

EVI Report

Environmental Vulnerability Index Nauru Data Profile: Summary Trip Report, April 2000

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ENVIRONMENTAL VULNERABILITY NAURU DATA PROFILE

SUMMARY TRIP REPORT

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Objective: To provide expert assistance and training in the identification, gathering and collation of environmental information required for the calculation of the environmental vulnerability index (EVI) for Nauru.

The trip to Nauru was funded by the EVI project as part of the objectives of Phase III of the EVI to include other countries in the SOPAC Region. The Nauru Government also expressed their support for the project at the 1999 Annual Session.

The SOPAC Environmental Vulnerability Project team consisting of Mr Craig Pratt and Mr Reginald Pal travelled to Nauru to assist the Nauru Government in preparing their country environmental vulnerability profile. The team was in Nauru from the 4 to 11 April 2000.

Brief Summary of Nauru's Environmental Vulnerability

Nauru is located in the central Pacific on the equator. It has undergone drastic changes in the last 100 years with the major impact being the mining of phosphate.

Nauru is a single raised coral atoll with a total land area of 21.6 km² with at least 80 percent of the total land area (13.9 km²) mined by the Nauru Phosphate Corporation. The population of Nauru of about 10,500 live in a thin strip of coastal land area along the coast of the country. Hence the coastal zone is prone to degradation with uncontrolled developments and increased anthropogenic pressures from over exploitation of natural resources and the lack of effective waste management.

Due to its location on the equator Nauru does not experience cyclone activity and has a relatively stable climate with average temperatures between 24 to 34°C. Mean rainfall records indicate rainfall of around 150 cm/year is experienced in Nauru although there has been very little precipitation recorded in the past two years resulting in an extended drought.

Freshwater supply is an important issue, as there is limited catchment area hence groundwater reserves are insignificant. There is a single desalination plant in Nauru that is responsible for supplying water to the population on a daily basis with no alternative reserves. With annual average rainfall of less than 150 cm the pressure on the desalination plant has increased with rising population and industrial needs.

Due to the nature of the atoll the highest point above sea level is only 64 m with at least 15.4 km² of land area below 10 metres above sea level. Nauru lacks any dense vegetation as most of the native vegetation has been cleared for the purpose of mining. Also the extended dry periods have resulted in the death of much of the remaining vegetation on the leeward side of the island. There

has been very little revegetation or rehabilitation of the island to date although there are plans to address this issue in future.

The major industries found in Nauru are phosphate mining, coconut products and fisheries. Phosphate mining has been carried out since 1907. The physical removal of the high-grade phosphate has resulted in drastic land degradation as well as air and water pollution. The production of coconut products has been minimal given the extended dry periods over the past couple of years. The two major fisheries for the country are tuna and reef fish with at least 40 to 50 percent of the reef fisheries considered to be over-exploited. Tuna fisheries are continually being developed although expansion of this fishery is limited.

There are no terrestrial or marine reserves set aside for the purpose of environmental management or refugia and with the existing environmental legislation still in draft form there is high chance that the management and protection of Nauru's environment will be extremely difficult in the immediate future.

Trip Agenda

A meeting between the EVI team and all interested government departments and agencies that may also hold important environmental information or data that may be of use in the EVI was recommended to be held upon arrival. The convening of this meeting at the beginning of the trip would allow the EVI team to provide a detailed briefing to everyone on the EVI project, its development progress, mechanics of the EVI methodology and the current focus of the work particularly in the context of the work to be done in Nauru. The meeting also provided an opportunity for constructive discussion between the country's experts and the EVI team on environmental vulnerability and EVI issues. Focus was also provided on the need for data for the EVI, how this data may be identified, collected and collated for use in the EVI. Follow-up meetings with each of the participants were then to be scheduled to allow the team more concentrated time with experts to resolve problems with data identification, collection and collation. The primary goal of the trip was to try and complete as much of the EVI data requirements as possible prior to departure.

Meeting Summaries

Upon arrival in Nauru on 4 April 2000 the team met the Nauru representative to SOPAC Ms Angie Itimaera briefly at the airport. She indicated she was on personal leave and could not assist with the immigration problems we faced. The Director of Immigration Mr Ernest Stevens indicated that neither of us held the appropriate visa and that we would not be allowed into the country. Upon explanation and provision of copies of faxes and other correspondence with the Nauru Government we were given conditional entry to Nauru. Our passports were taken and we were instructed to pick up our passports from the Immigration office the following day to allow for the correct stamps and paperwork to be completed.

That afternoon we attempted contact with the Acting Secretary for the Department of Island Development & Industry (IDI) Mr David Agir but were unsuccessful. The next morning we were able to meet and brief him on the objectives of our visit as well as the on the work that we were involved with. It was clear that no prior notification of our visit had been given to him despite verbal confirmation given to the Secretariat.

Despite these setbacks, a meeting was arranged for Thursday, 6 April 2000 with representatives from various departments and agencies at the conference room in government buildings. The meeting was very successful with at least 10 representatives attending.

Thursday, 6 April 2000

The meeting was opened by our designated contact Mr Davey Roxen Pene Agadio, Environment Officer from the Ministry of Island Development and Industry who welcomed the SOPAC Environmental Vulnerability Index Study team to Nauru. The floor was then handed over to the SOPAC team.

Craig Pratt firstly provided a brief introduction to the Environmental Vulnerability Index project and suggested a possible agenda for the meeting that was agreed to. Mr Reginald Pal then presented a background summary of the environmental vulnerability index, the development of the concept and how it works together with some of the preliminary results of Phase I and Phase II. He rounded up his presentation with a briefing of how Nauru fitted into the EVI study and the objectives of the visit.

This was followed by an active discussion by participants both in terms of the development of the EVI and its methodology and on the environmental vulnerability data aspects. To summarise some of the concerns raised:

- What follow-up plans were there to address problems highlighted in the study?
- Have countries started implementing the work done for the EVI?
- Can SOPAC secure or assist in the securing of funding for individual countries?
- Why 47 indicators and not less since Nauru is only a small place?

Following discussions, the EVI questionnaires were distributed to the various departments represented at the meeting. Follow-up meetings were then arranged for the following few days with the various agencies to collect data and resolve and problems faced. Names and contacts of participants are listed below in Table 1.

Table 1. Names and contacts of participants at the meetings

Name	Ministry	Contact	Day/Time
Mr Geoffrey Gionba	Nauru Rehabilitation Corporation	4443220/ 4443272 ggionba@hotmail.com	Monday
Mr Dempsey Detenamo	Nauru Rehabilitation Corporation	4443220/ 4443272 detenamo@yahoo.com	Monday
Mr Ramrakha Detenamo	Statistics Office	Boe District, Nauru	Friday 1.00pm
Mr Peter Jacob	Nauru Fisheries & Marine Resources Authority	4443733/ 4443812 peterjacob_nfmra@hotmail.com	Monday 9.00am
Ms Jennie Solomon	DCA		
Mr Formosa Emiu	Internal Affairs	4443292	
Mr John Aremoa	Education	4443121	
Mr Baron Waqa	Education	4443130	
Mr Porthos Bop	Lands and Survey	4443845	Monday
Mr Franklin Teimitsi	Atmospheric Radiation Measurement Program	4443276	Monday
Mr Pene Agadio	Island Development and Industries	4443181	Monday
Ms Bernadette Aliklik	Island Development & Industries	4443181	

Summary of Follow-up Meetings

Friday, 7 April

Nauru Rehabilitation Corporation

Mr Dempsey Detenamo and Mr Win from the Nauru Rehabilitation Corporation requested a meeting to discuss the indicators pertaining to their organisation. Clarifications on several points were provided and it was indicated that we should be able to collect the questionnaires on Monday before departure.

Statistics

The team met with Mr Ramrakha Detenamo and the Director for the Statistics Bureau. The several indicators relating to population statistics and information usually held by Statistics departments were discussed. It was indicated that the last census held in Nauru was in 1992 and therefore most estimates and projections were based on this outdated data. The Bureau had only been recently established and upon development of their statistics database had found that several of the datasets were incomplete and that no recent data had been collected. It would therefore be difficult to complete the indicator questionnaires particularly in terms of the time periods required. The team suggested that they complete the questionnaires with the most recent data and indicate the problems they have both in terms of quality and age of the data.

Nauru Phosphate Corporation

Mr Pene Agadio took the team to visit the NPC Personnel Manager, Mr Lesi Olsen. The Nauru Phosphate Corporation is the primary industrial development in the country and controls several of the utilities including power and water. They also hold a large amount of data relating to phosphate mining areas, land management, water quality etc. A briefing on the EVI project was provided and the objectives of our visit in terms of data gathering. He indicated that he would pass on the questionnaires to the NPC laboratory for completion and should have a result by Monday.

Monday, 10 April

Nauru Rehabilitation Corporation

In the morning the EVI team met with Mr Geoffroy Gionba from the Nauru Rehabilitation Corporation and secured several responses.

Fisheries

The EVI team met with Mr Peter Jacobs, acting CEO of the Fisheries Division who attended our briefing and had extensive discussions on the fisheries indicators. It was clear from these discussions that data to substantiate expert opinion was lacking. Despite this all the indicators were successfully completed.

Lands

At the Lands Department, the EVI team met with the Director Mr Porthos Bop and had some discussion regarding clarification of several indicators. Following discussion all indicators were completed and returned to us.

Meteorology – Atmospheric Radiation Measurement Program

The EVI team later met with Mr Franklin Teimitsi & Mr Larry Jones of the ARM Project and discussed the meteorological indicators. They indicated that they had access to some of the information but as they were not a meteorological station for Nauru they did not take the necessary measurements required by us. Also any relevant data held by them was only for the past 2 years. We were referred to NOAA as a possible source for the relevant meteorological data. They also indicated that the airport might also hold data that may be of use.

Environment

Later the EVI team met with Mr Pene Agadio from the Environment Unit of IDI and discussed the relevant environmental indicators. Several were completed upon research in their library.

2	Number of days over the last five years during which the maximum recorded wind speed (3 sec wind gusts) is greater than higher than the average maximum wind speed for that month. (Use 30 year average for each month as reference points and to be accumulated over all reference climate stations and be divided by the number of stations)		
3	Number of months over the last five years during which rainfall is greater than 20% lower than the 30 year average for that r (over all reference climate stations / number of climate stations)		
4	Number of months over the last five years during which rainfall was greater than 20% higher than the 30 year average fo month (over all reference stations / number of climate stations)		
5	Number of days over the last five years in which the maximum temperature was greater than 5°C higher than the mean mc maximum (reference mean is from the 30 year average) (over all reference stations/ number of climate stations)		
6	Number of days over the last five years in which the minimum temperature was greater than 5°C lower than the mean mc minimum (reference mean from the 30 year average) (over all reference stations/ number of climate stations)		
7	Number of volcanoes with potential for eruption greater than or equal to Volcanic Explosive Index of 4 (VEI 4) within 100l country land boundary per area of land		
8	Cumulative earthquake energy within 100km of country land boundaries per land area with Local Magnitude (ML) greater th equal to six (≥ 6.0) and less than or equal to depth of fifteen kilometres (≤ 15 km) over 5 years		
9	Number of tsunamis or storms surges with run up greater than 2 metres above Mean High Water Spring tide (MHWS) per 1 coastline since 1900		
10	Total land area (km ²)		
11	Ratio of length of shoreline or land border to total land area		
12	Distance to nearest continent within 10 degrees latitude (km)		
13	Altitude range (highest point subtract the lowest point in country)		
14	Percent of land area less than 10 metres above sea level		
15	Percent of land area below 10 metres in elevation within 2 kilometres to coast composed of unconsolidated sediments (excl coral reefs)*		
16	Number of known endemic species per square kilometre land area		
17	Number of reported (and verified) organism outbreaks (pathogens, blooms, plaques etc) over the last five years per land are		
18	Total tonnage of freight imported per year per square kilometre of land area		
19	Number of introduced species per square kilometre land area (IUCN Definitions)		
20	Number of endangered and threatened species per square kilometre land area (IUCN Definitions)		
21	Number of species, which have become extinct since 1900 per square kilometre land area (IUCN Definitions)		
22	Percentage of natural and regrowth vegetation remaining (e.g. forests, mangroves. prairies, saltmarshes, tundra, de savannah)		
23	Tonnage of intensively farmed animal products (includes aquaculture, pigs, chickens, cattle, etc.) produced per year per s kilometre land area		
24	Percent of fisheries stocks overfished (FFA/FAO definitions)		
25	Density of people living in coastal settlements (i.e. with a city centre within 100 km of the coast)		
26	Total human population density (number per km ² land area)		
27	Annual human population growth rate (average over last five years)		
28	Net percentage of land area changed by removal of natural vegetation over the last five years		
29	Annual number of international tourists multiplied by the average length of stay in the country over one year per land area the last five years)		
30	Litres of untreated industrial and domestic wastewater discharged per day per square kilometre of land area		
31	Total tonnage of generated and net imported toxic, hazardous and municipal wastes per square kilometre land area averag 10 years		
32	Mean percent of hazardous, toxic and municipal waste “effectively” managed or treated per year		
33	Number of spills of oil and hazardous substances greater than1000 litres during the last five years on land, in rivers or \ territorial waters per square kilometre of land area		
34	Number of nuclear, chemical and other major industrial facilities (e.g. oil rigs) that could cause significant environmental da per square kilometre land area		
35	Number of vehicles per square kilometre of land area		
36	Maximum 24 hour SO ₂ concentration (microgram/m ³) (average over last five years)		
37	Tonnes of nitrogen (N), phosphorus (P) and potassium (K) fertilisers used per year per square kilometre of agricultural (average last five years)		
38	Tonnes of pesticides used per square kilometre of agricultural land (average last five years)		
39	Number of new fisheries stocks or expanded fisheries efforts (greater than 20% increase in catches) added to the country the last five years (within territory)		

	Total Indicators Colle		
	Percen		

Conclusions

- The collection of an environmental vulnerability data file for Nauru that was the main objective of the trip was extremely successful. At least 35 of the 49 indicators for which data was sought were collected (71%). This is short of the required eighty percent (80%) as recommended by the experts at the Think Tank for an accurate calculation of the EVI. Therefore the completion of the remainder of the questionnaire indicators will now need to be followed up from the SOPAC Secretariat. It is expected that the remaining required data should be available and easily compiled and only requires more time for completion.
- The success of the data gathering process in Nauru indicates that the refined approach to data gathering is much more successful. The holding of a briefing meeting of all relevant government agencies upon arrival is the most efficient method of providing a detailed briefing and discussion forum for participants. This meeting was well attended and generated constructive discussion. Follow-up meetings with individuals and other appropriate colleagues from the various ministries also provided the necessary contact and time to help increase the understanding and workings of the EVI so that the importance of the work was fully understood. It is clear that this approach together with the questionnaires have helped to ensure the maximum use of the EVI team's time in-country and return of environmental vulnerability information.
- It is important to note that despite the relative success of the data collection process in terms of obtaining data for 35 indicators it must be recognised that a lot of the information used in the completion of indicator questionnaires was either based on expert assessments which need to be substantiated, or on data that is both incomplete or out of date. Most of the information required for the accurate calculation of the EVI requires that the data be based upon data collected from the last 5 years which in many cases was not possible in Nauru.
- Communication problems have to date been the main problem with Pacific countries, particularly in trying to obtain information. It is therefore hoped that through in-country contact responses to future communications and the following up of requests for information for the completion of indicators should be more successful.