Report on the Pacific Environmental Vulnerability Index (EVI) Capacity Strengthening Workshop

18 – 20 October 2004,

Tanoa International Hotel,

Nadi, Fiji

EVI REPORT

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ENVIRONMENTAL VULNERABILITY INDEX (EVI)
CAPACITY STRENGTHENING WORKSHOP
18 – 20 OCTOBER 2004,
TANOA INTERNATIONAL HOTEL,
NADI, FIJI

SOPAC

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OCTOBER 2004

UNEP

This project was supported by
Ireland, Italy, New Zealand, Norway
and the United Nations Environment Programme.

SOPAC Miscellaneous Report 584

Cataloguing-in-publication data:

Pratt, C.R., Kaly, U.L., and Mitchell, J. 2004. Report on the Pacific Environmental Vulnerability Index (EVI) Capacity Strengthening Workshop 18 – 20 October 2004, Tanoa International Hotel, Nadi, Fiji. SOPAC Miscellaneous Report 584, 8pp; 2 appendix. United Nations Environment Programme (UNEP). South Pacific Applied Geoscience Commission (SOPAC).

1. Vulnerability index – environment

This project has been supported by UNEP, Ireland, Italy, New Zealand and Norway.

Table of Contents

Introduction

The Environmental Vulnerability Index (EVI) is an indicators-based method which has been developed in partnership by SOPAC, UNEP, Ireland, Italy, New Zealand, and Norway in collaboration with the Alliance of Small Island Developing States (AOSIS), Small Island Developing States (SIDS) institutions and experts. The EVI was developed in response to a call made in the 1994 Barbados Programme of Action for the Sustainable Development of Small Island Developing States to prepare a composite vulnerability index that incorporated both economic and ecological concerns.

The EVI model quantifies vulnerability of the natural environment to damage from natural and anthropogenic hazards at national scales. It is the first global attempt to develop such an ecological index. The EVI will support decision-makers by providing a pragmatic approach that will enable them to "see" the problem, as well as identify actions that could be taken to manage vulnerability and protect or build environmental resilience of a country.

Purpose of the Workshop

The purpose of the workshop was to initiate capacity strengthening in the region to address vulnerability. Pacific Island Country representatives were exposed to the *Environmental Vulnerability Index (EVI)*, its concept, mechanics and how EVI scores are generated. The knowledge gained through the workshop will enable participants to provide their countries with detailed explanations on the need for environmental management information, the conceptual mechanics and overall benefits of the EVI and its application. In the long-term it is expected to help countries prioritise and direct actions in managing vulnerability and towards sustainability.

The workshop was convened at the Tanoa International Hotel, from 18 to 20 October 2004 with the principal objectives of:

- Strengthening understanding of the issue of environmental vulnerability and importance of tools like the EVI in environmental management and decision-making
- Providing training to Pacific country representatives in the data collection, computation and application of the Environmental Vulnerability Index

Workshop Agenda

The Workshop was divided into five sessions. Each session was opened with presentations by the EVI team and followed by open discussions. In Session 4, the workshop broke out into working groups to provide feedback on the EVI calculator as well as discuss potential uses for the EVI and where assistance may be required to ensure effective use of the EVI at the national, regional and international levels. The following summaries of the various sessions guided presentations and discussions of the workshop.

1. **Introduction (Plenary)**
   - What is vulnerability/resilience? BPoA. The development process.

2. **EVI mechanics (Plenary)**
   - Data, scaling, mapping & thresholds. Mechanics. The indicators. Specialist sub-indices. Repeated evaluations and what they mean.

3. **Using the EVI calculator (Plenary)**
   - A session on how to use it

4. **National and international applications of the EVI (Working groups)**
   - Working groups to work with the EVI calculator and identify internal uses for prioritising actions and meeting national and international reporting obligations. Working groups report.

5. **National and International applications and gaps (Plenary)**
   - Session carries on from Session 4 and goes into discussion on how the EVI fits into the overall management and reporting responsibilities / needs of countries; what other mechanisms are available and how do they complement each other. Are there any gaps that still need to be addressed? Can the EVI provide other data products that would help in these processes.

Workshop Outputs

The Pacific EVI Capacity Strengthening Workshop was attended by participants from nine countries from the region (see appendix for participant list). Following discussions both in working groups and plenary several important recommendations were made by the meeting. More specific refinement recommendations were also made and included in the Appendix.

The workshop suggested that the EVI should be presented to Mauritius with the following dedication to ensure recognition of the Pacific's effort in developing such an important global tool.

> The EVI was created by the countries of the Pacific to promote sustainable development across the world and cooperation on issues relating to our natural life-support ecosystems

General Recommendations

1. The EVI is an important tool that can aid national planning. It contains a wealth of information in a simplified way needed to identify and prioritise environmental vulnerabilities and provide guidance and context for action. The EVI could provide the basis for rationalising national reporting requirements and as a basis for improving sustainable development strategies. Through repeated evaluations, it becomes a monitoring tool, able to identify improvements in response to policy.

2. To support national use of the EVI, a regional coordinating institution (RCI) is required. The RCI would maintain links with UNEP (the global coordinating agency) and would assist countries with collecting data, generating results, adapting the EVI to their specific national uses and obtaining funding to address data and vulnerability issues as may be required. The RCI would also assist countries to strengthen their national capacity to utilise the EVI in decision-making and to promote environmental resilience-building.

3. There is a need to streamline collection and improve the quality of environmental data generally. A mechanism needs to be established to increase national capacities, and to create a permanent data collection process. There is also a need to establish a two-way data dialogue between countries and international datasets to ensure quality control, accuracy and availability of data. Such data are needed for a range of processes, including the EVI, national and regional planning, and reporting for MEAs. Special support should be given to SIDS to strengthen their capacity to compile environmental data.

Uses of the EVI

National level

1. The EVI could be used for national planning. It contains a wealth of information with a simplified way of identifying environmental vulnerabilities
2. The EVI could be used to identify issues and highlight areas requiring action. These would include issues that cannot be directly influenced by human interventions (natural hazards and inherent characteristics) but for which vulnerabilities could be compensated for by increasing resilience in other areas to reduce overall vulnerability
3. The EVI could be used to develop policies to reverse trends that are increasing the risk of damage to the natural environment that supports a country's development
4. The EVI could be used to guide legislation and the development of ERM mechanisms (Environmental Resource Management using most effective / practical solutions). This would focus on trade-offs and achieving a sustainable balance for development goals
5. The EVI could be used to bring together the stakeholders in a country, including government, civil society and other resource use / management groups to share information, coordinate efforts and identify individual and joint responsibilities
6. The EVI is useful as a basis for increasing national awareness of vulnerabilities at all levels of society
7. The EVI transforms data that are currently not in widespread or efficient use to a form that greatly enhances the benefits to be derived from them
8. The EVI promotes data collecting and sharing between agencies for the benefit of the whole country
9. The prioritisation of issues could be used as a basis for allocating budgets (both internal and donor). This could include funding for improving data mechanisms and for responding to issues
10. Regional reporting and conventions should be added to the uses / policy relevance of the EVI. Include Waigani Convention etc (after Mauritius, not for international presentations)
11. Where the EVI is adapted and modified for national uses, national standards may be used instead of international ones (such as WHO). In so doing, any adaptations should be mindful that indicators focus on environmental loads and vulnerabilities and not human ones
12. The EVI and national indicators could be used for monitoring progress resulting from actions and policy changes as well as in-country and donor support
13. The EVI could be used for national, regional and international reporting

International level

1. The EVI provides a mechanism for standardising and streamlining national reporting to multilateral environmental agreements
2. It provides a basis for negotiating bilateral and multilateral assistance either at a national level or regional level for common / transboundary issues
3. The EVI could be used to improve awareness of vulnerability and sustainability issues worldwide, acknowledging the transboundary nature of many environmental concerns
4. The EVI could be used to improve collaboration and support among PICs and for monitoring progress as a region. Regional level expressions of the results could be investigated
5. The EVI could be acknowledged by regional organisations to help key in on areas for technical assistance
6. The EVI could be used to coordinated Environment Outlook and Pacific Plan reports

Awareness, Capacity and Needs

1. There is a need to provide awareness and training for countries of the Pacific to use the EVI system
2. The University of the South Pacific and/or other institutions could be approached to include an EVI module in one of their courses to promote capacity for using the index
3. Information on the EVI should be circulated through statistical yearbooks and the media to increase awareness
4. The RCI could host information on the EVI on the world wide web to create user groups and improve general access and awareness

Data

1. National organisations responsible for collecting data should commit to providing accurate and authentic environmental data and sharing them
2. Funding should be sought to support capacity-building for all aspects of environmental data requirements
3. There is a need to strengthen the capacity of PICs for data collection and improve quality
4. Mechanisms for procuring, storing and handling data required for all environmental reporting, including the EVI, should be streamlined to minimise costs and maximise benefits.

Frequently Asked Questions

Several important issues of concern regarding the EVI and its indicators were discussed by participants during the workshop. As a result the workshop recommended that a FAQ be developed to explain in detail how these issues have been addressed by the EVI.

FAQ

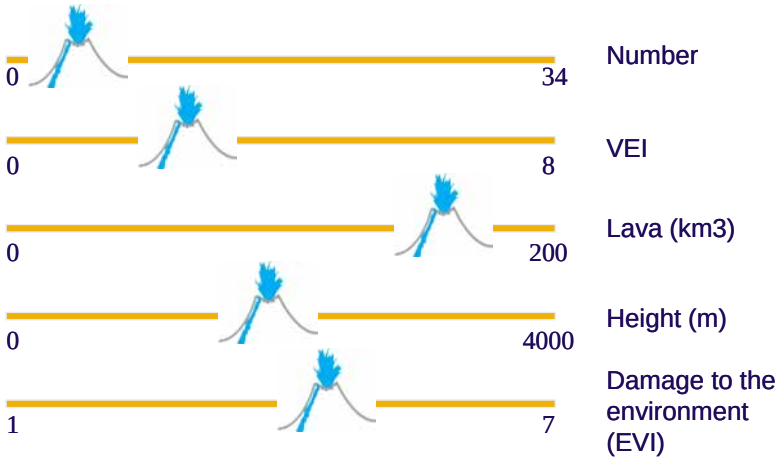
Frequently Asked Questions – October 2004

1. Is there a problem of non-independence of data in the EVI?

No. Statistically, there is no requirement that the data for indicators are independent of one another. The requirement of independence of data is associated with a class of statistical significance tests which rely on certain underlying assumptions of how data are distributed and how they are dispersed (parametric methods). The EVI uses only descriptive statistics that do not imply or require these assumptions and are never used to carry out significance tests. In terms of logic, the EVI is being used to describe and summarise the vulnerability of the natural environment. This, by its very nature, is a complex interactive system in which we fully expect to see various levels of interdependence of its parts. The EVI's indicators have been selected to provide information and to identify issues. The relationship among indicators is the same across countries and repeated evaluations and is part of how the EVI tool is defined.

2. The EVI compares apples and oranges

No. All measurable things can be simultaneously measured on a range of scales. All of these scales are valid and exist at the same time. Consider a single volcano depicted below. Here it is shown simultaneously on 5 separate scales. It is the only volcano found in the country:



3. How are countries ranked?

The EVI ranks countries into categories to provide information on overall environmental vulnerability. The ranking is as follows: Extremely vulnerable (375+); Highly vulnerable (325-375); Vulnerable (275-325); At risk (225-275); and Resilient (<225). Groups of countries that fall into these categories are presented in alphabetical order. The purpose of this ranking is to help identify countries with overall high or low vulnerability, without focusing on the smaller (and non-instructive) differences among them. The overall EVI score is calculated by averaging all values obtained for individual indicators and multiplying by 100 to remove the decimal point.

4. What happens for ND (no data)?

Indicators for which no data have been obtained (for now) are given a "ND" (no data) value. This implies, correctly, that no information on vulnerability can be obtained for that indicator at that time. This means that when the sub-indices and overall EVI are calculated such indicators are excluded from the calculation and do not contribute to the overall mean. A similar argument applies to several indicators that can score "NA" (not applicable, and only applies to land-locked countries for which an indicator can never be evaluated). The EVI has been built to allow for some indicators to be treated in these ways – this is the purpose of the 80% data requirements for a valid EVI.

5. Distance from biodiversity hotspots - isolation

Indicator 13 on isolation is not defined in relation to distance from biodiversity hotspots. The reason for this is that the global biovidersity is made up of hotspots as well as areas with lower species numbers which also form unique species assemblages and habitats. The EVI focuses on vulnerability to environmental isolation only in terms of the natural biodiversity normally found in a country and the degree to which it can be replenished from nearby sources in the event of damage.

6. Climate change & sealevel rise is not indicated

Climate change and sealevel rise are included in the EVI, but are only a part of it. Because the effects of climate change are expected on a scale of up to 100 years, and most EVI indicators can change on the scale of a very few years, the EVI addresses effects indirectly. That is, if climate change is occurring, we would expect to see changes in indicators 1 (Wind), 2 (Dry), 2 (Wet), 4 (Hot), 6 (Sea temperatures), and 36 (Water), with effects being amplified or reduced by changes in indicators 11 (land area), 12 (Dispersion), 14 (Relief), 15 (Lowlands), 24 (Vegetation cover), 45 (Population density) and 48 (Coastal settlements). Incremental changes in these indicators may signal changing climate and its effects in the short term, even though the entire process may be occurring on a much longer time scale. The EVI now has a sub-index specifically focusing on these signals, called the Climate Change Sub-Index which is reported with the overall EVI score and other policy-relevant sub-indices.

7. The 5 year re-evaluation period might not represent changes well. Why was 5 years chosen?

The 5 year period is only a recommended period for re-evaluation and may be changed. For some uses, the EVI could be re-evaluated yearly. Five years is the period over which the designers of the EVI considered it was most likely that responses to changes in policy and action could be measured, particularly for issues that are expected to lead to some change in natural systems. That is, if the way of doing business is changed in a country, we would expect a several year time lag before we would expect to see improvements in certain indicators (e.g. forest cover, renewable water etc). Indicators on a geological time frame are not expected to change significantly over this time frame, and can for most purposes be considered constants in the overall EVI equation. They nonetheless need to be considered because they are part of a country's vulnerability. The important point is that the EVI is flexible and may be re-evaluated over whatever time period people consider relevant to their needs.

8. How accurate are the data, and how does accuracy relate to an overall EVI score?

The EVI largely uses public data sources that have been selected because the organisations collecting and storing the data are recognised data providers and have applied quality control mechanisms (e.g. FAO, WRI, WCMC). Some data are also collected from official in-country sources, particularly if they are not available from global datasets. The accuracy of the EVI, as for all national and international data-related processes and agreements (e.g. census, ESI, SOE, IPCC, CDB), depends on the accuracy of the data obtained from both of these sources. Improving the availability and accuracy of data should be an on-going process, and is needed in a greater context than just the EVI. It is the future intention of the EVI Project to examine ways of formalising data collection and checking, and to create a 2-way dialogue between countries and international data providers. This will allow countries to correct and update their data as required, while allowing for an independent organisation to provide quality control needed for international processes.

9. Is it possible to use a mix of in-country and international data?

Yes. The EVI could be evaluated wholly from either source. The benefit of using international, quality-controlled data will be to provide transparency and known quality for international processes, and data that have been collected in the same way and on the same scale for each country.

10. Is it possible to add more indices and sub-indices?

Yes. Special indices that might be needed for particular purposes may be added at any time. It is much more difficult to add new indicators because they need to be investigated to create and set the EVI scale (also not impossible). Different combinations of existing indicators can be calculated by any user simply by averaging the EVI scores of relevant indicators needed for the issue they are investigating.

Appendix

Specific recommendations were also made by the Workshop for improvements to the EVI calculator. These refinements will be incorporated to enhance the EVI and improve its effectiveness and usefulness as a tool for measuring environmental vulnerability.

EVI Calculator

1. The layout of the EVI calculator needs to be made more intuitive. It assumes basic knowledge on how to use EXCEL. Use "Enter data here" or colour codes to show where data are to be input
2. There needs to be an appendix on what the indicators are, how the scales were derived and implications for the results (this can be as a separate document?)
3. The colour coding for the types of indicators used (weather & climate, geological, geographical, resources & services and human populations) is not clear. The coding should be placed elsewhere and the specialist sub-indices placed directly under the Hazards, Resistance, Damage sub-indices for continuity
4. Consider finding a way to automate colour coding from ranking or removing because it needs to be put on manually making the calculator less streamlined
5. Provide an explanation on how NDs (no data) and NAs (not applicable) are handled
6. A manual / step-by-step instructions on how to use the calculator is needed so that new users can use it. An explanation is needed on what the cells contain and how they do the calculations
7. The calculator should have a mechanism for easily converting values for countries using imperial measures (this may be as a separate input sheet that can be selected instead of the metric one now being used)
8. The headings used in the EVI Calculator should be better explained
9. The "Calculations" sheet could be protected so that people do not inadvertently use it and destroy the formulae
10. The EVI 1-7 scale shown in the "Calculations" sheet should be coloured with the graded red scaling used for indicators to make the sheet more intuitive
11. A units column should be added to the "Calculations" sheet
12. An explanation of the specialist sub-indices should be provided identifying the indicators that have been used to generate them
13. The output sheet should include an area for data deficiencies
14. Definitions used by the EVI's indicators should be included in the calculator (e.g. IUCN, WHO etc)

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18 – 20 October, 2004

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