



**PROGRESS REPORT:  
Towards a Global Environmental  
Vulnerability Index (EVI):  
Update on Progress March – June 2002  
and  
Revised Funding Proposal 2002 – 2003**



**SOPAC**

*South Pacific Applied Geoscience Commission*

June 2002

**SOPAC Miscellaneous Report 465**



**Progress Report:**

**Towards a Global Environmental**

**Vulnerability Index (EVI):**

**Update on Progress March – June 2002**

**and Revised Funding Proposal 2002 - 2003**

**By:**

**Craig Pratt, Ursula Kaly, Emma Sale-Mario and Jamie Seddon.**

**SOPAC**

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1. Vulnerability index – environment

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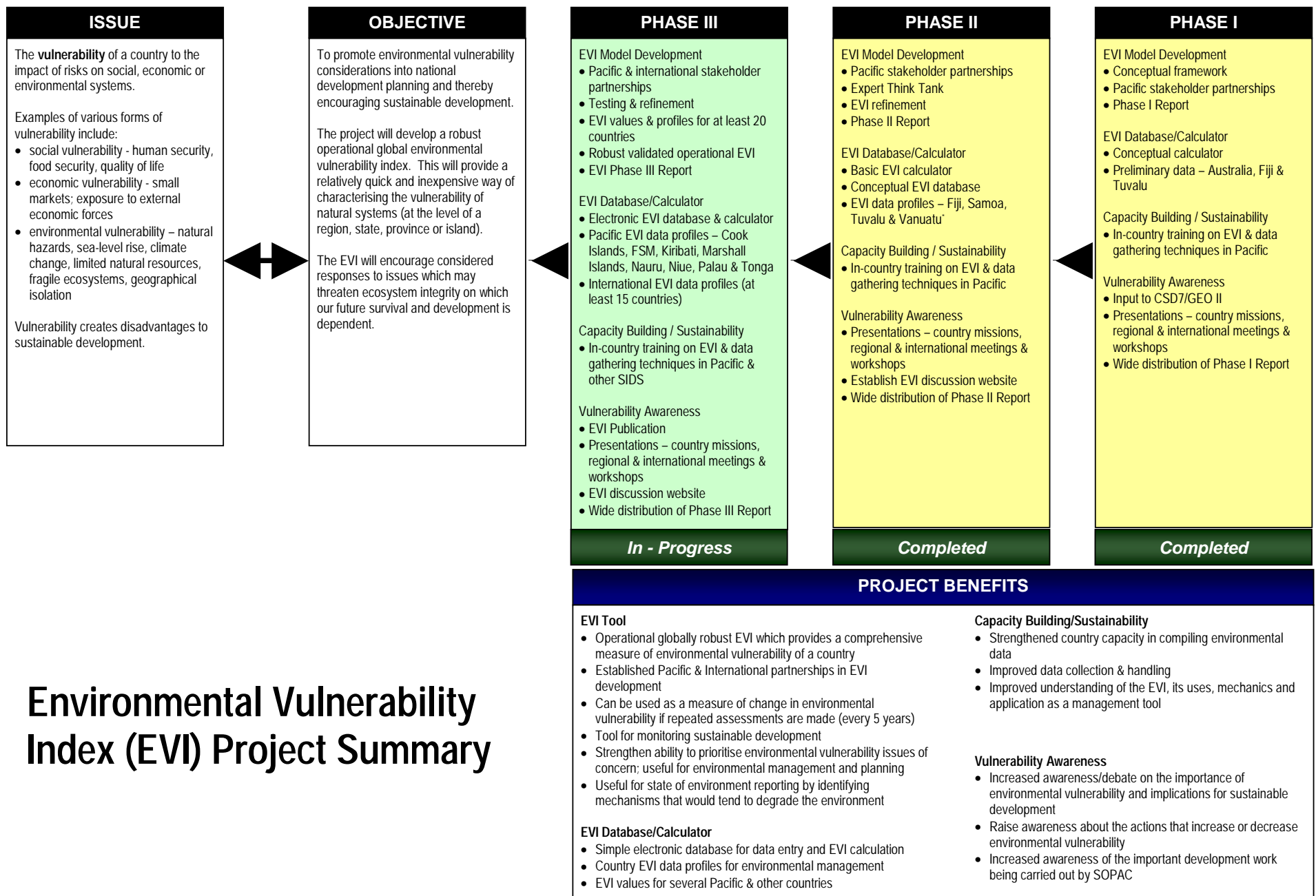
**This project has been funded by New Zealand, UNEP, Ireland, Norway and Italy.**

# Acronyms & Terms

ADB	Asian Development Bank
AIMS	Australian Institute of Marine Science
AOSIS	Alliance of Small Island States
BPoA	Barbados Programme of Action (1994)
CCD	Convention to Combat Desertification
CDP	UN Committee on Development Policy
CIA	Central Intelligence Agency
CRED	Centre for Research on Epidemiology of Disasters
CROP	Council of Regional Organisations in the Pacific
CSD	Commission on Sustainable Development
DEWA	Division of Early Warning and Assessment, UNEP
EU	European Union
EM-DAT	Emergency Events Database
EVI	Environmental Vulnerability Index and Profiles
FAO	UN Food and Agriculture Organisation
FIS	Foundation for International Studies
GEF	Global Environment Facility
GEO	Global Environment Outlook
GIS	Geographic Information Systems
GOOS	Global Ocean Observing System
GRID	Global Resource Information Database, DEWA, UNEP
HDR	Human Development Report
IATF	Inter-Agency Task Force for Disaster Reduction
IDNDR	International Decade for Natural Disaster Reduction
ISDR	International Strategy for Disaster Reduction
IUCN	The World Conservation Union
LDC	Least Developed Country
NGDC	National Geophysical Data Center
NGOs	Non-Government Organisations
NOAA	National Oceanic and Atmospheric Administration
NZODA	New Zealand Overseas Development Assistance
OECD	Organisation for Economic Cooperation and Development
OFDA	Office of United States Foreign Disaster Assistance
OPEC	Organisation of Petroleum Exporting Countries
PACCLIM	Pacific Climate Change Integrated Model
PICCAP	Pacific Island Climate Change Assistance Programme
SIDS	Small Island Developing States
SIS	Small Island States
SOE	State of the Environment
SOPAC	South Pacific Applied Geoscience Commission
SPREP	South Pacific Regional Environment Programme
SPTO	South Pacific Tourism Organisation
STAR	Science Technology And Resources Network
START	Global Change System for Analysis, Research and Training.
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNEP	United Nations Environment Programme
WCMC	World Conservation Monitoring Centre
WDC	World Data Center
WDI	World Development Indicators
WHO	World Health Organisation
WMO	World Meteorological Organisation
WRI	World Resources Institute
WSSD	World Summit on Sustainable Development

# Project Summary

<b>Project Title</b>	<i>Environmental Vulnerability Index (EVI) Project (Phase III)</i>
<b>Project Type</b>	<i>Development of a global environmental vulnerability index</i>
<b>Lead Implementing Agency</b>	<i>South Pacific Applied Geoscience Commission [SOPAC]</i>
<b>Key Stakeholders</b>	<i>Collaborators: Malta, Australia, Bangladesh, Botswana, Costa Rica, Greece, Kenya, Kyrgyzstan, New Zealand, Nepal, Philippines, Singapore, Thailand, UNEP, WMO</i> <i>SOPAC Pacific member and non-member countries:</i> <ul style="list-style-type: none"><li>• Cook Islands</li><li>• Federated States of Micronesia</li><li>• Fiji</li><li>• French Polynesia</li><li>• Guam</li><li>• Kiribati</li><li>• Marshall Islands</li><li>• Nauru</li><li>• New Caledonia</li><li>• Niue</li><li>• Papua New Guinea</li><li>• Palau</li><li>• Samoa</li><li>• Solomon Islands</li><li>• Tonga</li><li>• Tuvalu</li><li>• Vanuatu</li></ul> <i>Small Island Developing States (SIDS) – Barbados, Jamaica, Maldives, St Lucia, Mauritius, Trinidad &amp; Tobago</i> <i>Supporting Countries: New Zealand, Ireland, Italy and Norway.</i>
<b>Project Goal</b>	<i>To develop a robust operational global environmental vulnerability index which provides a relatively quick and inexpensive way of characterising the vulnerability of natural systems (at the level of a region, state, province or island). The common basis on which the index is developed will allow users to monitor the condition of the environment and comparisons through time and among countries.</i>
<b>Project Purpose</b>	<i>To enhance national capacity, technical skills and knowledge in environmental vulnerability and management</i>
<b>Project Benefits</b>	<i>Development of a robust internationally recognised and acceptable EVI.</i> <i>Promotion tool for sustainable development through identification of key environmental vulnerability issues and examining the relative vulnerabilities of states.</i> <i>Empower countries through strengthened capacity across all project components.</i>
<b>Project Components</b>	<i>Refinement &amp; Comprehensive Testing of the EVI</i> <i>Pacific Country EVI Capacity-Building</i> <i>Sustainable Data Collection Process for the EVI (through in-country and international agencies)</i> <i>Computer EVI Interface</i> <i>EVI Validation</i>
<b>Project Duration</b>	<i>The project is expected to have a duration of 2 years</i>
<b>Location</b>	<i>The project office will be located at the SOPAC Secretariat in Suva. Project staff will be required to travel within the Region and elsewhere as necessary, for the duration of the project</i>
<b>Donor Inputs</b>	<i>Donor inputs are primarily directed toward funding project activities, which include the resources required to carry out activities, enhance national capacity within participating countries and, costs for two full-time equivalent positions to coordinate and implement key project activities</i>
<b>SOPAC Inputs</b>	<i>The Secretariat will provide: a framework for administrative, financial and other reporting for the project; accommodation and access to facilities and services such as logistics support, library and publications, computer networks and databases; and representation to the Pacific Island Forum and CROP meetings</i>
<b>Achievements to Date</b>	<i>An EVI has been developed and is now being tested. Sufficient data for a valid EVI (minimum 80% data requirements) have been collected for 20 countries. Thailand and Palau are model examples, having provided 96% of their EVI data. Data have also been collected for at least 29 indicators for more than 100 countries from public data sources. In-country assistance will be required to compile data on all the remaining indicators. These results show that it is possible to collect the data requirements for the EVI.</i>



# Environmental Vulnerability Index (EVI) Project Summary

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## 1. Introduction ---

The EVI team has over the past four years, made significant progress towards the development of a robust global Environmental Vulnerability Index (EVI) tool. The EVI has been developed and is now undergoing testing and refinement in order to make it a globally applicable tool.

The purpose of this interim report is to highlight important emerging issues that have increasingly caused delays to meeting the goals of the third phase of the EVI project. The key impediments to progress with the testing and refinement of the EVI included:

- The need to respond to international and regional initiatives. Currently, the team is looking into the issue of environmental vulnerability in the lead up to the World Summit on Sustainable Development (WSSD)
- Additional workload as a result of inclusion of several additional EVI indicators as a result of the EVI Globalisation Meeting in Geneva (August 2001)
- Difficulties in obtaining effective commitment from some target collaborating countries to compile relevant in-country data
- The need to identify financial resources to support collaborating countries and their activities for compiling their environmental vulnerability data profiles

To ensure sufficient resources are secured for completion of globalising the EVI, this report also provides a revised funding proposal for consideration.

## 2. Environmental Vulnerability – The Issue ---

In 1994, the United Nations through the Barbados Programme of Action (BPoA) gave international recognition to the importance of vulnerability as a significant constraint to sustainable development of Small Island Developing States (SIDS). In this declaration, it was accepted that vulnerability of SIDS was the consequence of interplay of factors that can result in damage to social, economic or environmental systems, considered to be the three pillars of sustainable development. The factors affecting the degree of vulnerability included such characteristics as small size, remoteness, geographic dispersion, natural disasters, a high degree of economic openness, small internal markets and a limited or damaged natural resource base.

The BPoA in paragraphs 113 and 114 specifically highlighted the need for action on the development of a composite vulnerability index that integrated both ecological fragility and economic vulnerability to reflect the status of their countries.

Efforts at developing vulnerability indices for countries, and particularly to meet the needs of SIDS are well advanced for economic systems, with economic indices developed by several organisations and individuals. A range of environmental indices has also been developed in the past with most, narrowly focused, on the special vulnerabilities associated with climate

change and sea-level rise. Other more general environmental vulnerability indices were developed during the 1990's, but most of these focus on the impacts of environmental hazards on human systems (and are thus really economic or human welfare indices and do not measure the vulnerability of the environment). Moves are now being made to develop a social vulnerability index to complete the vulnerability picture repeatedly called for by SIDS since the Rio Summit in 1992.

International recognition of the need to complete development of vulnerability indices is being reflected in preparatory documents to be presented to the World Summit on Sustainable Development (WSSD) for endorsement in Johannesburg, August 2002. Proposed text agreed to by the international community at the last PrepCom in Bali in paragraph 48 of the Sustainable Development of SIDS section states:

*“(i) [Agreed] Support the finalization and subsequent early operationalization, on agreed terms, of economic, social and environmental vulnerability indices and related indicators as tools for the achievement of the sustainable development of the small island developing States;”*

All countries will endorse this statement and pave the way for support towards the completion of the work being carried out on the index and other vulnerability indices. Several Type II initiatives are also currently being developed by international and regionally to address vulnerability. Vulnerability indices are key components that are essential if these initiatives are to be effective in addressing vulnerability.

The upcoming triennial review of Least Developed Country (LDC) status of countries in 2003 and the Barbados Programme of Action review in 2004 make it imperative that all work still to be carried out on the testing and refinement of the EVI be completed as soon as possible. It is expected that with sufficient resources and once all international target country environmental vulnerability data profiles are complete, the testing and refinement process should take no more than six months to finish. The EVI team is targeted to complete the EVI by 2003.

### 3. Progress Summary ---

A true vulnerability index for the environment (EVI) has been developed by SOPAC and its partners. It is the first international initiative to provide a measure for environmental vulnerability or the risk of damage to the natural environment, which is the basis for all human activities and survival.

The project initiated by SOPAC in 1998 with funding from New Zealand has seen the completion of two phases of EVI development. Additional support from Ireland, Italy and Norway provided the necessary resources to allow the EVI project to proceed into a third phase aimed at fully testing, refining and globalising the EVI into a robust tool.

Several significant achievements have been made during this past four years, which are summarised below with important milestones and documents outlined:

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July 1998	SOPAC study team established to develop a methodology for determining and quantifying environmental vulnerability at the scale of entire countries
February 1999	Conceptual EVI developed and preliminary data compiled for Australia, Fiji and Tuvalu to complete Phase I.  <i>Environmental Vulnerability Index (EVI) to summarise national environmental vulnerability profiles (SOPAC Technical Report 275).</i>
September 1999	Extensive expert review of the EVI culminating in a Think Tank meeting to constructively refine the EVI concept.  <i>Report on the Environmental Vulnerability Index (EVI) Think Tank, 7 – 10 September 1999, Pacific Harbour, Fiji (SOPAC Technical Report 299).</i>
December 1999	Organisation of a meeting of SIDS experts in Malta to review and extend the EVI through partnership with Foundation for International Studies of the University of Malta and the United Nations Environment Programme (UNEP)  <i>Report of the Meeting of Experts on the Environmental Vulnerability Index, Valletta, Malta, 29 November – 3 December 1999</i>
February 2000	Further development and refinement of the EVI accompanied by the accumulation of EVI data profiles for several Pacific countries including Fiji, Samoa, Tuvalu and Vanuatu. Data provided the basis for preliminary testing of the model and completion of Phase II.  <i>Environmental Vulnerability Index: Development and provisional indices and profiles for Fiji, Samoa, Tuvalu and Vanuatu 2000 (SOPAC Technical Report 306)</i>
March 2001	Expansion of the EVI Country Database with data from 13 Pacific countries together with the establishment of mechanisms for controlling its quality and expediting collection within countries  <i>Environmental Vulnerability Index (EVI) Project – Progress Towards a Global EVI 2001 (SOPAC Miscellaneous Report 405)</i>
August 2001	Commitment and involvement of several additional collaborating partners in EVI project. Strengthened partnership with UNEP in the further improvement of the EVI through co-hosting of Global EVI Meeting in Geneva  <i>Globalising the Environmental Vulnerability Index (EVI): Proceedings of the EVI Globalisation Meeting, 27 – 29 August 2001, Geneva, Switzerland (SOPAC Technical Report 345)</i>
March 2002	Expansion of the EVI to include additional indicators from Global EVI Meeting. Establishment of 100 Country EVI Database (indicator-by-indicator database) and expansion of the Country EVI Database. Preliminary testing of EVI Indicators 13, 16 & 27.  <i>Environmental Vulnerability Index (EVI) Project: Initial Testing of the Global EVI. Progress April 2001-March 2002. (SOPAC Technical Report 453)</i>
April 2002	Preparation of a concept paper for managing vulnerability as part of an international UNDP Capacity 21 initiative to investigate ways to address vulnerability of SIDS  <i>Towards Managing Environmental Vulnerability in Small Island Developing States (SIDS). April 2002 (SOPAC Miscellaneous Report 461)</i>

#### FUTURE MILESTONES

Mid-2003	Least Developed Country (LDC) Status Review by ECOSOC
Mid-2004	Review of Barbados + 10

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## 4. Interim Progress Update ---

To provide guidance to experts, funding agencies and the international community on when the EVI would be technically ready for use, the EVI Think Tank in 1999, recommended testing the EVI against the following three criteria:

- (i) That there are no redundant indicators using data from at least 15 countries;
- (ii) That EVI scores do spread throughout the range of conditions found, and cluster countries according to known similarities for at least 15 countries around the globe; and
- (iii) That the EVI is validated through independent assessments made in at least 5 countries.

This list is important as it provides an independent 'finishing line' for the index and has provided a clear pathway for developing appropriate milestones against which funding needs could be identified against work requirements to complete the EVI.

In the March 2002 Progress Report, the EVI team provided a list of activities required to complete Phase III of the EVI project and which are aimed at addressing criteria (i) and (ii):

1. Complete data collection from the 32 collaborating countries (Country Database)
2. Complete data collection from public sources for as many indicators as possible for the 100 Country Database (likely to be 35 out of 54 indicators)
3. Continue the process of testing individual indicators until a proposed EVI scale can be set for each
4. Test the entire EVI index and its sub-indices using completed datasets from the 32 collaborating countries
5. Complete testing to the stage that it meets Criteria (i) and (ii) as set at the EVI Think Tank
6. Run Think Tank II to examine the entire functional draft EVI, including all scaling and testing of indicators
7. Seek funding for collaborators who are experiencing difficulty in collecting their data
8. Seek additional funding for Phase III to carry out testing for Criterion (iii) and establish international data collection mechanisms for the EVI
9. Present the functional draft EVI at WSSD in response to the initial call for an Environmental Vulnerability Index made in 1994 in Barbados.

Since the last progress report, the EVI team has continued to make notable progress towards completing activities 1 and 2. However, due to several difficulties over this period delays have made completion of the outlined activities unattainable within the suggested timeframe. The key impediments to progress are discussed in section 5 below.

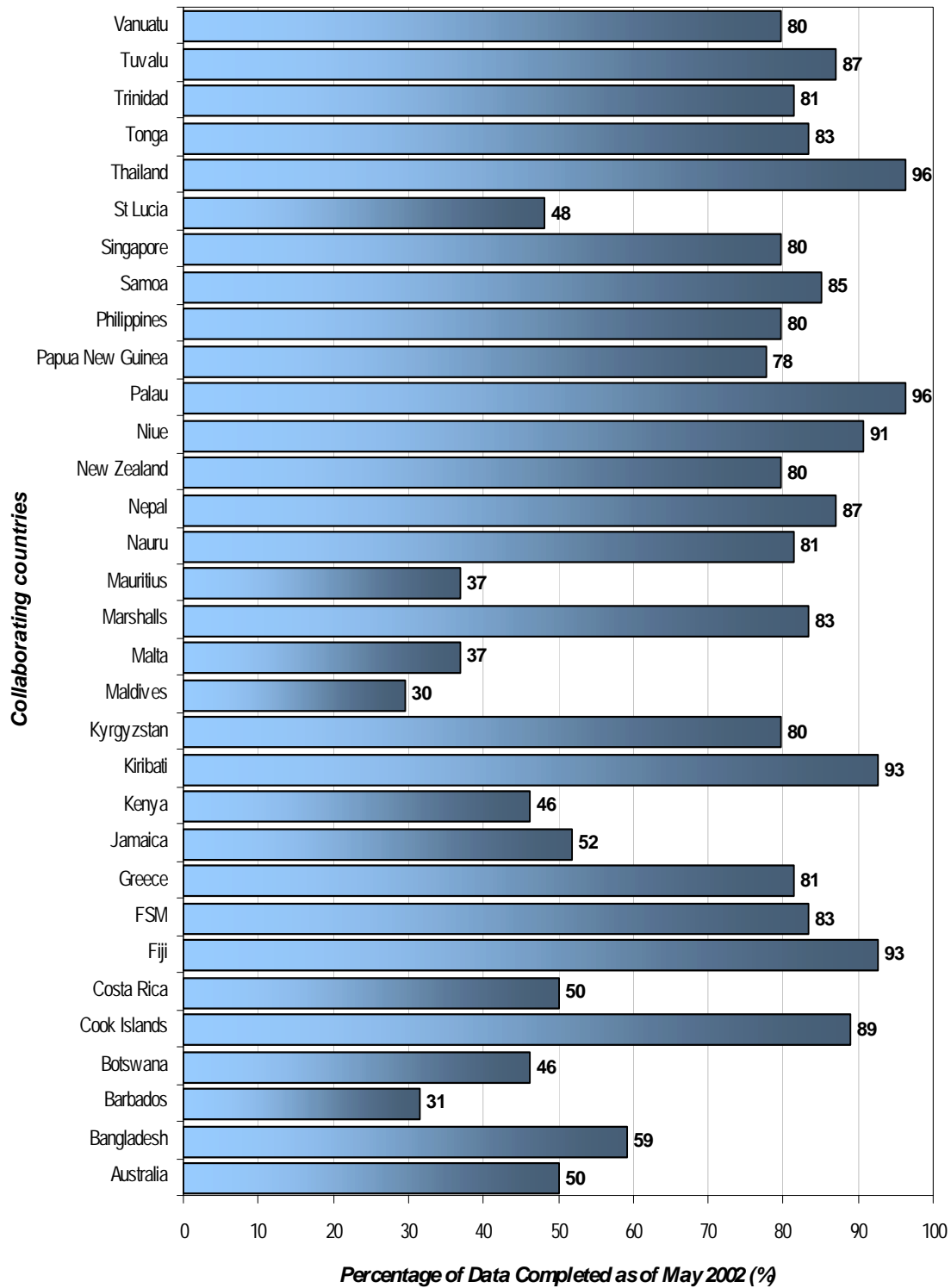
#### **4.1 EVI Country Database**

To fully globalise the EVI, and ensure that the full range of conditions and extremes are built into the model, requires that countries that exhibit environmental extremes and/or represent the various biogeographical types around the globe are included in the testing of the tool. Several countries were targeted on this basis for inclusion in the testing of the EVI.

During the course of the project, commitment of collaboration has been obtained from 32 countries. Collaboration with countries beyond SOPAC member countries and the Pacific has seen Bangladesh, Barbados, Botswana, Costa Rica, Greece, Jamaica, Kenya, Kyrgyzstan, Maldives, Malta, Mauritius, Nepal, Palau, Philippines, Saint Lucia, Singapore, Thailand and Trinidad & Tobago participate.

To date, the EVI team in collaboration with these countries has seen the successful compilation of 20 EVI country profiles (Figure 1). To qualify as a success, an EVI country profile must contain at least 80% of the data requirements. It must also be stated here that although the data requirements may be satisfied for an EVI country profile there may still be issues of currency, completeness and quality with data. These issues have been discussed in detail in previous EVI project documents.

**Figure 1: EVI Country Data Profile Status for Collaborating Countries**



## 4.2 EVI 100 Country Database

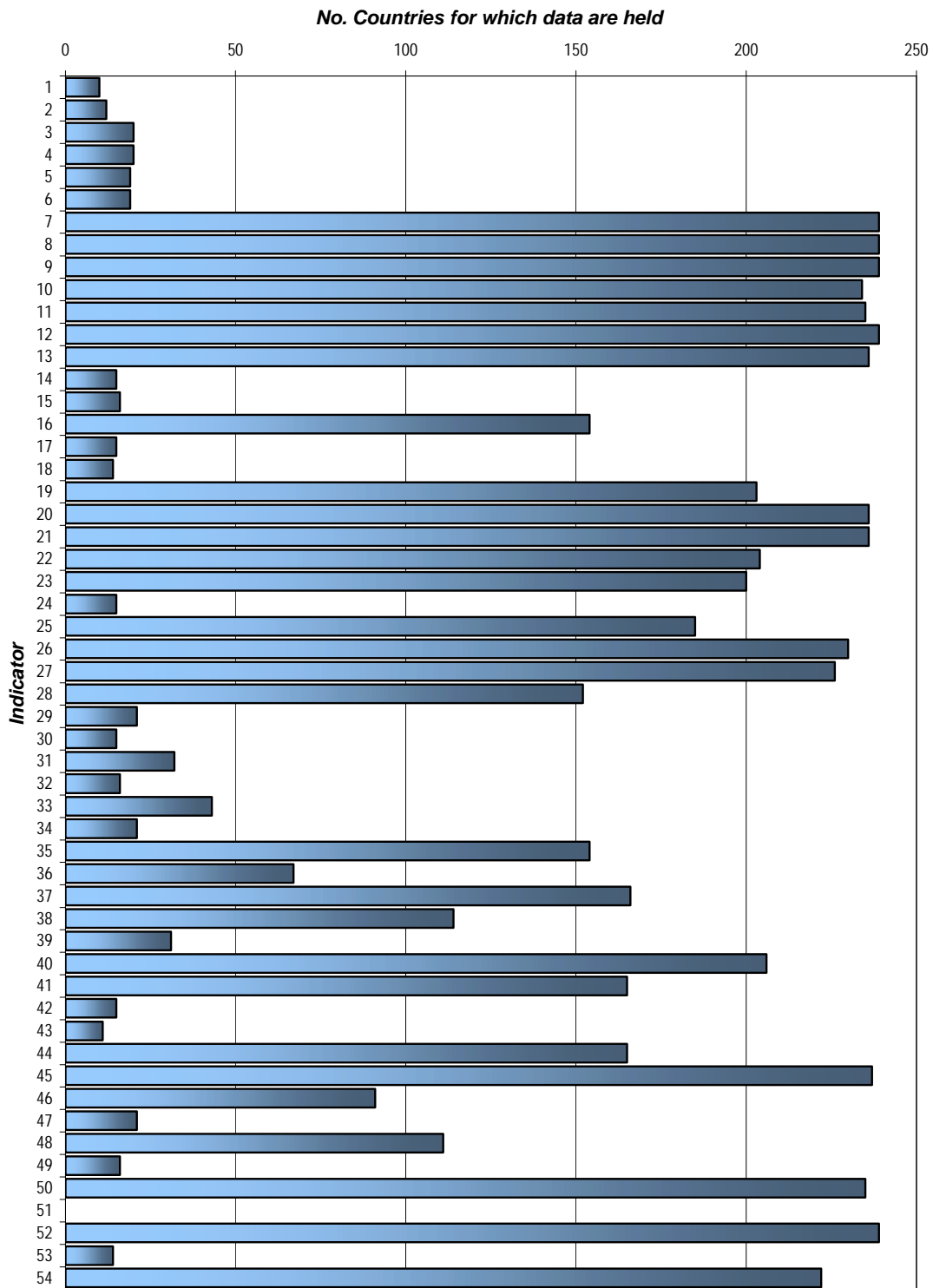
The EVI team has continued to expand the 100 Country Database (i.e. database by indicator). Most of this data has been obtained from external sources with some supplementary data provided by countries. To provide an insight into the potential success of obtaining data from public sources, the EVI team in our Progress Report March 2002, classified indicators into eight categories. Since then the team has been able to determine data existence for all indicators and its potential availability from public sources or in-country sources and completed searches on all outstanding indicators. This has resulted in the reducing of our table into four categories (Table 1).

**Table 1: Summary of Data Source Availability for EVI Indicators**

Status	Indicator Numbers
Data from public sources (data for >100 countries complete)	7, 8, 9, 10, 11, 12, 13, 16, 19, 20, 21, 22, 23, 25, 26, 27, 28, 35, 37, 38, 40, 41, 44, 45, 46, 48, 50, 52, 54
Data available but must be purchased	2, 3, 4, 5, 6
Data available but not in useable form	1
Data probably exist, but are not accessible by us. Needs to be done in-country.	14, 15, 17, 18, 24, 29, 30, 31, 32, 33, 34, 36, 39, 42, 43, 47, 49, 51, 53

To date the EVI team has successfully compiled data for over a 100 countries for at least 29 of the 54 indicators (Figure 2). This graph shows the number of countries for which data was obtained from public sources for each of the EVI indicators. Data for several meteorological indicators (i.e. 2, 3, 4, 5, 6) are available but due to the need to process the raw data into a useable format for the EVI, will require the data to be purchased, resources that the project does not have. Only one indicator on sea surface temperature has data freely available but will require substantial time and expertise to convert this data into useful information for the EVI. After extensive investigation by the team, it is now evident data is known to exist in most countries for remaining indicators (19) but will require their full support to compile appropriate information. This in no way implies that all countries have the required data and where gaps exist, interventions beyond the scope of this project, may still be required.

**Figure 2: Status of data collection by indicator from country and public sources**



## 5. Impediments to Progress ---

In our last Progress Report in March 2002, the EVI team outlined our next major target - the completion of testing and refinement of the EVI for presentation to the WSSD. However, this suggested deadline is totally dependent upon the completion of all data gathering activities.

Unfortunately, due to the slow progress caused by the additional workload, lack of country capacity and resources and the need to respond to international and regional vulnerability initiatives, it is now clear that we will be unable to meet this deadline. The need to respond to these issues has forced the EVI team to reallocate time and resources of our limited budget. It is therefore of utmost importance that to be able to achieve the goal of building a robust global EVI tool, that further commitment both in terms of country commitment and financial support must be given to the EVI project to ensure completion.

### **5.1 Environmental Vulnerability Initiatives**

Throughout the EVI project SOPAC has continued to promote the EVI work and increase awareness of the importance of issue of environmental vulnerability. This has been achieved through presentations and participation by the EVI team at several international and regional fora, development of an EVI discussion website and production of educational awareness material.

The issue of environmental vulnerability has increasingly been given priority by international initiatives. The most recent initiative is that of the United Nations Development Programme's Capacity 21. The objective of this inter-regional SIDS initiative was to prepare a comprehensive summary report of progress made in addressing vulnerability in SIDS. The report looked at vulnerability of the three considered pillars of sustainable development – economy, environment and society for submission to the World Summit on Sustainable Development (WSSD) process. The report also outlined recommendations for directions that SIDS and donors could take to help reduce vulnerability.

Participation in this process has required the EVI team to divert time and effort towards the development of this summary report and a concept paper aimed at expanding discussions on the issue of environmental vulnerability. The concept paper *Towards Managing Environmental Vulnerability in Small Island Developing States (SIDS)* provides a framework and new approach for identifying the nature of and addressing environmental vulnerability in SIDS. The paper also attempts to highlight the importance of tools especially vulnerability indices like the EVI that help provide a comprehensive measure and complement other environmental management tools in addressing environmental vulnerability.

This document together with the summary report provide an excellent foundation for ongoing discussions on how everyone can broadly address vulnerability throughout SIDS both at the WSSD and beyond in the lead up to Barbados+10.

## 5.2 Additional Indicators

At the Global EVI Meeting in Geneva in August 2002, several additional indicators were suggested for inclusion into the EVI. After consideration by the EVI team in consultation with experts five additional indicators were included into the EVI. These indicators addressed critical environmental vulnerability issues not previously considered.

The inclusion of these indicators meant additional work for both the team and country collaborators to compile the necessary data both by country and by indicator. This increased workload has placed a greater challenge on the team to complete activities within the timeframe and within the already limited secured funds.

## 5.3 Collaboration Commitment

The level of collaboration from countries in the EVI project has been mixed with some countries completing the compilation of country EVI data profiles with minimal of assistance while others have made very little in-country progress. It has become increasingly apparent that there is an urgent need for greater country commitment and financial assistance to collect the required data where existing data collection mechanisms are inadequate, or in some cases, lacking.

The Global EVI Meeting held in Geneva, August 2001 discussed issues surrounding data compilation and made two recommendations:

9. *As a way forward, three types of funding were recommended for developing the EVI. Writing proposals for all of these are to be assisted by SOPAC:*
  - *Initial funding assistance to be sought from UNEP for collecting test data;*
  - *GEF medium level funding to be sought for technical development and testing of*
  - *the EVI with participating countries as collaborators; and*
  - *Bilateral funding to be sought from UNDP for longer term capacity-building and setting up permanent data mechanisms.*
10. *Many of the problems with the data collection process could be addressed by obtaining funding and setting up permanent, organised collection mechanisms. The UN funds such data collections and could be approached for assistance and/or EVI data could be included in existing reporting obligations.”*

In response to these recommendations and the urgent need to secure financial support for country EVI data profile activities, SOPAC developed, in collaboration with countries, a financing proposal. This proposal was submitted to UNEP for consideration earlier this year but to date no response has been received.

As the continuation of the whole project hinges on the need to complete both the Country and 100 Country Databases the EVI team has been forced to re-allocate secured resources to support the ongoing EVI country data profile compilation efforts. Consequently, funding will now be required to complete the testing and refinement process to globalise the EVI tool.

## 6. Requirements for Completion of the EVI \_\_\_\_\_

The EVI team continues to progress towards the completion of a robust global EVI tool despite increasing demands on the time and limited resources of the project. The reallocation of funds to address data issues, international and regional initiatives and other emerging problems now leaves the project without sufficient resources to complete Phase III (Annex 1).

It is essential that all EVI data compilation activities are fully supported both by increased country commitment to the provision of necessary information and financial assistance required to complement country efforts. It is therefore critical that further financial support be secured immediately by the project to ensure completion of Phase III.

Several major tasks have been identified for the successful complete development of the EVI as a tool for measuring and managing the vulnerability of countries. These are presented in the format of modules, some of which must be run in parallel with others for the work to be undertaken efficiently. It is important to highlight the need to secure funding for all modules to ensure the complete development and refinement of the EVI.

SOPAC is currently seeking immediate funding from UNEP and other donor partners for the completion of Module 1 - Refinement and Comprehensive Testing of the Environmental Vulnerability Index (Collecting data profiles from 15 countries world-wide, globalising the model, testing indicators, testing the overall index, Think Tank 2, publication). The acquisition of funding for other modules will enhance and expand the EVI into a workable and operational global tool.

The basic modules include:

**Module 1: Refinement and Comprehensive Testing of the Environmental Vulnerability Index (Collecting data profiles from 15 countries world-wide, globalising the model, testing indicators, testing the overall index, Think Tank 2, publication)**

***Module 2: Computer Environmental Vulnerability Index Interface Development***

**Module 3: EVI Validation Exercise**

**Module 4: Pacific EVI Country Capacity-Building**

The modules are currently presented in concept with estimated budgets and timeframes. Detailed proposals for each module can be provided as required.

All tasks will be carried out in consultation and partnership with all Council for Regional Organisation of the Pacific (CROP) members including: South Pacific Regional Environment Programme, Forum Secretariat, Secretariat of the Pacific Community, University of the South Pacific, Forum Fisheries Agency, Pacific Island Development Program, Tourism Council of the South Pacific, non-government organisations and other regional agencies. Particular inputs will be sought from all Pacific Island governments and the international agencies with a mandate for international affairs and particularly SIDS.

## 7. Revised Project Budget

### TOTAL BUDGET FOR PHASE III - US \$512,060

#### *Project Budget Summary*

<i>MODULES</i>	<i>ESTIMATED BUDGETS USD</i>	<i>PROPOSALS SUBMITTED FOR FUNDING CONSIDERATION</i>
<i>International Data – Refinement/Testing</i>	<i>\$283,260</i>	<i>UNEP – Italy Ireland</i>
<i>EVI Computer Interface Development</i>	<i>\$18,700</i>	<i>Australia New Zealand</i>
<i>EVI Validation Exercise</i>	<i>\$151,800</i>	
<i>Pacific EVI Capacity Strengthening Workshop</i>	<i>\$58,300</i>	
<i>TOTAL BUDGET</i>	<i>\$512,060</i>	

Please see Attachment 1 for detailed EVI Project Phase III budget.

## 8. Modules Required for EVI Development with Justification

### **8.1 Module 1: Refinement and Comprehensive Testing of the EVI**

**Aim:** To operationalise the EVI through extensive testing with real environmental vulnerability data from at least 15 countries that represent the vast variety of different environments found globally

**Tasks:** Collecting data profiles from 15 countries world-wide, globalising the model, testing indicators, testing the overall index, Think Tank 2, publication.

Technical development of the environmental vulnerability index requires that the model and its indicators be extensively tested with environmental data from at least 15 countries with widely differing characteristics. The countries targeted must represent the variety of environmental and risk conditions found on the globe so that the EVI can be set within a world-wide context. The raw data obtained from these countries will be used to define the parameters within which the conditions of any single country can be identified.

Countries targeted for inclusion in the EVI project include high mountainous countries, small land-locked countries, countries with a large size embracing numerous ecosystems, highly industrialised countries constituted mainly of man-made environments, or countries with cold climates. In addition to SOPAC member countries, target countries include: Bangladesh, Barbados, Botswana, Costa Rica, Greece, Jamaica, Kenya, Kyrgyzstan, Maldives, Malta, Mauritius, Nepal, Palau, Philippines, Saint Lucia, Singapore, Thailand and Trinidad & Tobago. Data collection from these countries is additional to any country information collected within the Pacific.

Activities to compile EVI data profiles for target countries have been initiated, however, further efforts are needed to complete the outstanding EVI data profiles for all collaborating countries. This data is an essential prerequisite for the testing and refinement of the EVI to proceed.

It is expected that several developed countries beyond the target countries will also collaborate with the EVI project and their voluntary participation and provision of data is essential to the process of data collection. It is envisaged that their participation may require technical assistance to facilitate the collection of environmental vulnerability data files and this will need to be co-ordinated by the project.

The environmental vulnerability index will also need to undergo extensive mathematical and statistical analysis to fully refine and operationalise it. The testing will include correlation analyses to identify and discard redundant indicators, weighting of indicators and sensitivity analyses.

***Outputs/Benefits:***

- An index which is globally applicable while at the same time providing context for its application in the Pacific Region
- Environmental vulnerability data for 15 international countries which show their relative vulnerabilities for a range of variables which affect or characterise their environments
- A fully mathematically and statistically tested model using real data from a diverse range of countries leading to a refined and robust EVI

***Budget/Timeframe:***

- **US\$283,260            12 months**

**(Budget required for Module 1 completion – see Attachment 2 for details)**

## **8.2 Module 2: Development of a computerised EVI Interface**

**Aim:** To develop a user interface in Microsoft Access for the EVI

The model developed for calculating the EVI during Phase I was built into EXCEL spreadsheets. This makes calculating the EVI cumbersome for the endpoint users and was not intended for use by them because files may be easily damaged or altered, making calculations inaccurate.

During Phase III, the EVI model will be built into a user-friendly ACCESS application with on-line help to allow for easy and streamlined input of data. The computer interface will also make the mathematical calculations robust to damage by users and secure the generation of final reports into quick and simple formats with graphical outputs.

### **Output/Benefits:**

- The development of a robust and simple user-friendly Microsoft Access interface for the environmental vulnerability index model
- Simplified and streamlined entry of environmental vulnerability index data with enhanced generation of final environmental vulnerability index values and reports

### **Budget/Timeframe:**

- **US\$18,700**                      **2 months**

## **8.3 Module 3: EVI Validation Exercise**

**Aim:** To independently peer review and validate the EVI

Peer review is essential throughout the development of the EVI to ensure international applicability and robustness. Because the task is multi-disciplinary and breaks new ground, it will be necessary to obtain rigorous technical inputs through a second think tank and through publication in an international academic journal. International experts from the fields of climate, geology, ecology, statistical methods, modelling, environmental assessment and management, economics and indexing will need to be consulted in a forum which allows their areas of expertise to be integrated.

An important part of this validation exercise of the EVI involves the independent assessment of 5 countries by consultants not initiated in the workings of the EVI. These detailed country vulnerability assessments will be compared against environmental vulnerability index values to ascertain their correlation. This was considered by think tank participants to be the 'acid test' for determining when the EVI could be considered operational.

### **Outputs:**

- A globally applicable scientifically sound, robust, fully tested and validated EVI

**Budget/Timeframe:**

- **US\$151,800**                      **6 months**

**8.4 Module 4: Pacific Environmental Vulnerability Index Country Capacity-Building**

**Aim:** To provide training to SIDS country representatives in the use, data collection and computation of the environmental vulnerability index.

To provide ongoing utility for the skills developed in the first two phases of EVI development and strengthening of skills for environmental vulnerability data identification, use and compilation it is essential that Pacific member countries be provided with further training in identification of environmental vulnerability issues and in particular the use and application of the EVI tool.

It is proposed that a workshop be held over 3 days at the SOPAC Secretariat located in Suva, Fiji. The central location and ease of access to the Secretariat together with the necessary computer, training and workshop facilities required to facilitate such a workshop will ensure that no outside facilities will be required at additional cost.

The workshop participants would be provided with an introduction to the environmental vulnerability index, the underlying concepts, benefits and uses of the model in environmental management and decision-making, and an introduction into the mechanics and computation of the EVI. The aim of this is to provide participants with the basic skills needed to produce the necessary information to calculate an EVI in their home countries as well as interpret the results generated by the EVI tool and how these results can be used in decision-making and in complementing existing environmental management tools.

The knowledge gained through the workshop will allow participants to provide their countries with detailed explanations on the need for environmental management information, the conceptual mechanics and overall benefits of the environmental vulnerability index and its application in environmental management.

**Outputs/Benefits:**

- Strengthening of country capacity to identify, collect and compile environmental vulnerability information
- Improved understanding of the environmental vulnerability index, its uses, mechanics and applications in environmental management and policy making
- Pacific ownership of the EVI and the work that has been carried out in the region

**Budget/Timeframe:**

- **US\$58,300**                      **3 day workshop – Suva**

### **8.5 Overall Expected benefits from Project**

All of the above modules are required to fully develop an internationally recognised and acceptable EVI. By ensuring that the model has been fully tested and that consultation has occurred at all levels (technical and political) the EVI can become an important tool for examining relative vulnerabilities of states, whether they be small islands or continental. Consultation and involvement of Pacific Island Countries throughout the project will ensure that the initiative remains with the region and that the needs and expectations of those countries are incorporated into the development of the EVI. It will also mean that the capacity of Pacific Island Countries for environmental management using tools like the environmental vulnerability index are secured. Additional benefits include the establishment of partnerships with collaborating countries and the recognition of the importance of environmental vulnerability as a key issue for sustainable development.

### **8.6 Overall Project Outputs**

The major outputs from Phase III will be:

- An internationally tested, robust, validated and operational EVI which is transparent in its strengths, biases and functions as a way of summarising the environmental vulnerability of countries
- Pacific ownership of the EVI and the work that has been carried out in the region
- Capacity-building within the region in the use, mechanics and applications of the EVI in environmental management and policy making
- Strengthened capacity in Pacific Island Countries in the identification, collection and analysis of environmental management data
- Environmental vulnerability data for at least 10 Pacific island countries and 15 international countries which show their relative vulnerabilities of a range of variables which affect or characterise their environments
- A user-friendly computer programme which can be sent to all countries wishing to calculate their EVIs (some with assistance)
- An EVI that can be combined with other vulnerability indices into a composite vulnerability index
- Increased awareness and debate on the importance of environmental vulnerability and implications for sustainable development
- Raised awareness about the actions that increase or decrease environmental vulnerability

## 2001 - 2003 ENVIRONMENTAL VULNERABILITY INDEX (EVI) PROJECT PHASE III PLANNING BUDGET

FUNDING SECURED	Phase I USD	Phase II USD	Phase III USD
New Zealand	75,000	85,000	150,000
Norway			70,000
Ireland			50,000
Italy			100,000
<b>TOTAL FUNDING SECURED (as at June 2002)</b>			<b>370,000</b>

EVI PROJECT PHASE III TASKS	Budget USD	Ireland USD	New Zealand USD	Norway USD	Italy USD	UNSECURED FUNDING - USD	Cost Sharing USD
<b>TASKS COMPLETED</b>							
<b>EVI Tool / Database Development 2001 - 2002</b>							
Project Team Consultancy	200,000		101,000	20,000	79,000		
SOPAC Administration (13%)	39,650						39,650
<b>Globalise EVI Model</b>							
Country Expert Group Meeting (3 days - Geneva)							
SOPAC Experts Travel	5,000	5,000					
UNEP Expert Assistance	12,000						12,000
Participant Travel (7 country participants)	23,000	23,000					
Participant Expenses	15,000	15,000					
Conference Facilities	3,000	3,000					
Secretarial Support/Documentation/Supplies	3,000	3,000					
Communications	2,000	1,000			1,000		
<b>Pacific Data Files</b>							
Compilation of Pacific Country EVI Data Profiles							
Capacity building/Compilation of Pacific Country Data (~14 countries @ ~US\$3500)	49,000		49,000				
Communications	3,000			3,000			
Stationary/Publication/Consumables	2,000			2,000			
<b>REMAINING TASKS</b>							
<b>International Country Data Files</b>							
15 Country Environmental Vulnerability Data Files							
Project Team Consultancy	44,000			44,000			
Voluntary Country Data Collection (~5 large developed countries)	100,000						100,000
Consultancy/Compilation of International Country Data (~15 countries @ ~US\$6,000)	140,000				20,000	70,000	50,000
Consultant Travel	6,000					6,000	
Communications	4,000					4,000	
Stationary/Publication/Consumables	2,000					2,000	
<b>Indicator Refinement</b>							
Finalise the Global Indicator Set for the EVI							
Project Team Consultancy	44,000					44,000	
Consultant Travel	6,000					6,000	
Communications	1,500					1,500	
Stationary/Publication/Consumables	1,800					1,800	
<b>Mathematical Testing</b>							
Redundancy, correlation, monte carlo simulations, sensitivity analyses							
Project Team Consultancy	44,000					44,000	
Expert Review Consultancy	8,000					8,000	
Consultant Travel	6,000					6,000	
Stationary/Publication/Consumables	1,800					1,800	
Communications	1,500					1,500	
<b>Think Tank 2</b>							
Final Expert Peer Review - Globalise Model (3 days - Fiji)							
Consultant Travel	2,000					2,000	
Participant Travel (15 experts)	30,000					30,000	
Participant Expenses	16,000					16,000	
Conference Facilities	3,000					3,000	
Secretarial Support/Publication/Consumables	2,000					2,000	
Communications	1,000					1,000	
<b>Publication</b>							
International publication in academic journal/final report							
Publications	2,000					2,000	
<b>Electronic Database</b>							
Develop an electronic user interface							
Project Team Consultancy	11,000					11,000	
Stationary/Publication/Consumables	3,000					3,000	
Communications	3,000					3,000	
<b>Robust Validated EVI</b>							
Independently validate the EVI for 5 countries							
Validation Consultancy (~3 consultants @ \$500/day)	75,000					75,000	
Consultant Travel & per diem (10 days/country)	60,000					60,000	
Communications	2,000					2,000	
Stationary/Publication/Consumables	1,000					1,000	
<b>Pacific Country EVI Capacity Strengthening</b>							
Country Expert Group Meeting (3 days - Suva)							
Consultant Travel	2,000					2,000	
Participant Travel (15 country participants)	30,000					30,000	
Participant Expenses	16,000					16,000	
Secretarial Support/Documentation/Supplies	3,000					3,000	
Communications	1,000					1,000	
Publication/materials	1,000					1,000	
<b>Additional Costs</b>							
SOPAC Administration (13%)	68,198						68,198
SOPAC Contribution *	10,000						10,000
Contingency - Remaining tasks (10%)	52,460			1,000		51,460	
<b>BUDGET TOTALS</b>	<b>\$1,161,908</b>	<b>\$50,000</b>	<b>\$150,000</b>	<b>\$70,000</b>	<b>\$100,000</b>	<b>\$512,060</b>	<b>\$279,848</b>

ACTIVITIES COMPLETED

FUNDING REQUIRED

SOPAC  
Contribution

TOTAL BUDGET FOR EVI PHASE III \$1,161,908

## ENVIRONMENTAL VULNERABILITY INDEX BUDGET SUMMARY PHASE III

	USD Amount	% of Total Budget
<b>Funding Secured</b>		
New Zealand	150,000	13%
Norway	70,000	6%
Ireland	50,000	4%
Italy	100,000	9%
<b>Funding Needed from Donor(s)</b>	<b>512,060</b>	<b>44%</b>
<b>Partner Cost Sharing</b>		
International Assistance through Provision of Country Data	150,000	13%
UNEP	12,000	1%
SOPAC	117,848	10%
<b>TOTAL BUDGET</b>	<b>\$1,161,908</b>	<b>100%</b>

EVI Project Team

Mr Craig Pratt, Dr Ursula Kaly, Prof. Lino Briguglio, Ms Emma Sale-Mario, Mr Owen White and Research Assistant

\*SOPAC Contribution (includes management, support, computers, office space, electricity etc.)

## ATTACHMENT 2

## DETAILED EVI PHASE III - MODULE 1 PLANNING BUDGET

Refinement & Comprehensive Testing of EVI	Budget USD	Budget Required USD	Partnership contribution USD	Cost Sharing USD
<b>International Country Data Files</b>		<b>82,000</b>		
<i>15 Country Environmental Vulnerability Data Files</i>				
Project Team Consultancy	44,000			44,000
Voluntary Country Data Collection (~5 large developed countries)	100,000		100,000	
Consultancy/Purchase of Country Data (~15 countries @ ~US\$6,000)	140,000	70,000	50,000	20,000
Consultant Travel	6,000	6,000		
Stationary/Publication	1,500	1,500		
Communications	4,000	4,000		
Consumables	500	500		
<b>Indicator Refinement</b>		<b>53,300</b>		
<i>Finalise the Global Indicator Set for the EVI</i>				
Project Team Consultancy	44,000			
Consultant Travel	6,000			
Stationary/Publication	300			
Communications	1,500			
Consumables	1,500			
<b>Mathematical Testing</b>		<b>61,300</b>		
<i>Redundancy, correlation, monte carlo simulations, sensitivity analyses</i>				
Project Team Consultancy	44,000			
Expert Review Consultancy	8,000			
Consultant Travel	6,000			
Stationary/Publication	300			
Communications	1,500			
Consumables	1,500			
<b>Think Tank 2</b>		<b>56,000</b>		
<i>Final Expert Peer Review - Globalise Model (3 days - Fiji)</i>				
Consultant Travel	2,000			
Participant Travel (15 experts)	30,000			
Participant Expenses	16,000			
Conference Facilities	3,000			
Secretarial Support/Publication/Consumables	2,000			
Communications	1,000			
Publication	2,000			
<b>Additional Costs</b>		<b>30,660</b>		
SOPAC Contribution * (13%)	41,158			41,158
Contingency (10%)	31,660			1,000
<b>BUDGET TOTALS</b>	<b>539,418</b>	<b>283,260</b>	<b>150,000</b>	<b>106,158</b>

\*SOPAC Contribution (includes management, support, computers, office space, electricity etc.)

**TOTAL BUDGET FOR EVI PHASE III - MODULE 1 \$539,418.00**

**ENVIRONMENTAL VULNERABILITY INDEX BUDGET SUMMARY FOR MODULE 1**

	USD Amount	% of Total Budget
<b>Funding Needed from Donor(s)</b>	<b>283,260.00</b>	<b>53%</b>
Country Partnership Assistance through Provision of Country Data	150,000.00	28%
Funding Secured (Italy & Norway)	64,000.00	12%
SOPAC	41,158.00	8%
<b>TOTAL BUDGET</b>	<b>\$538,418.00</b>	<b>100%</b>

EVI Project Team - Mr Craig Pratt, Dr Ursula Kaly, Ms Emma Sale-Mario, Mr Owen White, Research Assistant