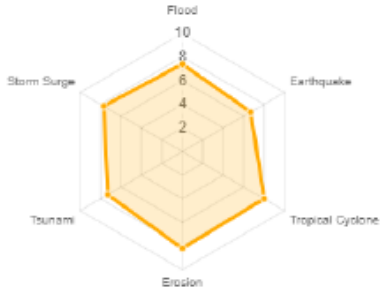
Descriptive | Diagnostic | Multiple Criteria Decision Analysis | Data Quality Assessment

Where is the highest overall risk?

- 6.9 - Nairai (0.5k ppl)
- 6.8 - Naviti (2.9k ppl)
- 6.7 - Yasawa (2.2k ppl)
- 6.6 - Ovalau (9.6k ppl)
- 6.5 - Cakaudrove (14.6k ppl)
- 6.4 - Tunuloa (3.8k ppl)
- 6.3 - Wainikeli (4.5k ppl)
- 6.2 - Mualevu (0.8k ppl)
- 6.2 - Vuda (99.3k ppl)
- 6.2 - Noco (3.7k ppl)
- 6.1 - Nakorotubu (4.4k ppl)
- 6.1 - Bua (6.2k ppl)
- 6.1 - Serua (16.4k ppl)
- 6.1 - Saqani (2k ppl)
- 6.1 - Koro (2.9k ppl)
- 6 - Nakasaleka (2.5k ppl)
- 6 - Bau (31k ppl)
- 6 - Suva (94.1k ppl)
- 5.9 - Nakelo (10.9k ppl)
- 5.9 - Sawakasa (8.6k ppl)
- 5.9 - Lomaloma (0.9k ppl)
- 5.9 - Gau (2.2k ppl)
- 5.9 - Cikobia (0.1k ppl)
- 5.9 - Macuata (9.4k ppl)
- 5.9 - Naitasiri (160k ppl)
- 5.8 - Batiki (0.2k ppl)
- 5.8 - Nabukelevu (2.6k ppl)
- 5.8 - Naceva (1.8k ppl)

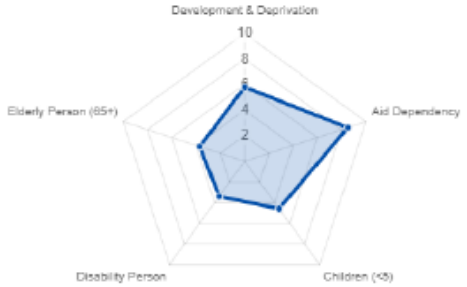


EXPOSURE TO HAZARD: 7.6



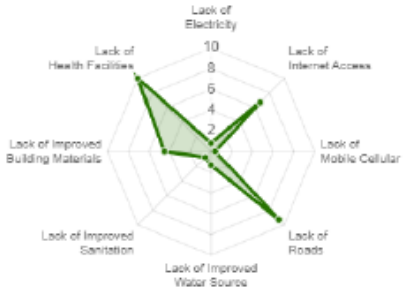
Events that could occur and the people or assets potentially affected.

VULNERABILITY: 5.8



The susceptibility of communities to those hazards.

LACK OF COPING CAPACITY: 5.5



Lack of resources available that can help absorb the shock.

Selected Intervention: Relocation

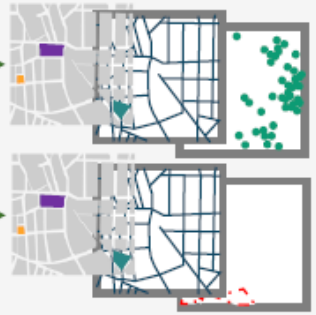
Score

All Criteria

- Accessible to existing neighborhood
- Accessible to planned neighborhood
- Minimized tree and vegetation disruption
- Avoided topological challenges
- Minimized impact on watershed
- Reduced on-site dev't costs
- Reduced off-site dev't costs

Weight

Criteria	Imp.	Rk.	Wt.	Sub-Criteria	Sub Wt.
Proximity to users	imp.	3	10	Access-existing	9
				Access-planned	8
Env. impact	Very Imp.	1	60	Min. veg. disruption	30
				Min. topo.	45
				Min. watershed impact	60
Cost	Mod. imp.	2	30	On-site dev't costs	30
				Off-site dev't costs	25



op.1	$$	$$$	$$
op.2	$$$	$$	$$$$
op.3	$	$$$	$$$

Provide scores for each option

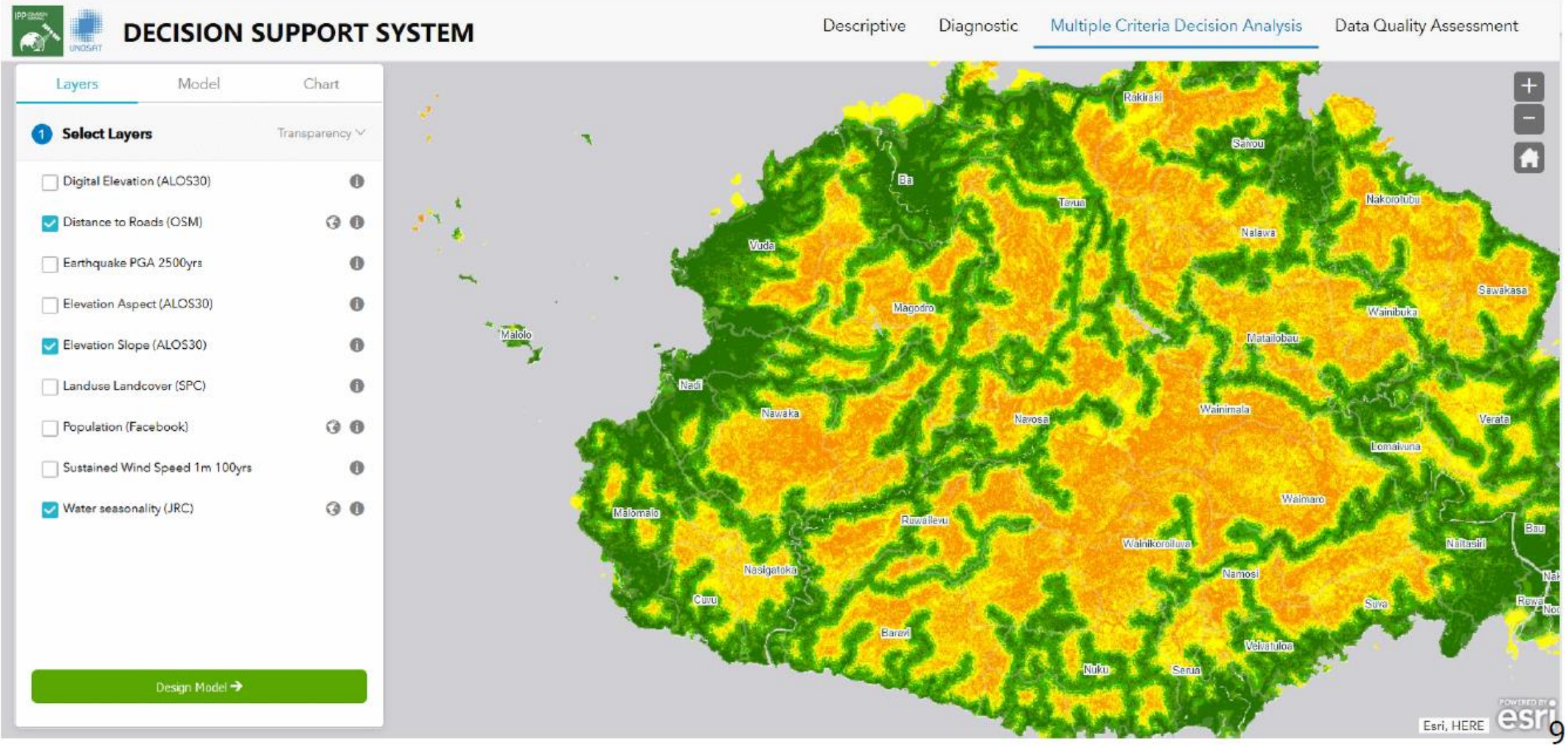
For example:

Accessibility to neighborhood:
- *5: Dist. from each settlement < 3 min. walk*
- *1: Dist. from each settlement > 15 min. walk*

Min. tree and vegetation disruption:
- *5: No. of tree = 0 + Grass area < 10 sqmt*
- *1: No. of tree > 4 + Grass area > 50 sqmt*

Reduced on-site development cost:
- *5: Total on-site development cost < $90,000*
- *1: Total on-site development cost > $250,000*

Multi Criteria Decision Analysis (Demonstration)



Decision Support Platform for DRR

Access the application here

- https://unosat-geodrr.cern.ch/dss/FJI

Please provide your feedback here;

- User Experience Survey Form (DRR DSS Tool)

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