Pacific Community
Communauté du Pacifique

RESCCUE

ECONOMIC VALUATION IN THE PACIFIC – A SNAPSHOT

AGENCE FRANÇAISE DE DÉVELOPPEMENT

FONDS FRANÇAIS POUR L'ENVIRONNEMENT MONDIAL

This paper has been published following the RESCCUE experts meeting on project approach and methodology in Noumea from 24th to the 28th November 2014.

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Front cover photo:
Hyega island, Northen Province, New Caledonia (R.Billé, 2015)

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ACRONYMS

ADB	Asian Development Bank
ANU	Australian National University
CBA	Cost Benefit analysis
CVM	Contingent Valuation Method
DCCEE	Department of Climate Change and Energy Efficiency (Government of Australia)
FSPI	Foundation of the Peoples of the South Pacific International
IUCN	International Union for the Conservation of Nature
NOAA	National Oceanic and Atmospheric Administration (Government of the US)
SOPAC	South Pacific Applied Geoscience Commission (cited as the Applied Geoscience and Technology Division of SPC from 2012)
SPREP	Secretariat of the Pacific Regional Environment Programme
TCM	Travel Cost Method
UNEP	United Nations Environment Programme
USP	University of the South Pacific
WWF	World Wildlife Fund

INTRODUCTION

2014 saw the commencement of the project 'Restoration of Ecosystem Services against Climate Change's Unfavourable Effects' or RESCCUE. Executed through the SPC, and funded by the French Development Agency (AFD) and the French Global Environment Facility (FFEM), RESCCUE aims to support Pacific island countries and territories implement integrated coastal zone management, based on sound economic foundations. To this end, the project has a strong focus on economic analysis and valuation and an intention to explore innovative financial instruments[2] such as payments for ecosystem services. The project is presently scheduled to operate for five years until 2018 and will operate in four pilot countries: Fiji, Vanuatu, New Caledonia and French Polynesia. More details of the project background can be access through SPC (www.spc.int).

To support the implementation phase of the project, an expert meeting is scheduled for November 2013 in which the project approach and methodology will be shared and discussed. This paper has been prepared in support of that meeting with the intention of stimulating discussion around economic valuation, a matter that is pivotal to the project.

In so doing, the paper aims to provide a snapshot as of mid-2014 of recent economic analyses of Pacific coastal zone resources that include valuations[3]. In this paper, the term "coastal zone" refers to the region where interaction of the sea and land processes occurs (Wikipedia 2014). This is a significant concept in the Pacific where many nations are small island states, with half occupying a total land mass of less than 500 km^2 (Table 1). In fact, with the World Resources Institute (FAO undated citing World Resource institute 1996; see also Kwon 2000) referring to a global definition of coastal zones as land area within 60 kilometres of adjacent near-shore waters, most Pacific island states are nations are by definition coastal communities, with only Fiji, Kiribati[4], Solomon Islands and Vanuatu containing any land masses big enough to be considered non-coastal.

In conducting the review of economic valuations, several issues were targeted with a view to generating discussion:

- A review of what has been/ is being done in terms of economic valuations for coastal zone management in the Pacific;
- The context of the work (government policies and administration, development cooperation projects etc.);
- The purpose (aim) of the work (such as to determine policy trade-offs or for awareness raising);
- The key players promoting assessments, undertaking them, and training people to do so;
- General trends and lessons learnt that may be useful for RESCCUE.

COMPLETED STUDIES

Perspectives on the context, method and delivery of recent economic valuations for coastal zone management are provided below, based on a rapid review conducted of 53 economic valuation studies conducted since 2000. The valuations were identified through a database maintained by the Pacific Resource and Environmental Economics Network (PREEN) hosted at SPC, on-going research as well as triangulation with peers and other reviews (see Jungwiwattanaporn et al. *Forthcoming*).

[2] In this document several different phrases are used purposely for these instruments: defining their scope and deciding on language will be one of the objectives of the meeting.
[3] A summary table of these studies can be found in the Annex.
[4] because of Kiritimati Island

Table 1 Total land area of Pacific island nations

Pacific island country or territory	Land area (km^2)
American Samoa	199
Cook Islands	237
Federated States of Micronesia	701
Fiji	18,333
Guam	541
Kiribati	811
Marshall Islands	181
Nauru	21
Niue	259
Northern Mariana Islands (CNMI)	457
New Caledonia	18,576
Palau	444
Papua New Guinea	462,840
Pitcairn	47
French Polynesia	3,521
Samoa	2,934
Solomon Islands	28,000
Tokelau	12
Tonga	749
Tuvalu	26
Vanuatu	12,281
Wallis & Futuna	142

Source: http://www.spc.int/prism/.

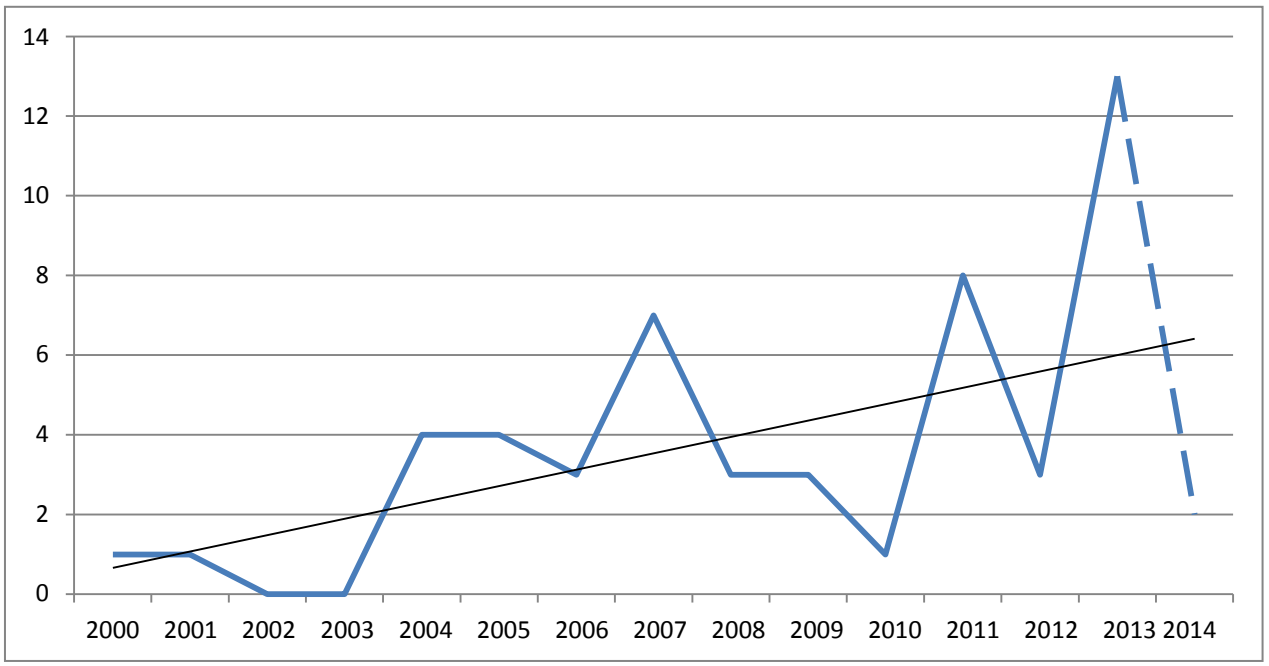
On the other hand, with SPC is being a regional agency and many peers being hosted in international or regional organisations, most of the studies identified are associated with internationally funded development projects. By comparison, familiarity with valuations conducted under national projects is limited. This is partly because national assessments are often internal and not released publicly, and or because they are delivered by external consultants who are not connected to the PREEN or other economics networks with which we are familiar. As a result, the studies reviewed are unlikely to represent all studies conducted. The comments below can therefore reflect one set of perspectives only.

Coverage

Conversations with colleagues in SPREP and SPC suggest that there were relatively few economic valuations being conducted in the 1990s. By comparison, based on the over 50 studies conducted, there appears to have been a steady increase in the number of economic valuations for coastal management in the last 13 or so years (Figure 1).

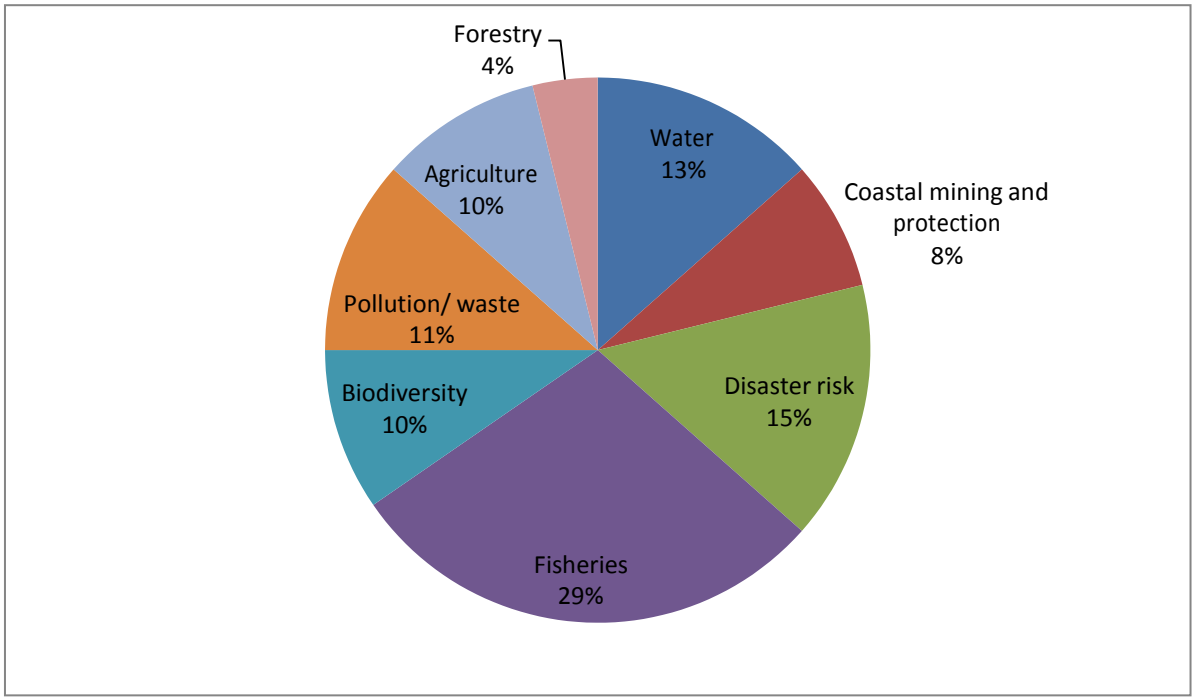
The economic valuations cover a wide variety of coastal management sectors (Figure 2), with most sectors containing an economic valuation of one form or another. At first glance, it would appear that most economic valuations have been conducted of fisheries resources but, in truth, the fisheries sector includes resources that might alternatively be categorised as biodiversity (such as coral reefs) so final figures partly depend on how the assessments are interpreted. The sector least covered by any economic valuations appears to be Forestry.

Figure 1 Economic valuations 2000-2014 (n=53)



- - - - 2014 data not yet in.

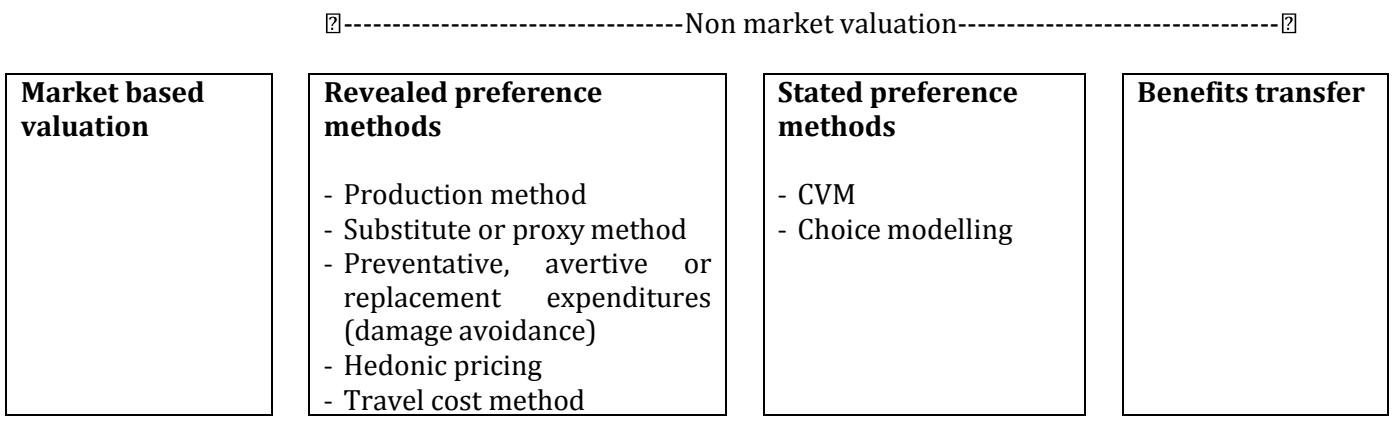
Figure 2 Economic valuations by sector 2000-2014



Valuation methodologies

Standard neoclassical economic *approaches* to valuation are based around market prices and vary according to the availability of relevant market data. As a result, there are numerous *actual methods*, each reflecting the different types of data available. While the specific valuation methods used can be categorised in a variety of manners, one way to envisage the methods could be as in Figure 3.

Figure 3 Broad methodologies for economic valuation



In practice, the majority of economic valuations tend to involve a variety of methods, reflecting the range of goods and services being assessed and or the different dimensions of the same good (not to mention the different data availability associated with these situations). As a result, the 53 economic valuations recently conducted often use more than one method in their assessment, 'dipping in and out' of the different methods available (Table 2).

Table 2 Broad techniques used in economic valuations since 2000

Method*	**Frequency**	**Comment**
Market based valuation/ production	25	Particularly used for agriculture, fisheries, aquaculture, commercial/tourism values
Revealed preference		
TCM	1	Whale watching
Avoided damage	8	Particularly for risk reduction/ climate change related projects
Stated preference		
CVM	8	Evenly spread over time
Choice modelling	4	Evenly spread over time; Favoured by Van Beukering
Benefits transfer/	6	Especially health benefits
Expert opinion	3	Especially health benefits

* Some methods used in combination.

Generally, the following broad observations can be made:

- Market based valuation approaches (based on observed/expected changes in production of the good or a similar good) are commonly used to value costs. It is reasonable to consider that these are used because of ease of access to data. They also help explain and communicate the meaning of the values to decision makers
- Market based valuations are extremely common for the valuation of improved water availability ($ price of water/m^3 multiplied by the change in quantity), while benefits transfer is commonly used to estimate the associated health benefits.
- Stated preference techniques are most commonly used biodiversity valuations. Nevertheless, several other biodiversity assessments focus on gross expenditure (gross revenues) assessment, presumably because of the relative ease of access to data.

- Approaches combining survey based techniques and market prices are often used for coral reef fisheries economic valuations.

Context and rationale

Economic valuations may be conducted for a variety of reasons and often depend on the type of agency commanding the work. For example, environmental protection agencies often seek economic valuations as part of behavioural change and awareness programmes, while development partners may seek project assessments to determine whether or not to continue funding.
Drawing on Laurans et al. (2013), several potential purposes behind economic valuation might be considered:

- Valuation for decisive purposes:
  - To inform trade-offs (cost benefit analysis);
  - For participation ('negotiation language' or basis of discussion);
  - As a criterion for environmental management (eg., prioritisation of options);
- Valuation for technical purposes (design of an instrument):
  - To establish levels of damage compensation;
  - To set prices;
- Valuation for information purposes:
  - For awareness-raising;
  - For justification and support (economic rationality of measures envisaged or executed);
  - To produce 'accounting indicators',

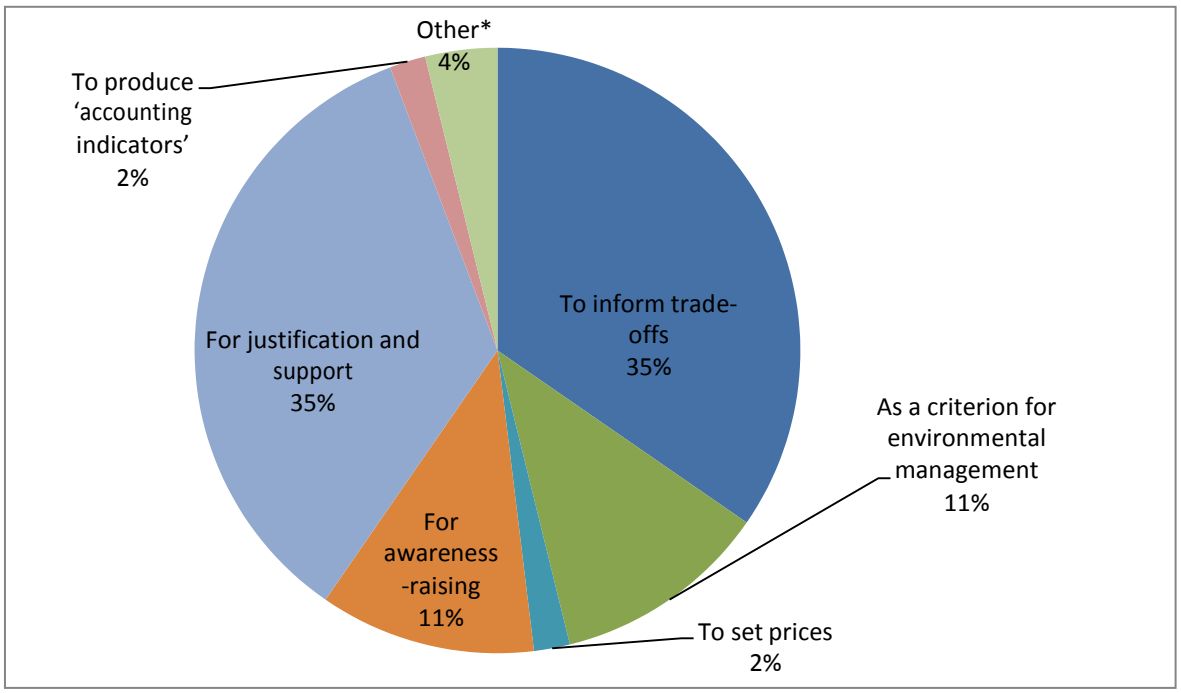
Unfortunately for the studies considered in this snapshot, it was not always straightforward to determine a primary purpose. This was the case:

- where the purpose of a study was not stated at all;
- where the purpose of a study was only loosely stated (say, to fill a data gap without explicitly stating how that data is to be used);
- where a project had multiple purposes (such as increasing awareness and determining whether a policy seems worthwhile).

In cases where the purpose of the analysis is not clear, inferring a purpose can be challenging because it requires an interpretation – a judgement call – on the possible intents of the work; this, often in the face of limited information. In cases where studies had multiple or unclear purposes, interpretations were made of the 'likely' primary purpose for the purpose of this review, but any resulting mistakes in interpretation are then totally unintentional.

Based on the studies reviewed and the apparent key reason for conducting them, the most common reasons for conducting the work was equally to inform trade-offs (commonly a cost benefit analysis seeking to determine whether an activity should proceed) or to provide evidence to support an activity (particularly investment) (Figure 4). Rarely was valuation explicitly conducted to support natural resource accounting or to inform price setting, although price setting as the purpose for a study may have a lower profile because it can be controversial (and or the result of multiple activities over time).

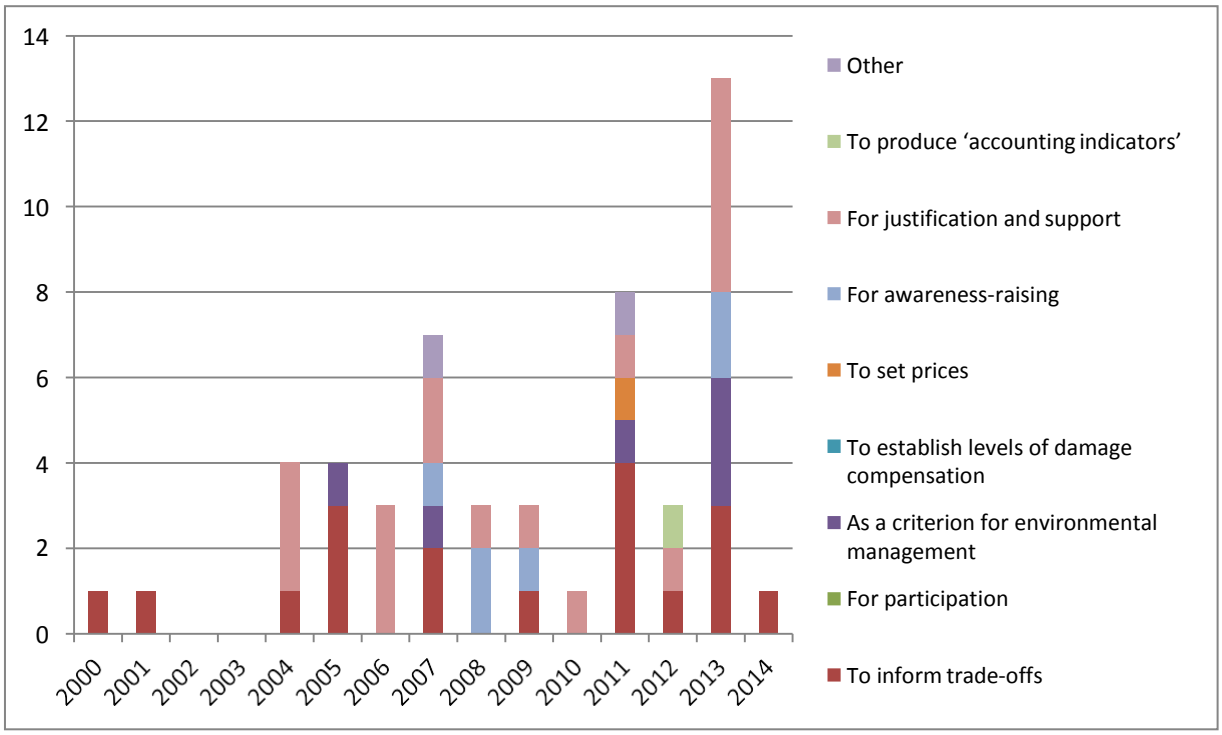
Figure 4 Purpose of valuations



* Other: testing the suitability of CBA as a methodology in the Pacific.

As illustrated in Figure 5, there does not presently appear to be a firm trend in the rationale for conducting an economic analysis over time (such as a movement from advocacy to decision making over the years). Nevertheless, there does appear to have been an increase in the diversity of reasons spurring agencies to conduct the valuations over time, and this might be used to tentatively suggest that economic assessments of resources are becoming more mainstreamed to policy and dialogue.

Figure 5 Purposes over time



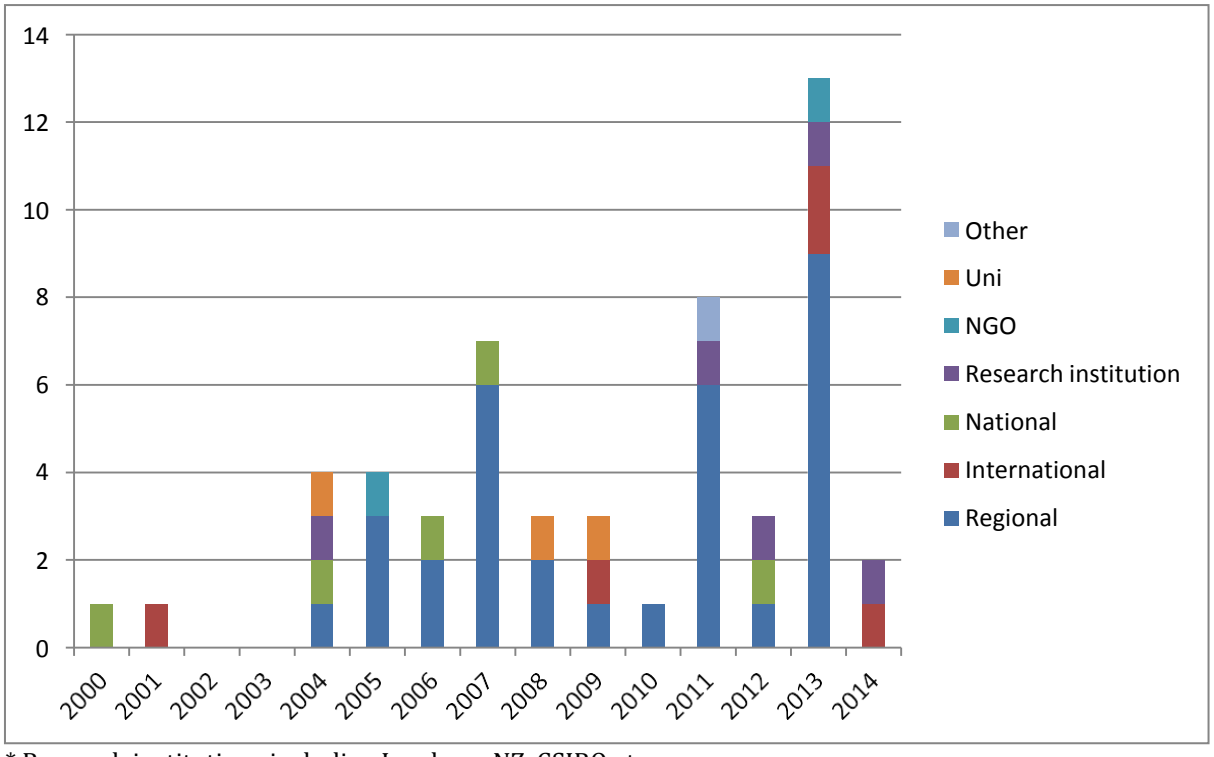
Whether or not the objectives of conducting these studies were ever achieved is uncertain. There are a number of reasons for this. First, many of the valuations form part of *ex ante* cost benefit analyses where the projects are still underway or are only recently completed. As a result, appraisal of the success of some projects is yet to be undertaken. Second, not all projects are assessed and, when they are, the results are not always publicly released. Third, as implied by the categories proposed by Laurans et al. (2013), economic valuation is rarely an outcome itself, but is usually used as a means to achieve some form of goal. As a result, the final outcome may hinge on a variety of factors not related to the values estimated. As an example, economic valuations that seek to justify investment in activities may well demonstrate that the investment will have high returns, but may not be supported because of prior commitments to support other sectors, because political interests lie elsewhere, or because the effort to establish the policies and enabling environments to deliver those benefits may be substantial.

Follow up research would be required to assess whether the studies considered in this snapshot met their goals. This is outside the scope of this paper but may be a worthwhile activity for future researchers.

Key players

Most of the studies identified for this snapshot are development in nature and were commissioned (and delivered) by staff in regional agencies (Figures 6 and 7), with SPREP commissioning 31 per cent of the studies and SOPAC (prior to absorption to SPC) 27 per cent. Research institutions came next, accounting for around 10 per cent of assessments.

Figure 6 Agencies commissioning economic assessments



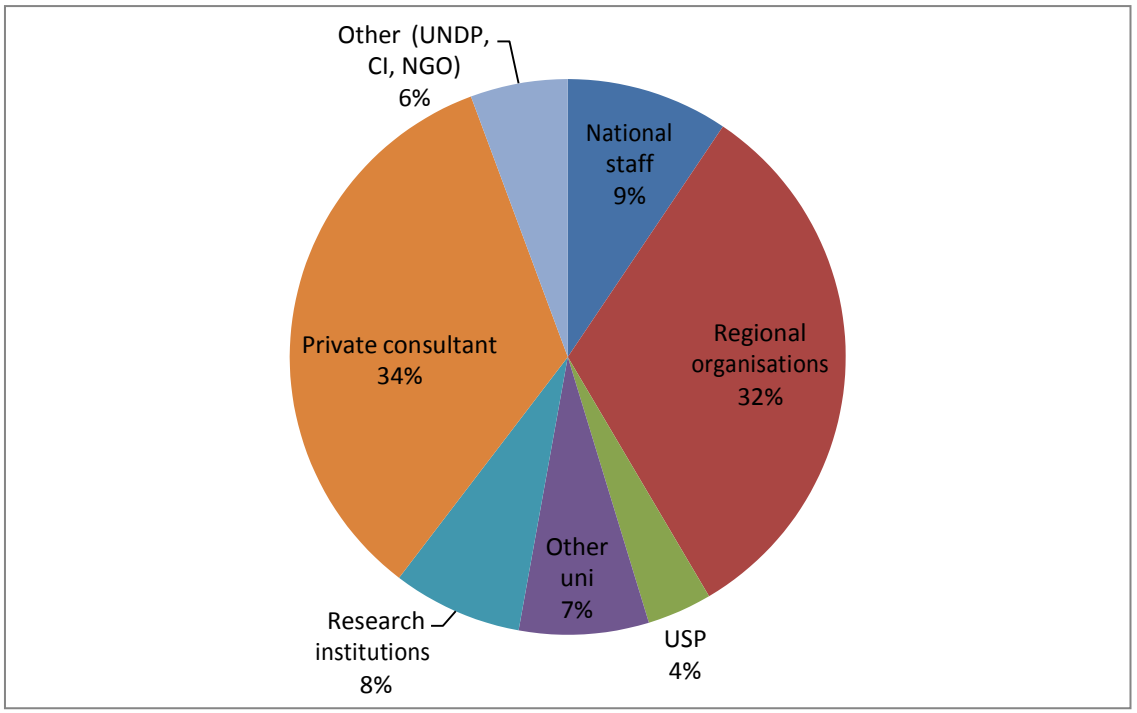
* Research institutions including Landcare NZ, CSIRO etc.

With the work being commissioned mostly by SPREP and SPC (including SOPAC), it is not surprising that a small core of practitioners are hosted there. Outside of this group, practitioners are mostly private consultants or universities (Figure 6), scattered through the wider Pacific. A short list of known active practitioners in economic valuations for coastal

management is presently held with the PREEN, coordinated by SPC (Applied Science and Technology ('SOPAC') Division).

It is important to note that less than 10 per cent of the valuations identified appear to have been delivered by *national staff* (Figure 7). This possibly reflects possibly the specialized skill set required to deliver economic valuations and or the time burden which often small government administrations cannot afford. This may also go some way to explaining the level of private consultants involved in valuations.

Figure 7 Practitioners in economic assessment



CAPACITY BUILDING IN RESOURCE ASSESSMENT

Given the limited delivery of known economic valuations by national staff, efforts to bolster the capacity on national officers to deliver economic valuations have been made. These include *ad hoc* training activities in cost benefit analysis or the economic dimensions of ecosystems delivered in the last five years. While it cannot be known with certainty the total number of training activities delivered, at least some are noted in Table 3. These specific training activities have mostly been delivered by SPREP or SPC as part of discrete projects in coastal zone management

While training associated with discrete projects makes the training vocational, its sustainability hinges on the continuation of the projects. As a result, a voluntary initiative founded by several agencies to coordinate and sustain strategic capacity building in economic assessment is presently underway in the Pacific. The initiative – known as P-CBA[5] – is presently coordinated by UNDP and comprises a number of key organisations:

- UNDP
- SPREP
- PIFS
- SPC
- GIZ
- [USP – to be confirmed].

[5] Capacity building for resilient development in the Pacific: improving the use of cost-benefit analysis – otherwise commonly referred to as the P-CBA initiative.

Table 3 Recent training activities in economic valuation for coastal zone management

Training activity	Date	Location	Coordinator	Project	Further information	Approx. # trained
CBA for water projects	2011	Nauru	SPREP	PACC	https://www.sprep.org/attachments/Pu blications/CC/PACCTechRep1.pdf	17
CBA for agricultural projects	2012	Fiji	SPREP	PACC	https://www.sprep.org/attachments/Pu blications/CC/PACCTechRep1.pdf	11
CBA for coastal management projects	2012	Samoa	SPREP	PACC	https://www.sprep.org/attachments/Pu blications/CC/PACCTechRep1.pdf	17
CBA for agriculture	2012	Fiji Dept of Agriculture	SPC (with delivery support from GIZ)	-	Email Director, Land Resources Division, SPC at: lrdhelpdesk@spc.int	20
CBA for natural resource projects	2013	Kiribati	GIZ (with delivery support from SPC)	Coping with Climate Change in the Pacific Island Region	Marita Manley, GIZ: Marita.manley@giz.de	33
CBA	2013	Tuvalu	GIZ	Coping with Climate Change in the Pacific Island Region	Marita Manley, GIZ: Marita.manley@giz.de	?
CBA for natural resource projects	2013	Vanuatu	GIZ (with delivery support from SPC)	Coping with Climate Change in the Pacific Island Region	Marita Manley, GIZ: Marita.manley@giz.de	25
CBA for natural resource projects	2014	Solomon Islands	SPC with delivery support from GIZ	US Food Security project	Vuki Buadromo, SPC: vukib@spc.int	
Economic tools for marine conservation	2014	Palau (regional	Conservation Strategy Fund	-	Kim Bonnie, Conservation Strategy Fund: kim@conservation-strategy.org Or general enquiries: www.conservation-strategy.org	28
Economic dimensions of ecosystem services	2014	Solomon Islands	IUCN (with support from UNDP)	MacBio	Jacob Salcone, IUCN: JacobMichael.Salcone@iucn.org	20
Economic dimensions of ecosystem services	2014	Kiribati	IUCN (with support from UNDP)	MacBio	Jacob Salcone IUCN: JacobMichael.Salcone@iucn.org	20
Economic dimensions of ecosystem services	2014	Tonga	IUCN (with support from UNDP)	MacBio	Jacob Salcone, IUCN: JacobMichael.Salcone@iucn.org	20
CBA	2014	Fiji	UNDP (with support from SPC, GIZ)	P-CBA	Marco Arena, UNDP : marco.arena@undp.org	35

Combined with the on-going MACBIO project (see over), several additional capacity building activities targeting economic assessment are scheduled in the next few months (Table 4).

Table 4 Scheduled training activities in economic analyses for coastal zone management

Training activity	Date	Location	Coordinator	Project	Further information
Economic valuation of ecosystem services	Oct 2014	Solomon Islands	IUCN/ UNDP	MacBio P-CBA	Jacob Salcone, IUCN: JacobMichael.Salcone@iucn.org; Marco Arena, UNDP : marco.arena@undp.org
CBA	Oct 2014	FSM	UNDP	P-CBA	Marco Arena, UNDP : marco.arena@undp.org
CBA/ Environmental valuation	Nov 2014	Samoa	UNDP	P-CBA	Marco Arena, UNDP : marco.arena@undp.org
Economic valuation of ecosystem services	Nov 2014	Vanuatu	IUCN/ UNDP	MacBio P-CBA	Jacob Salcone, IUCN: JacobMichael.Salcone@iucn.org
CBA/ Environmental valuation	Jan 2015	Tuvalu	UNDP	P-CBA	Marco Arena, UNDP : marco.arena@undp.org
CBA/ Environmental valuation	Feb 2015	Kiribati	UNDP	P-CBA	Marco Arena, UNDP : marco.arena@undp.org
CBA/ Environmental valuation	1st qtr 2015	Tonga	UNDP	P-CBA	Marco Arena, UNDP : marco.arena@undp.org
Environmental valuation	1st qtr 2015	Fiji	SPC	P-CBA	Marco Arena, UNDP : marco.arena@undp.org
CBA	1st qtr 2015	Timor L'Este	SPC	P-CBA	Marco Arena, UNDP : marco.arena@undp.org

COMPLETED STUDIES OF PARTICULAR INTEREST

Of the 53 studies since 2000 identified, some may be of particular interest to the RESCCUE project on account of their recent efforts to value ecosystems:

- IUCN's MESCAL project aimed to increase the climate change resilience of Pacific islanders as well as improve their livelihoods by enhancing the ability of PICs to adaptively co-manage and restore the mangroves and associated ecosystems of five countries: Fiji, Samoa, Solomon Islands, Tonga and Vanuatu. In conducting the work, two sets of economic valuations were conducted: one for each site in Samoa (yet not released[6]) and Vanuatu (Pascal and Bulu 2013).

  The methodologies used for the valuation were mixed but included:

  - Household survey information in Samoa on (i) catch and consumption of fish and market prices for fisheries (ii) replacement cost method for firewood, timber, and medicinal uses and (iii) the cost of seawall construction as a proxy for the value of natural coastal protection;
  - (i) catch and market price for fisheries (ii) carbon production and market price for carbon sequestration and (iii) benefits transfer in Vanuatu for the relative

[6] Ram-Bidesi, V., Siamomua-Momoemausu, M. and Faletutulu, M. *Forthcoming*, Economic Valuation of Mangroves of the Safata District in Samoa, Report for the Ministry of Natural Resources and Environment, Samoa and IUCN-Oceania, IUCN-Oceania, Suva.

importance of subsistence versus commercial fisheries as well as for the proportion of tourism spending that can be assigned to the existence of mangroves.

On the basis of the valuations conducted, the Samoa studies recommended that mangrove management plans for the Safata District required strengthening, an activity that would require advocacy work, legislative and institutional strengthening together with a thorough cost benefit analysis of any project to protect and preserve the mangroves. On the basis of the valuations conducted in Vanuatu, it was recommended that the economic value of mangroves be considered in regulations and policies affecting mangrove use, including any procedures concerning compensation for their damage or removal.

- Landcare New Zealand's disaster risk management project (Brown et al. 2014) was intended to assess the economic value of ecosystem based management to reduce flooding in Fiji compared to other (such as structural) solutions. The work drew on extensive socioeconomic surveys conducted specifically for the study in local villages and estimated payoffs from different flood mitigation options through, in particular, the use of the damage avoided method. Expert opinion was also critical.

- SPREP's assessment of coastal management in Lami Fiji (Rao et al. 2013) was intended to provide lessons on choices for climate change adaptation using Lami town as a case study. The study compared ecosystem based approaches to flood mitigation with structural measures using a number of benefits transfers and indicative scenarios to consider the economic dimensions of different strategies.

  On the basis of the valuations conducted, the Lami study observed that intact mangroves, forests, sea grass, mud flats and coral reefs provide natural capital by reducing flood and erosion potential while providing secondary ecosystem services. The study recommended that an adaptation plan focused on hybrid approach to risk reduction by considered, including a combination of both ecosystem management and targeted engineering options to provide a high benefit-to-cost return.

- SPC's project Coral Reef Initiative for the South Pacific (CRISP) aimed to (i) develop a vision for the future for coral reef eco-systems and the communities that depend on them; and (ii) introduce strategies and projects to conserve their biodiversity, while developing the economic and environmental services they provide, both locally and globally.

  On account of its efforts to develop the economic dimensions of reefs, the project involved a number of ecosystem valuations in Fiji and Vanuatu. Two of the assessments involved expressed preference methods (see O'Garra 2007; Korovulavula et al. 2008), while the third drew heavily on the production method (yield protected by MPAs) and damage avoided (coastal protection from reefs) (Pascal 2011). Benefit transfer was also important to estimate the order of magnitude for some values.

  The studies ultimately noted the importance of coral reefs and associated marine protected areas in protecting the coastline in Fiji and their value in supporting rural tourism and fisheries in Vanuatu. All studies highlighted the need for improved data for future valuations.

PRESENT STUDIES

At a general level, economic valuations for coastal management are underway continuously in the region since individual projects increasingly stipulate cost benefit analysis or economic valuations to support their work. However, a handful of projects are also underway that strategically and specifically target environmental valuation (Table 5).

Table 5 On-going economic valuation projects in the Pacific

Project	Agency	Countries concerned	Study target	Status	Scheduled completion
MacBio	IUCN/GIZ	Fiji, Kiribati, Solomon Islands, Tonga, and Vanuatu	Review of ecosystem services and data gap analysis to guide evaluation both underway	Detailed preparation	Feb 2015
Vatu-I-Ra	WCS	Economic valuation of Vatu-I-Ra landscape		Completed and awaiting circulation	2014
Sovi Protected Area project	IUCN	Sovi Basin, Fiji	Total economic value	Stalled	?
Marquesas Islands MPA project: towards sustainable financing	Agence des aires marines protégées (Marine Protected Areas Agency)	Marquesas Islands, French Polynesia	Value of a prospective large MPA, including environmental valuation for sustainable financing as well as advocacy and awareness. Contact: Mahe Charles mahe.charles@aires-marines.fr)	Planning phase	?

Of particular note is the MACBIO project which is generating some valuable resources concerning valuation. These include an annotated review of ecosystem values generated in the Pacific (Jungwiwattanaporn et al. 2014) and a list of resources available for consistent environmental valuation.

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ANNEX SELECTED ECONOMIC VALUATIONS SINCE 2000

Sector	Country	Topic	Discount rate (%)	Reference	Valuation methods used included …	Context	Year	Commissioning agency	Practitioner
Agriculture	Fiji	Invasive species management	4, 8, 12	Daigneault et al. (2013)	Value of species protection = CVM; expert opinion on rate of change	Dev	2013	Landcare NZ	Landcare NZ
Agriculture	Fiji	Economic value of fair trade certification	3, 7, 10	Bower (2012)	Production method P x Q	Dev project	2012	SPC	SPC
Agriculture	Solomon Islands	Climate change risk and agriculture	4, 8	Buncle (2013)	Taro production = production method (P x Q) Health benefits = qualitative	Dev project	2013	SPREP	Private consultant
Agriculture	Palau	Climate change risk and agriculture	4, 8	Buncle (2013)	Taro production = production method (P x Q) to est. production losses avoided Health benefits = qualitative	Dev project	2013	SPREP	Private consultant
Agriculture	Samoa Vanuatu	Germplasm	2, 15	MacGregor et al. (2011)	Production method P x Q	Dev	2011	DCCEE	Private consultant
Biodiversity	Hawaii	Whale watching	5	Utech (2000)	TCM Surveys, revenues x visitors (production method)	National	2000	U.S. Department of Commerce	National government staff
Biodiversity	Fiji	Shark diving	n.a.	Vianna et al. (2011)	Direct use value = total dive expenditure on shark dives	Research	2011	Institute of Marine Science, University of Western Australia	National government staff
Biodiversity	Palau	Shark diving	5	Vianna et al. (2012)	Direct use value = total dive expenditure on shark dives Fisher surveys for incomes	Research	2012	Institute of Marine Science, University of Western Australia	National uni staff
Biodiversity	Samoa	Valuation of the terrestrial and marine resources	4	Mohd-Shahwahid (2001)	Fisheries resource = production method P x Q Forestry resource = royalty charges Recreational value = CVM	National	2001	WWF	Private consultant
Biodiversity	Hawaii	Dolphin watching	n.a.	Hu et al (2009)	Choice modelling	National	2009	University of Hawaii	National uni staff
Biodiversity	French Polynesia	Shark diving	8	Clua et al (2011)	Direct use value = total dive expenditure on shark dives/ number of sharks	Research project	2011	SPC	SPC
Coastal management	Republic of Marshall Islands	Costs of coastal erosion from coastal (reef and sand) mining	10	McKenzie, et al. (2006)	Damage avoided method (coastal inundation costs avoided)	Research activity	2006	SOPAC	SOPAC
Coastal management	Tuvalu	Aggregate supply	3, 7, 10	Ambroz (2009)	Aggregate value = commercial P x Q Road damage incurred = maintenance	Dev project	2009	SOPAC	SOPAC

					costs				
Coastal management	Kiribati	Aggregate supply	10	Greer Consulting Services (2007)	Aggregate value = commercial P x Q Infrastructure damage avoided = maintenance costs avoided	Dev project	2007	SOPAC	Private consultant
Coastal management	Fiji	Flood mitigation	1, 3, 7, 10	Rao et al (2013)	Benefits transfer, least costing, indicative scenarios	Research project	2013	UNEP	CI
Disaster risk	Fiji	Flood early warning	3, 7, 10	Holland (2008)	Direct survey	Dev project	2008	SOPAC	SOPAC
Disaster risk	Samoa	Climate change risk and coastal protection/ infrastructure (sea wall)	4, 8	Buncle (2013)	Environmental damage = qualitative; Value of protected personal possessions = qualitative Land protection benefit = production method (Pmkt price of land x Q)	Dev project	2013	SPREP	UNDP
Disaster risk	Cook Islands	Climate change risk and infrastructure (wharf)	4, 8	Buncle (2013)	Reduction in storm damage = replacement cost method (of existing infrastructure) Reduction in commercial losses = production method (P cost per day of running vessel x Q days lost; time x labour costs) Life savings = qualitative	Dev project	2013	SPREP	SPREP
Disaster risk	Samoa	Flood mitigation	7	Woodruff (2007)	Damage avoided (inundation damage curves)	Dev project	2007	SOPAC	SOPAC
Disaster risk	Fiji	Flood impacts on the sugar belt	n/a	Lal et al. (2009)	Production method (P x Q)	international response/ support post floods	2009	IUCN	Private consultant
Disaster risk	French Polynesia	Economic value of coastal protection	3, 7, 10	Rios Wilks (2013)	Coastal protection value = building replacement costs, replacement costs of personal possessions	Dev project	2013	SOPAC SPC	SOPAC
Disaster risk	Tonga	Economic value of coastal protection	3, 7, 10	Holland (2013)	Coastal protection value = building replacement costs, land values	Dev project	2013	SOPAC SPC	SOPAC
Disaster risk	Fiji (Ba River and Penang River) - Viti Levu	Flood mitigation	4, 8, 12	Brown et al (2014)	Direct household survey for damage values from pervious events Calculation of flood exceedance probability curves Benefits = damage avoided approach: based on illustrative? Expert opinion based % change from options (?)	Research project (DFID, Landcare NZ)	2014	Landcare NZ	Landcare NZ

Fisheries	Cook Islands	Pearl production	11	McKenzie (2004)	Production method P x Q (limited detail)	National (but delivered by CROP)	2004	SOPAC	SOPAC
Fisheries	American Samoa	Coral reefs	3	Jacobs (2004)	CVM	National (Am Sam a US territory)	2004	Dept of Commerce	Private consultant
Fisheries	Fiji	MPAs	5, 10, 15	O'Garra (2007)	CVM	Dev project (CRISP)	2007	SPREP	USP
Fisheries	Fiji	MPAs	10	Korovulavula etc. (2008)	CVM, benefits transfer	Dev project	2008	SPREP	USP
Fisheries	Vanuatu	Mangroves	not stated	Pascal and Bulu (2013)	Often production method p x q for fisheries; also for carbon sequestration Benefits transfer for the relative importance of subs fisheries versus commercial fisheries as well as for the % of tourism spending that can be assigned to the existence of mangroves	Dec project	2013	IUCN	Private consultant
Fisheries	RMI	MPAs	10	Gjertsen et al (2013)	fisheries = production method + benefits transfer to % gross revenue as value added; coastal protection = ha land protected x price	Research	2013	Conservation Strategy Fund	NGO staff
Fisheries	Solomon Islands	Coral reefs	n.a	Lal and Kinch (2005)	Financial assessment - production method p x q	Dev project	2005	FSPI	Private consultant
Fisheries	Fiji	Coral reefs	5	Lal and Cerelala (2005)	Production method P x Q	Dev project	2005	SPREP	Private consultant
Fisheries	Guam	Coral reefs	5	Van Beukering et al (2007)	Choice modelling	National?	2007	US NOAA	Private consultant
Fisheries	CNMI	Coral reefs		Van Beukering (2006)	Choice modelling	National through US (CNMI a territory)	2006	US NOAA	Private consultant
Fisheries	Vanuatu	MPAs	[not reported]	Pascal (2011)	Review of lit and user surveys on change in yield achieved through protection yield = P (protein via canned tuna) x ΔQ Coastal protection = damage avoided Bequest value = benefit transfer	Dev project	2011	SPREP	Private consultant
Fisheries	Hawaii	Value of tuna	n.a.	Cantrell et al (200)	CVM	Research	2004	Oceanic Institute of Hawaii	National government

									staff
Fisheries	Hawaii	Value of small boat recreational fishing	n.a.	Haab et al. (2008)	random utility model - stochastic analysis	Research	2008	Ohio State University	National uni staff
Fisheries	American Samoa	Coral reefs	n.a.	Gaskin (2012)	Choice modelling	Dev	2012	NOAA	National government staff
Fisheries	Regional	Fish aggregating devices	n/a	Sharp (2011)	Production method P x Q	??	2011	SPC	SPC
Forestry	Fiji	Biofuel	15	Zieroth et al. (2007)	Production method P x Q	Dev project	2007	SOPAC	SOPAC
Forestry	Solomon Islands	Forestry certificatio	10	Pesce and Lal (2004)	Breakeven analysis	Research project	2004	ANU	ANU
Pollution / waste	Cook Islands	Watershed degradation	3, 5, 9	Hajkowicz et al. (2005)	Expert opinion (health), cost avoided of mosquito spraying (health) Tourism value – brochure analysis	Dev project	2005	SPREP	CSIRO
Pollution / waste	Palau	Solid waste management	3, 5, 9	Hajkowicz et al. (2005)	Expert opinion (health)	Dev project	2005	SPREP	CSIRO
Pollution / waste	Kiribati	Value of sanitation	1, 3, 5	ADB (2014) (Padma Lal)	Health = avoided health costs, lost earnings	Dev project research	2014	ADB	Private consultant
Pollution / waste	Fiji	Waste management	10?	Lal, Tabunakawai and Singh (2007)	Income lost from composting not conducted Health benefits = cost of health treatment	Dev project	2007	SPREP	Private consultant
Pollution / waste	Tonga	Solid waste management	10	Lal and Fakau (2006)	CVM	Dev project	2006	SPREP	Private consultant
Pollution / waste	Tuvalu	Value of liquid waste management	n/a	Lal et al. (2007)	Health benefits = lost earnings Water value = avertive expenditure (desalinated water purchases) CVM	Dev project	2007	SPREP	Private consultant
Water	Palau	Water safety planning	3, 7, 10	Gerber (2010)	Production method (water price x Q); Benefit transfer (range of health benefits pp)	Dev project	2010	SOPAC	SOPAC
Water	Republic of Marshall Islands	Water resources	3, 7, 10	Gerber (2011)	Health benefits = treatment costs avoided; lost productivity; benefits transfer; cost of alternative water (import) supplies	Dev project	2011	SOPAC	SOPAC
Water	Niue	Water safety planning	3, 7, 10	Talagi (2011)	Health benefits = treatment costs avoided Water value = cost of alternative sources (eg., bottled water); water supply costs m3	Dev project	2011	SOPAC	SOPAC
Water	Tuvalu	Climate change risk and water supply	4, 8	Buncle (2013)	Water value = production method (P x Q) health benefits = qualitative	Dev project	2013	SPREP	National government

									staff
Water	RMI	Climate change risk and water supply	4, 8	Buncle (2013)	Water value = production method (P x Q) health benefits = qualitative	Dev project	2013	SPREP	Private consultant
Water	Niue	Climate change risk and water supply	4, 8	Buncle (2013)	Health benefits = treatment costs avoided Water value = avoided cost of alternative sources (eg., bottled water); water supply costs m3	Dev project	2013	SPREP	SPREP
Water	Tuvalu	Water supply	3, 7, 10	Gerber et al. (2011)	Health benefits = benefit transfer Water value = market price; alternative supply costs	Dev project	2011	SOPAC	SOPAC