eightyoptions

Environmental Data Management

Presenter: Tony Miller
tony.miller@eightyoptions.com

SPREP
Secretariat of the Pacific Regional Environment Programme

Inform
ENVIRONMENTAL INFORMATION FOR DECISION MAKING

Workshop agenda

Inform project background

Proposed solution demo: Online data portal

Morning tea and group photo

Proposed solution demo: Online SoE / MEA reporting tool

Lunch

Hands on training - data portal

Hands on training - reporting tool

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Workshop Objectives

Establish a clear understanding of the overall objectives and outcomes of the Inform Project

Identify opportunities for synergies, collaboration, and partnerships

Assess environmental data portal and reporting tool suitability for FSM

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Project Name	Building National and Regional Capacity to Implement Multilateral Environmental Agreements by Strengthening Planning and the State of Environmental Assessment and Reporting in the Pacific **Referred to as the Inform project**
Objectives	• A National Reporting System that stores data and/or connects to existing databases. • Improvements in monitoring and reporting. • Improvement of capacity of PICs to share data, information and knowledge to enable streamlined reporting and informed decision-making
Summary	This project will establish a Pacific Island Country (PIC) network of national and regional databases for monitoring, evaluating, and analysing environmental information to support environmental planning, forecasting, and reporting requirements at all levels.
Funding	$4,319,635 GEF grant, including co-financing from PICs @200,000 each
Geographical scope	Regional Multi-Country: Cook Islands, Federated States of Micronesia (FSM), Fiji, Kiribati, Republic of the Marshall Islands (RMI), Nauru, Niue, Palau, Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu
Duration	Four years

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Outcome 1: Database

PICs and partner institutions have functional monitoring databases, that are networked, and users are largely dependent on them for their environmental monitoring and planning needs.

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Data Repository

A repository is a place where data is stored.

Data Reporting Tool

Displays data, has a “dashboard”, generates reports and presents data in an understandable way - is key to making informed decisions

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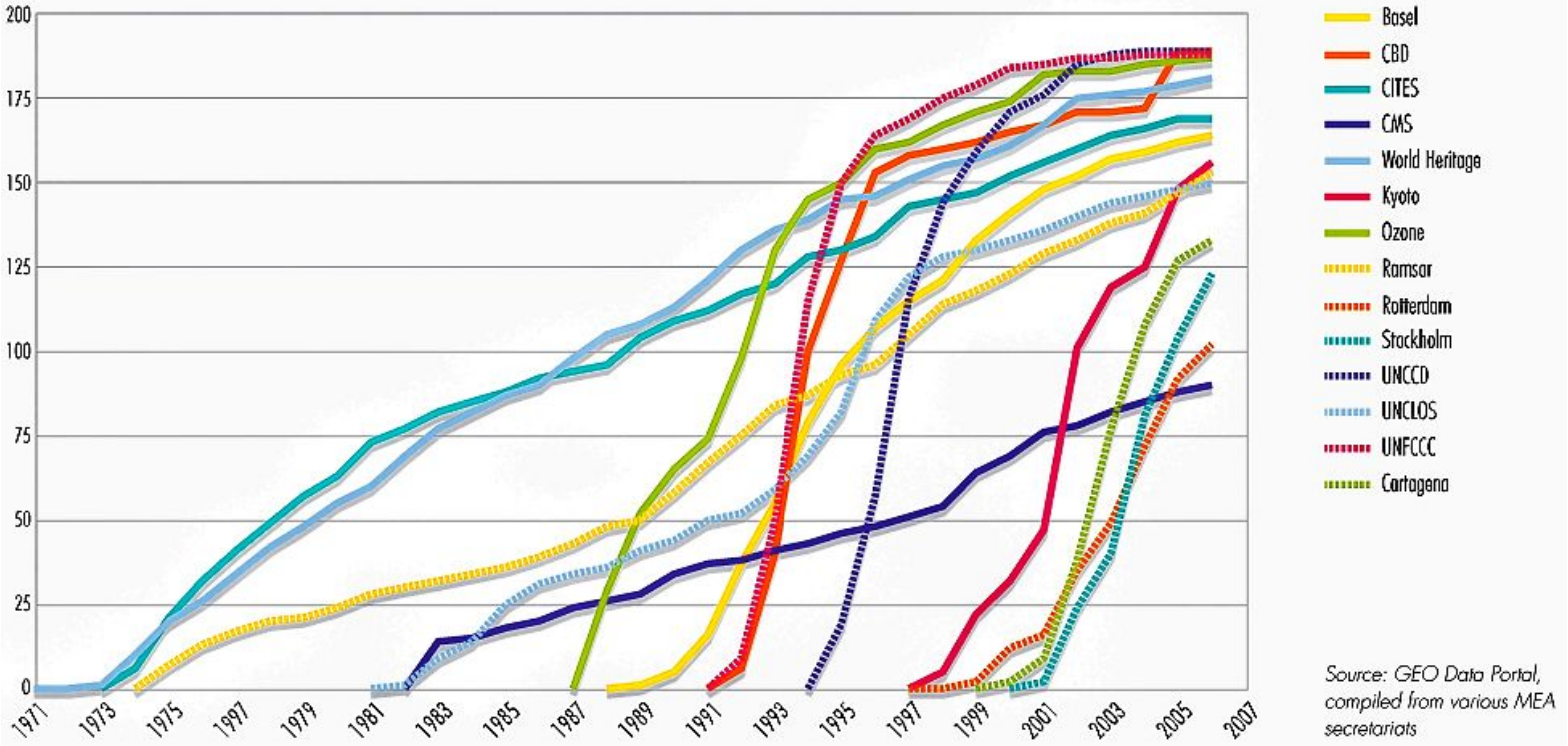
Reporting Against MEAs

Figure 1.1 Ratification of major multilateral environmental agreements



Source: GEO Data Portal, compiled from various MEA secretariats

Application within FSM: MEA Reporting Obligations

Biodiversity

- Convention on Biological Diversity (CBD) (Nagoya Protocol on Access and Benefit Sharing)
- World Heritage Convention (WHC)

Waste and Pollution

- Basel Convention
- Stockholm Convention
- Vienna Convention (Montreal Protocol)
- UNCLOS (Part XII: Protection and Preservation of the Marine Environment)

Climate Change

- Kyoto Protocol
- Paris Agreement

Land Degradation

- UNCCD

Regional Agreement

- Waigani Convention
- Noumea Convention

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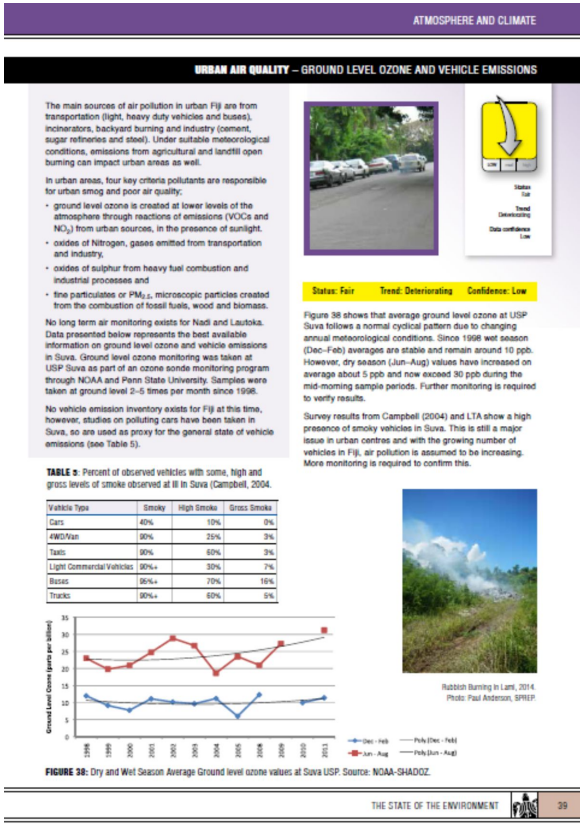
Application within FSM: SoE and NEMS Reports

Last FSM State of Environment report published 1993.

TOR prepared for consultant to assist.

Follow up consultations from SPREP and consultant later this year.

Data portal “setting the stage”



ATMOSPHERE AND CLIMATE

URBAN AIR QUALITY – GROUND LEVEL OZONE AND VEHICLE EMISSIONS

The main sources of air pollution in urban Fiji are from transportation (light, heavy duty vehicles and buses), incinerators, backyard burning and industry (cement, sugar refineries and steel). Under suitable meteorological conditions, emissions from agricultural and landfill open burning can impact urban areas as well.

In urban areas, four key criteria pollutants are responsible for urban smog and poor air quality;

- ground level ozone is created at lower levels of the atmosphere through reactions of emissions (VOCs and NO_2) from urban sources, in the presence of sunlight.
- oxides of Nitrogen, gases emitted from transportation and industry,
- oxides of sulphur from heavy fuel combustion and industrial processes and
- fine particulates or $PM_{2.5}$, microscopic particles created from the combustion of fossil fuels, wood and biomass.

No long term air monitoring exists for Nadi and Lautoka. Data presented below represents the best available information on ground level ozone and vehicle emissions in Suva. Ground level ozone monitoring was taken at USP Suva as part of an ozone sonde monitoring program through NOAA and Penn State University. Samples were taken at ground level 2–5 times per month since 1998.

No vehicle emission inventory exists for Fiji at this time, however, studies on polluting cars have been taken in Suva, so are used as proxy for the general state of vehicle emissions (see Table 5).

Status: Fair **Trend: Deteriorating** **Confidence: Low**

Figure 38 shows that average ground level ozone at USP Suva follows a normal cyclical pattern due to changing annual meteorological conditions. Since 1998 wet season (Dec–Feb) averages are stable and remain around 10 ppb. However, dry season (Jun–Aug) values have increased on average about 5 ppb and now exceed 30 ppb during the mid-morning sample periods. Further monitoring is required to verify results.

Survey results from Campbell (2004) and LTA show a high presence of smoky vehicles in Suva. This is still a major issue in urban centres and with the growing number of vehicles in Fiji, air pollution is assumed to be increasing. More monitoring is required to confirm this.

TABLE 5: Percent of observed vehicles with some, high and gross levels of smoke observed at III in Suva (Campbell, 2004.

Vehicle Type	Smoky	High Smoke	Gross Smoke
Cars	40%	10%	0%
4WD/Van	90%	25%	3%
Taxis	90%	60%	3%
Light Commercial Vehicles	90%+	30%	7%
Buses	96%+	70%	16%
Trucks	90%+	60%	9%

Rubbish Burning in Lami, 2014. Photo: Paul Anderson, SPREP.

FIGURE 38: Dry and Wet Season Average Ground level ozone values at Suva USP. Source: NOAA-SHADOZ.

What is data?

Data is the “raw material” from which information and knowledge can be derived.

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What is data?

	A	B	C	D	E	F	G	H
1	Mth	Year	Gaps	Good	Minimum	Maximum	Mean	St Devn
2	2	1993	456	216	27.1	29.1	27.897	0.258
3	3	1993	1	743	26.5	28.3	27.248	0.403
4	4	1993	0	720	25.9	27.8	26.737	0.286
5	5	1993	0	744	24.6	27.1	25.851	0.706
6	6	1993	0	720	23.2	25	24.045	0.394
7	7	1993	0	744	22.6	24.7	23.798	0.327
8	8	1993	0	744	22.7	25	23.921	0.471
9	9	1993	720	0				
10	10	1993	744	0				
11	11	1993	720	0				
12	12	1993	744	0				
13	1	1994	744	0				
14	2	1994	672	0				
15	3	1994	744	0				
16	4	1994	720	0				
17	5	1994	744	0				
18	6	1994	720	0				
19	7	1994	13	731	22.6	25.4	24.58	0.423
20	8	1994	3	741	22.1	24.4	23.747	0.351
21	9	1994	64	656	22.7	24.5	23.451	0.354
22	10	1994	38	706	22.8	26.6	24.911	0.753

Data vs Information

Data can be interpreted into information

Information has context

Decisions are based on information

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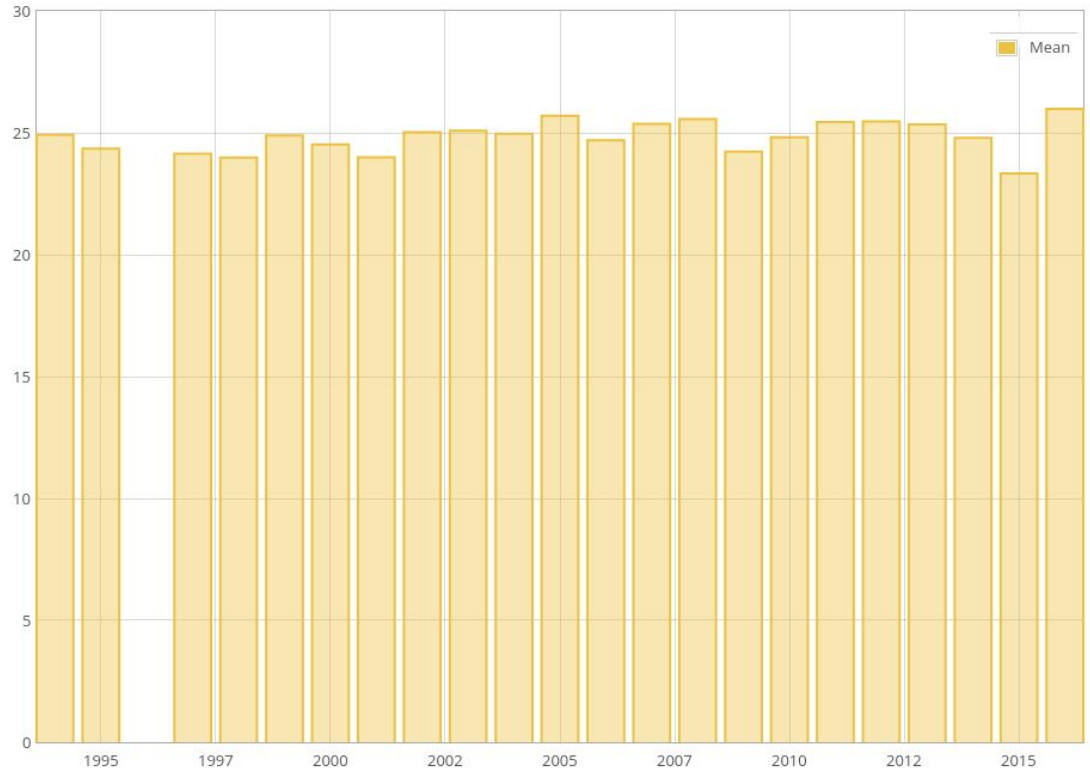
Information



Average water temperatures from 1994 to 2017

Why should we store and share data?

Data may be used in different contexts and different ways to derive difference information and knowledge.

Data has ongoing value… if it is accessible.

Data loss = value loss.

Federated States of Micronesia Data Portal

Other Examples:

Data.gov

Data.gov.uk

Data.gov.au

Data.gov.nz

Data.europa.eu

Etc...

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Federated States of Micronesia Data Portal

Available to preview at https://fsm-data.sprep.org

Demonstration….

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Federated States of Micronesia Data Portal

Publishing platform

Repository

Backups

Groups - departments / agencies

Support for Shared + Open data

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Federated States of Micronesia Data Portal

Ministries upload own datasets if account requested

Environment department manages users and groups

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Technical Details

Open source tools

- DKAN

Cloud or in-country hosting

Support from SPREP

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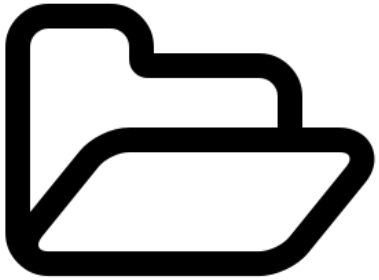
Types of Data Availability

Closed

Shared

Open



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Types of Data Availability - Closed

Commercial

Contracts

Sales data

Personalised data

- Identifying individuals

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Types of Data Availability - Shared

Accessible to specific organisations / individuals

Limitations on use, e.g. “Non Commercial”

Data sharing agreements add management, cost and time overheads.

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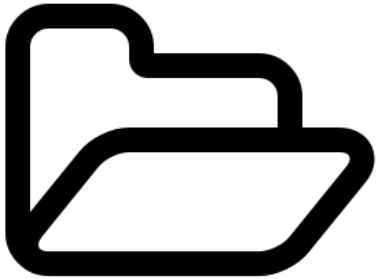
Types of Data Availability - Open



Anyone can access

Anyone can share

Anyone can use

“Freedom” doesn’t always mean “Free ($)”

*conditions may apply

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What is an open data policy?

“Share data by default”

Share unless there is a good reason not to.

Publish the existence of a dataset

Governments Adopting Open Data Policies

Negotiating data sharing agreements was a large overhead

- Time and cost

Freedom of Information (FOI) demand

Transparency, participation and collaboration

Spur innovation

Data has more value when open and available

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Open Data Benefits

Reduce duplication

Maximise utility

Transparency

Accountability

Informed decision making

Cost efficiency

Reduced overheads

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Benefits - Private Sector

Open data can be used in different contexts to derive different information.

Open data creates opportunities and stimulates innovation

Example.. Mobile applications using open maps and weather data.

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Open data strategy

Default to an open licence

- Unless there is a clear need for restrictions (e.g. privacy concerns)

Raise awareness of open data benefits

Data management policy

Publish the data where it can be found (e.g. online data portal)

- Preferably machine readable

Raise awareness of the publishing platform

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Open data licences

Public domain (no restrictions)

Attribution

Share-alike - any derived content must be shared under the same licence.

Attribution + share-alike

https://creativecommons.org

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Indicator Reporting Tool

State of the Environment Report

Multilateral Environment Agreement (MEA) Reporting

Reducing the workload on PICs to meet reporting obligations

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Indicator Definitions

Collection of pre-defined indicator definitions

Including guidelines on reporting for each indicator.

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Online Reporting Tool

Indicator workbench demonstration...

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Online Reporting Tool

Many indicators are common across multiple MEAs

Write once and reuse

Generate a report per MEA

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Next Steps

State of Environment Reporting

MEA Reporting

Spatial Data Server

Promotion

Training

Maintenance