



Pacific
Community
Communauté
du Pacifique



MITIGATION HIERARCHY AND BIODIVERSITY OFFSETS IN THE PACIFIC A REVIEW

DRAFT NOVEMBER 2016



This RESCCUE activity is a desktop review of the Pacific Islands region under the supervision of SPC.

Project Leader:

The Biodiversity Consultancy

Guy Dutson, Leon Bennun, John Pilgrim

guy.dutson@thebiodiversityconsultancy.com



Project Subcontractors:

Bio eKo

Yannick Dominique

ydominique@bioeko.nc



Environment Consultants Fiji / Nature Fiji - Mareqeti Fiji

Dick Watling

watling@environmentfiji.com



Golder Associates

Mervyn Mason

mmason@golder.com.au



Pae Tai – Pae Uta

Charles Egretaud

charles.egretaud@ptpu.pf



Te Ipukarea Society

Kelvin Passfield

kelvin.passfield@gmail.com



Main redactor(s)/Contributor(s)	Date of publication
Guy Dutson, Leon Bennun, Yannick Dominique, Charles Egretaud, Mervyn Mason, Kelvin Passfield, John Pilgrim and Dick Watling	6 November 2016

Front cover photo: Mangrove offsets are technically feasible: Nawi Island Ltd's Mangrove Rehabilitation

Overview of the objectives and components of RESCCUE project:

The *Resilience of Ecosystems and Societies to Climate Change* (RESCCUE) project is a regional project implemented by the Pacific Community.

The overall goal of RESCCUE is to contribute to increasing the resilience of Pacific Island Countries and Territories (PICTs) in the context of global changes. To this end RESCCUE aims at supporting adaptation to climate change (ACC) through integrated coastal management (ICM), resorting especially to economic analysis and economic and financial mechanisms.

The RESCCUE project operates both at the regional level and in one to two pilot sites in four countries and territories: New Caledonia, Vanuatu, Fiji and French Polynesia.

RESCCUE is funded primarily by the *French Development Agency* (AFD) and the *French Global Environment Facility* (FFEM) for a duration of five years (01/01/2014 to 31/12/2018). The total project budget is 13 million Euros, including 6.5 million Euros from AFD/FFEM and about the same in co-funding.

Program has successfully planted thousands of propagules near Savusavu, Fiji (@Nawi Island Ltd)

Disclaimer

The views expressed in this document are those of the authors only and do not constitute a statement of policy, decision or position of SPC, AFD or FFEM.

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Review of national offset policies and practices

Draft August 2016

Executive Summary

The mitigation hierarchy and biodiversity offsets are two relatively new tools used for cost-effective reduction of impacts from development on biodiversity and ecosystem services. Globally, there are a growing number of mitigation hierarchy and offsets policies which are starting to have a wide influence on business practice in some sectors. This study reviewed national policies and practices relating to the mitigation hierarchy and offsets across all Pacific Island Countries and Territories (PICTs), based on interviews and desk-research.

This study assessed a series of questions to review current policies and practices and to frame the need and practicality of developing improved policies. The factors assessed in the study were scored by the lead author based on information from desk-studies and in-country reviews and responses, and should be interpreted as indicative rather than definitive. Assessing each PICT against a simple scoring system, rather than offering a solely descriptive review, is designed to elicit more engaged discussion from technical and policy specialists in the PICTs.

This study found a wide range of mitigation hierarchy and offsets policies and practices across PICTs. These policies vary significantly between PICTs but, more importantly, the extent to which they are applied or practiced, is also very variable. Overall, there are opportunities to improve practice in all PICTs and to improve policy in most PICTs. A detailed review of policy details was considered to be much less relevant than analysing how these were implemented in practice, and the context for the development of improved policy and, especially, its practice. Follow-up work should focus on the practice and the factors constraining practice.

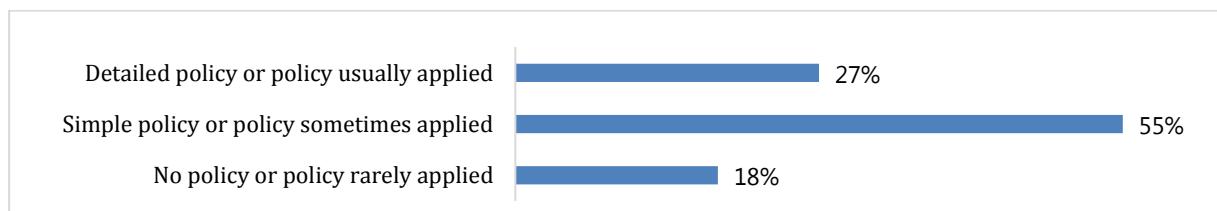


Figure 1. State of mitigation policies in each of the 22 PICTs: is there a detailed policy or policy usually applied, or simple or sometimes applied, or no policy or rarely applied (See Annex)

The first contextual question is whether there is a need to invest in new policies based on significant predicted development and impacts. Many PICTs have limited need for improved policy, compared to their need for improved practice and implementation of existing policy, except for the uncertain impacts and mitigation actions of deep sea mining for which regional policy might be more practicable.

The second question is whether there are current opportunities to integrate mitigation hierarchy or offsets requirements into other policies which are currently under review. In at least eight PICTs, there were found to be immediate opportunities.

A key question is whether there is adequate capacity for oversight, regulation and delivery of current and improved mitigation hierarchy and offsets policies, including effectively-managed offsets. Assessment of capacity, especially in a rapid study such as this, depends on the assessors' perspectives and benchmarks, and capacity can fluctuate significantly over time. However, it is considered that many PICTs do have the capacity to implement current and improved mitigation hierarchy and offsets policies, but for many other PICTs, capacity is likely to be a constraining factor.

Finally, the study investigated the status of other key enabling conditions for effective implementation of improved policies: an up to date National Biodiversity Strategy and Action Plan, a comprehensive and accessible biodiversity database, strategic land-use plans, adequate protected area legislation and effective environment impact assessments (EIAs). The study also looked at whether site-based offsets are socio-politically and technically feasible. The status of these enabling conditions varies widely between PICTs and is likely to constrain the opportunities for some PICTs to develop or implement detailed mitigation hierarchy and offset policies.

Analysing each country and territory against the key factors identifies five groups of PICTs with similar needs, capacity, enabling conditions, and current status of policy and practice (Table 1, Figure 2). For each group, a possible framework roadmap towards improved policy is suggested. These groups and the roadmap suggestions are offered as initial considerations to inform the next steps of this project of workshopping opportunities and solutions, and developing feasible roadmaps towards improved policy and practice in PICTs.

	Group	Features	Needs (future impacts)	Capacity to implement	Enabling Conditions	Current Status
American Samoa	one	high capacity, conditions and status	1	2	2	3
Federated States of Micronesia			1	2	3	2
Guam			3	3	3	3
Northern Mariana Islands			3	3	2	3
Palau			2	2	3	2
Wallis and Futuna			1	2	3	3
Cook Islands	two	low needs and capacity; moderate status	2	1	2	1.5
Kiribati			1	1	2	2.5
Marshall Islands			1	1	2	1.5
Pitcairn Islands			1	1	2	1.5
Samoa			2	1	2	1.5
Tuvalu			1	1	2	2
Vanuatu	2	1	2	1.5		
Nauru	three	low needs, capacity and status	1	1	1	1
Niue			1	1	2	1
Tokelau			1	1	2	1
Tonga			1	1	2	1
Fiji	four	high needs; low capacity and status	3	1	1	1.5
Solomon Islands			3	1	2	1.5
French Polynesia	five	high needs; moderate capacity and status	3	2	2	2
New Caledonia			3	2	2	2
Papua New Guinea			3	2	2	2

Table 1. Provisional grouping of PICTs based on scores (3 = high; 2 = medium; 1 = low) for four factors (see Section 6 Roadmap Possibilities)

(Note that the scoring and grouping is offered as a starting point for discussion – it is not definitive)

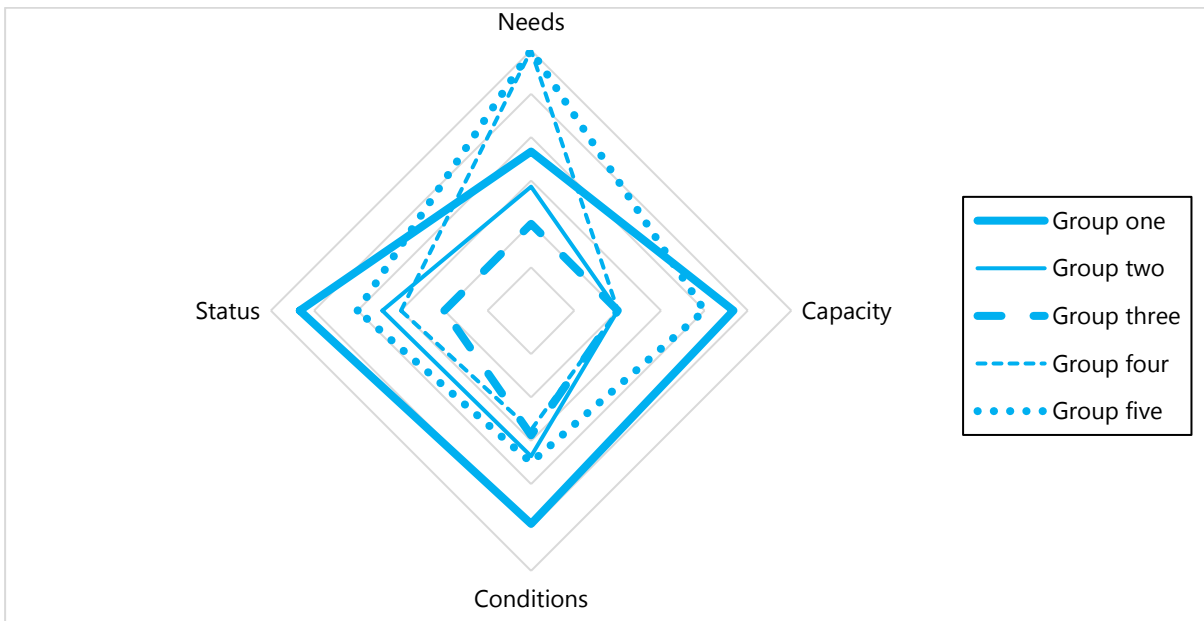


Figure 2. Provisional grouping of PICTs based on scores for four factors (see Section 6 Roadmap Possibilities)

In conclusion, there are opportunities to improve practice in all PICTs and to improve policy in most PICTs. However, policy must be customised to address the needs of each PICT and their potential capacity to oversee, regulate and implement this policy, and the focus should be on the practice. Improved practices will mitigate the impacts of development on biodiversity and ecosystem services to the long-term benefit of each PICT. The provisional findings of this study and considerations for future policy development need to be discussed and developed in close collaboration with PICT governments and other significant stakeholders.

1 Biodiversity, ecosystem services and livelihoods

The Convention on Biological Diversity's definition of biodiversity is "the variability among living organisms from all sources, including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems". In practice, the mitigation hierarchy and offsets apply to specific features or components (usually particular species and ecosystems) of this complex concept.

Ecosystem services are the benefits accruing to human communities from the existence of biodiversity. Ecosystem services include 'provisioning services' such as the production of food and water, 'regulating services' such as the control of climate, 'supporting services' such as nutrient cycles and crop pollination, and 'cultural services' such as spiritual and recreational benefits. Ecosystem services form the connection between biodiversity and people. This is particularly important in PICTs where a high proportion of livelihoods depend on ecosystem services. In this report, 'biodiversity' is used as a shorthand term for 'biodiversity and ecosystem services'.

2 The mitigation hierarchy and biodiversity offsets

The Mitigation Hierarchy is a framework for managing risks and potential impacts related to biodiversity and ecosystem services (BES) when planning and implementing development projects (CSBI & TBC 2015). It provides a logical and effective means for protecting and conserving biodiversity and maintaining important ecosystem services, and a mechanism for explicit decisions that balance conservation needs and development priorities.

The Mitigation Hierarchy can be defined as the sequence of actions to anticipate and avoid impacts on biodiversity and ecosystem services; and where avoidance is not possible, minimise; and, when impacts occur, rehabilitate or restore; and where significant residual impacts remain, offset (CSBI & TBC 2015).

Applying the mitigation hierarchy is crucial for all development projects aiming for No Net Loss on biodiversity, or a Net Positive Impact on biodiversity or those adopting a Net Positive Approach.

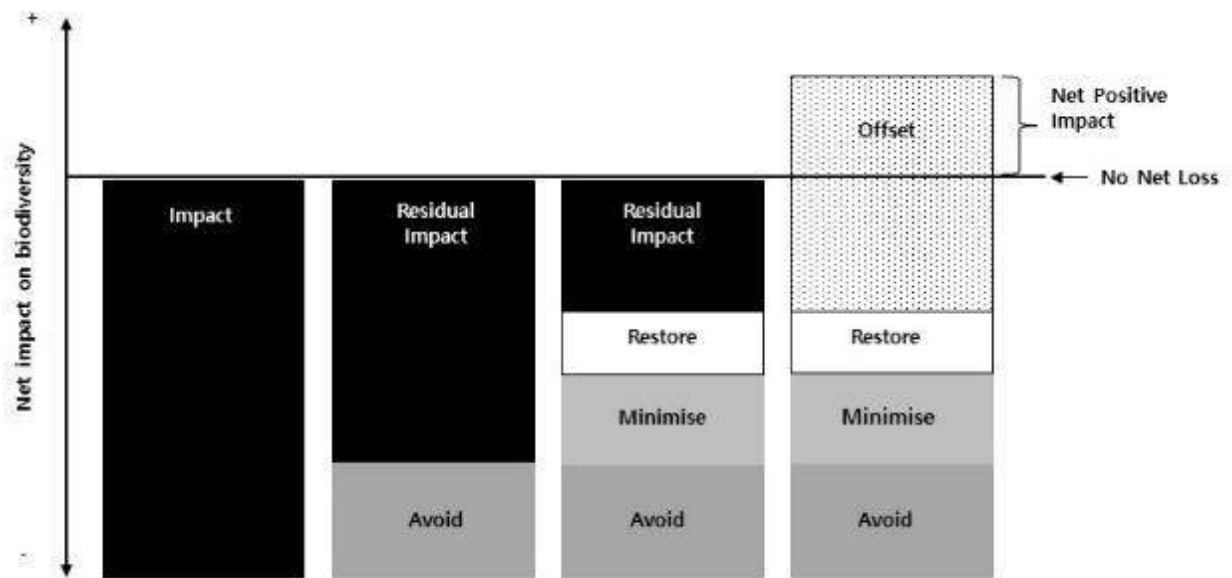


Figure 3. The mitigation hierarchy (from www.thebiodiversityconsultancy.com)

1. Avoidance: the first step of the mitigation hierarchy involves measures taken to avoid creating impacts from the outset, such as careful spatial placement of infrastructure or timing of disturbance. For example, placement of roads outside of sensitive habitats or key species' breeding grounds, or timing of seismic operations when aggregations of sensitive species are not present. When feasible, avoidance is often the easiest, cheapest and most effective way of reducing potential negative impacts, but it requires biodiversity to be considered in the early stages of a project.
2. Minimisation: measures taken to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided. Examples include such measures as reducing noise and pollution, or capturing, recycling and treating water.
3. Restoration: measures taken to improve degraded or removed ecosystems following exposure to impacts that cannot be completely avoided or minimised. Restoration aims to bring back at least some elements of the original ecosystem that was present before impacts. In many ecosystems, restoration can be costly and slow and uncertain. More commonly undertaken is rehabilitation, which aims to restore basic ecological functions and/or ecosystem services (e.g. through planting trees to stabilise bare soil). Restoration and rehabilitation are frequently needed towards the end of a project's life-cycle, but sometimes can be undertaken during operation (e.g. after temporary borrow pits have fulfilled their use).

Collectively avoidance, minimisation and restoration serve to reduce, as far as possible, the residual impacts that a project has on biodiversity. Typically, however, even after their effective application, additional steps will be required to deliver No Net Loss or a Net Positive Impact.

4. Offset: measures taken to compensate for any residual, adverse impacts after full implementation of the previous three steps of the mitigation hierarchy. Biodiversity offsets are of two main types. 'Restoration offsets' aim to restore degraded habitat, while 'averted loss offsets' aim to stop anticipated biodiversity loss (e.g. future habitat degradation) in areas where this is predicted to occur. Definitions differ, but in this report the term 'offset' is restricted to cases that deliver measurable gains that are at least as large as the residual losses for the targeted components of biodiversity (Maron *et al.* 2012). The broader term 'compensation' generally covers other types of actions for which there is no demonstrable quantified equivalence between the gains and the

residual losses. However, terminology varies between jurisdictions, and the PICTs with legal relationships to the USA use the term 'compensatory mitigation' for offsets.

Further reading: *A cross-sector guide for implementing the Mitigation Hierarchy published by the Cross-Sector Biodiversity Initiative provides practical guidance, innovative approaches and examples:*
www.csbi.org.uk/wp-content/uploads/2015/09/CSBI-Mitigation-Hierarchy-Guide-Sept-2015-1.pdf

3 About this study

The SPC RESCCUE project is summarised on the title page of this report. RESCCUE commissioned The Biodiversity Consultancy to review national offsets policies and practices across all Pacific Island Countries and Territories (PICTs).

There are a growing number of national mitigation hierarchy and offsets policies globally which are starting to have a wide influence on business practice in some sectors (Rainey *et al.* 2014). The net conservation outcomes of the policies are as yet uncertain given the short period of implementation compared to the long times required for ecological recovery and assessment of overall outcomes.

The purpose of this study is to review the national laws, policies and other guidance relating to the mitigation hierarchy and offsets across all PICTs. This provides background for the next steps of workshopping opportunities and solutions, and developing roadmaps towards improved policy and practice in PICTs. The study was extended to review key elements for an effective national offsets framework, as developed by The Biodiversity Consultancy for similar work for the Southern African Development Community based on global offsets lessons:

Independent and effective management authority	Robust legal and policy framework	Coherent eco-scape planning	Relevant, accessible biodiversity information	Skilled domestic consultants
<ul style="list-style-type: none"> Adequately resourced with capacity to review and to enforce Shielded from political interference Accrediting and regulating consultants Facilitating stakeholder and cross-department government input Offers training in application of environmental law/policy to both public and private sectors Decisions consider national conservation objectives and international commitments 	<ul style="list-style-type: none"> Setting clear conservation objectives to inform planning and permitting (including 'no go' areas) Setting clear process for environmental assessment and permitting Supporting and implementing international commitments In line with international best practice Protecting sensitive biodiversity (No Net Loss goal) Based on application of Mitigation Hierarchy Enabling biodiversity offsets (potentially an aggregated approach) Considering indirect and cumulative impacts 	<ul style="list-style-type: none"> Cross-sectoral involving all relevant government departments Biodiversity integrated into economic plans Strategic Environmental Assessment and consideration of cumulative impacts 	<ul style="list-style-type: none"> A National Biodiversity Database Housed in a specialised institute, university or museum Capacity to collect, manage, analyse relevant biodiversity data Spatial information facilitates integration of biodiversity considerations in project planning Access and use straightforward Development projects contribute to database funding 	<ul style="list-style-type: none"> Understanding of biodiversity and of best practice management Understanding of business requirements and social context University/college courses in biodiversity management Domestic consultants partnering with international firms

Figure 4. Key elements for an effective national offsets framework (adapted from The Biodiversity Consultancy unpublished work for the Southern African Development Community)

A standardised questionnaire to review policy and practice was developed and completed for each PICT (hereafter, termed 'national reviews'). Key factors related to the context and status of policy and practice were scored on a simple ranked scale of 1-3, from low to high. (Although a five-point scale is usually recommended, these scorings are only intended to be indicative, and the study did not want to engage stakeholder time in detailed revisions of scorings.) These factors are listed in the table in the Annex and as sub-headings in the Table of Contents and the main report. Assessing each PICT against a simple scoring

system, rather than offering a solely descriptive review, is designed to elicit more engaged discussion from reviewers and PICT governments and other significant stakeholders.

National reviews were undertaken by the study manager and the regional sub-consultants based on personal experience, personal connections with government and other practitioners, and publicly-available documents. The study manager led the assessments for Micronesia and Pitcairn based on personal experience, publicly-available documents and consultation with regional experts. The sub-consultants led the assessments for their region (Bio-Eko led New Caledonia; Environment Consultants Fiji led Fiji, Samoa, Tonga and Vanuatu; Golder Associates led the Solomon Islands and PNG; Pae Tai – Pae Uta led French Polynesia and Wallis and Futuna; and Te Ipukarea Society led Anglophone Polynesia). Most of the sub-consultants' assessments involved personal experience, interviews with government, and publicly-available documents. Key interviewees are listed in the acknowledgments. The study manager explored and where necessary clarified issues arising from these national reviews, and standardised the scores. A set of illustrative examples was researched and documented, presented in this report as case studies.

Additional factors were documented qualitatively, relating to conservation planning, protection of biodiversity, agencies mandated to manage these processes, other relevant institutions or organisations, provision for private protected areas, conservation easements, conservation trust funds and other mechanisms for long-term conservation financing.

More detailed questions were asked about the content of offset policies (including laws and guidance). However, these questions proved to be relevant only to New Caledonia and the territories of the USA. Offset policies in New Caledonia are currently under review by another RESCCUE study. The territories of the USA apply the USA's offset laws and guidance, which are well studied and documented elsewhere, (e.g. <https://www.epa.gov/cwa-404/compensatory-mitigation> for the Clean Water Act and <https://www.federalregister.gov/articles/2016/03/08/2016-05142/proposed-revisions-to-the-us-fish-and-wildlife-service-mitigation-policy> for the Endangered Species Act) and have not been further reviewed here.

This study could be extended to sub-national levels where these governments are responsible for environmental policies and practices, such as the Federated States of Micronesia or the Provinces of New Caledonia. It could also be extended to wider aspects of the policy and practice of environmental impact assessment, as this usually underpins the mitigation hierarchy and offsets.

4 Key findings: Context

4.1 Is there a need for new mitigation policies to manage development impacts on biodiversity?

Investing in improved policies is only cost-efficient if there are significant opportunities for the policies to improve biodiversity and livelihood outcomes. This section reviews the 'need' for new policies as indicated by predicted future impacts. Many PICTs have limited 'need' for improved policy, except for the potential impacts of deep sea mining, for which a regional policy might be more appropriate. The PICTs with greatest need are Fiji, French Polynesia, Guam, New Caledonia, Northern Marina Island, Papua New Guinea and Solomon Islands.

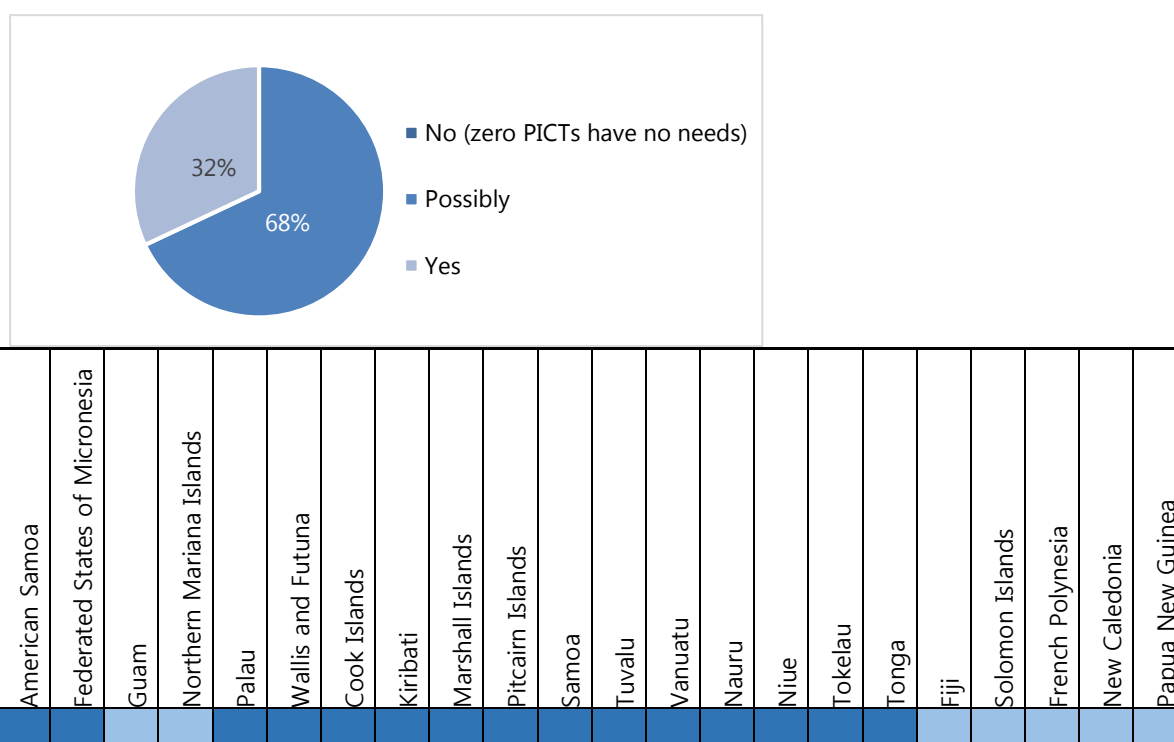


Figure 5. Is there a need for new national policies to mitigate development impacts on biodiversity? All PICTs scored 'possibly' or 'yes'. (See Annex)

In many of the smaller PICTs, **deep sea mining** is the only type of development likely to impact biodiversity on a scale that would usually justify development of new mitigation or offset policy. Most PICTs have **commercial fisheries** which theoretically could be subject to the mitigation hierarchy and offsets. Tuna fisheries are a major component of the economies of many PICTs. Commercial fisheries have various policies to mitigate their seabird bycatch but this does not extend to a full application of the mitigation hierarchy and offsets. Given the trans-national operations of most fisheries and the relatively slow update of even the most pragmatic and cost-effective seabird bycatch mitigation measures, a fuller application of the mitigation hierarchy is considered to be an unlikely national policy objective in the short to medium-term. **Onshore extractive industries** have the potential for significant impacts in Fiji, New Caledonia, PNG and the Solomon Islands, and perhaps Palau (oil extraction) and French Polynesia (phosphate mining – see case study). **Tourism** development has significant impacts in many PICTs, and at a scale to particularly benefit from improved polices in the Cook Islands, Fiji, French Polynesia, New Caledonia and Palau. Similarly, although **civil infrastructure** impacts biodiversity in most PICTs, it is at a scale where it would benefit from improved polices in Fiji, French Polynesia, Guam, New Caledonia, Northern Mariana Islands, Palau and PNG. **Agribusiness**, such as oil plan and timber plantations, is limited to the largest islands, and could potentially

benefit from improved policies in Fiji, French Polynesia, New Caledonia, PNG and Solomon Islands. **Industrial logging** has significant impacts on biodiversity in PNG and Solomon Islands and potentially in Samoa and Vanuatu. Other industries and developments are small and piecemeal, and often not subject to environmental impact assessments. The cumulative impact of these small industries and developments on small island PICTs might also justify the development of improved mitigation hierarchy and offsets policies, especially if linked to strategic environmental assessments, but with less opportunity to tailor the policies to specific types of impacts and solutions.

Deep Sea Mining

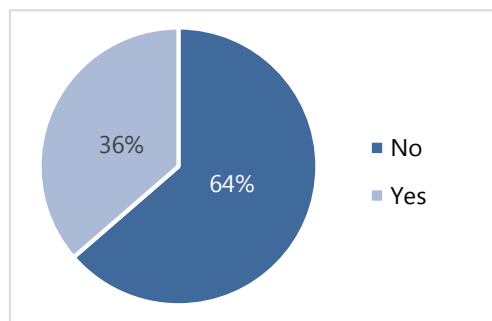
Mineral resources potentially suitable for deep sea mining occur across the Pacific Ocean. Region-wide technical guidance is being developed on how best to manage this relatively new industry. The Solwara project in PNG has well advanced plans, and other countries are permitting exploration. Deep sea mining will impact poorly-known benthic ecosystems, including around hydrothermal vents, which are likely to include many specialised species. Mitigation will need to focus on avoidance and minimisation given that options for rehabilitation and offsets are largely unstudied and may be financially very costly or infeasible (Van Dover et al. 2014) – although feasible for some ecosystem services. As an example of avoidance, the International Seabed Authority is disallowing development in nine 160,000 km² “areas of particular environmental interest” in the Clarion-Clipperton Fracture Zone. Deep sea mining may also impact the ecosystem services accruing to coastal fishing communities. The Solwara project acknowledges these impacts but also the challenges in quantifying them. Although there should always be an emphasis on avoidance and then minimisation, Solwara has discussed the potential to offset residual impacts to ecosystem services by providing financial compensation to affected communities.

	Mining / oil / gas	Deep sea mining	Tourism	Infrastructure	Agribusiness	Forestry
American Samoa	1	2	1	1	1	1
Federated States of Micronesia	1	2	1	1	1	1
Guam	1	2	1	3	1	1
Northern Mariana Islands	1	2	1	3	1	1
Palau	2	2	2	2	1	1
Wallis and Futuna	1	2	1	1	1	1
Cook Islands	1	2	2	1	1	1
Kiribati	1	2	1	1	1	1
Marshall Islands	1	2	1	1	1	1
Pitcairn Islands	1	2	1	1	1	1
Samoa	1	2	1	1	1	2
Tuvalu	1	2	1	1	1	1
Vanuatu	1	2	1	1	1	2
Nauru	1	2	1	1	1	1
Niue	1	2	1	1	1	1
Tokelau	1	2	1	1	1	1
Tonga	1	2	1	1	1	1
Fiji	3	2	3	2	2	2
Solomon Islands	3	2	1	1	2	3
French Polynesia	2	2	3	3	2	1
New Caledonia	3	2	2	3	2	1
Papua New Guinea	3	3	1	2	3	3

Table 2. PICT by sector summary of the need for new national policies to mitigate development impacts on biodiversity (3 = predicted significant impacts; 2 = no current development or predicted moderate impacts; no resources or predicted small impacts; see Annex)

4.2 Are there current opportunities to improve policy?

In several PICTs, there are new policies (and/or laws and/or guidance) of relevance being actively developed. In some cases, such as PNG, this involves specific policy around the mitigation hierarchy and offsets. In several PICTs, opportunities were identified to include, to some degree, the mitigation hierarchy or offsets in emerging policy. These include Cook Islands, Fiji, French Polynesia, New Caledonia, Niue, Solomon Islands and Tokelau. Other PICTs may also have policies of relevance under review or development that this review did not identify. For Micronesian PICTs with fully functional policies, this question was scored as 'no' regardless of whether further policy is currently under development. This includes significant policy development such as the U.S. Coral Reef Task Force Draft Handbook on Coral Reef Impacts which will provide global best-practice guidance on mitigating and offsetting impacts on coral reefs.



American Samoa	No
Federated States of Micronesia	No
Guam	No
Northern Mariana Islands	No
Palau	No
Wallis and Futuna	Yes
Cook Islands	Yes
Kiribati	No
Marshall Islands	No
Pitcairn Islands	No
Samoa	No
Tuvalu	No
Vanuatu	No
Nauru	No
Niue	Yes
Tokelau	Yes
Tonga	No
Fiji	Yes
Solomon Islands	Yes
French Polynesia	Yes
New Caledonia	Yes
Papua New Guinea	No

Figure 6. Are there current opportunities to improve policy? (Yes if an opportunity is known in each PICT)

PNG government's roadmap to offsets

The PNG government (CEPA) is working with Forest Trends on an options analysis for improving mitigation in PNG, including introducing biodiversity offsets. In the first phase of exploring the needs and opportunities, CEPA and Forest Trends completed gap analyses for policy, law, legal process and some assessment of technical capacity (including on biodiversity data), integrated with capacity-building. Currently, they are reviewing policy options, including the requirements associated with implementing each option, and capacity development continues. CEPA expects to continue to work with Forest Trends and consult a range of stakeholders as the government of PNG selects and implements the preferred policy over the next few years.

4.3 Is there adequate capacity for oversight, regulation and delivery of current and improved policies?

Development, implementation and auditing of mitigation hierarchy and offsets policies require significant technical capacity and staff resources within government, project proponents, consultants and civil society. Arguably the most important factor in considering mitigation and offsets is the capacity of government and other stakeholders to oversee and govern these processes (Pilgrim & Ekstrom 2014). Other capacity needs include the technical capacity to develop policy and to assess project proposals, set conditions and audit implementation.

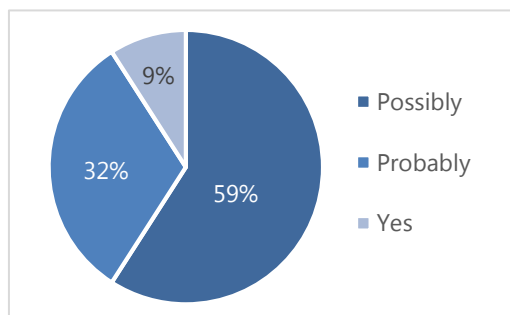
Another capacity need is for the delivery of well-managed offsets. Most offsets involve the ecological restoration and/or averted loss of conservation areas. However, many conservation projects, even well-funded projects, in the PICTs have not succeeded. PICTs will have to assess what conservation outcomes are feasible when designing offset policies.

Capacity needs

A recent report on biodiversity offsets policy options for governments noted that government (and consultant, NGO and academic) staff preparing mitigation and offsets policies will need skills in biodiversity policy, land-use planning, environmental impact assessment, strategic environmental assessment, administration and enforcement, information technology and field assessments (ten Kate and Crowe 2014).

Capacity can limit successful implementation of the mitigation hierarchy and offsets even in countries with the most advanced policies worldwide, such as the USA and Australia. It is unrealistic to expect any PICT to have full capacity in this area. However, American Samoa, French Polynesia, Federated States of Micronesia, Guam, New Caledonia, Northern Mariana Islands, Palau, PNG and Wallis and Futuna all have the capacity to manage, to some extent, mitigation hierarchy and offsets policies. Other PICTs have limited capacity for implementing complex mitigation hierarchy and offsets policies.

Assessment of capacity, especially in a rapid review, is subjective and depends on the assessors' perspective and benchmarks. It can fluctuate significantly over time, often related to individual champions. The scores presented in this review should be regarded as indicative only, for the purpose of informing discussions about the feasibility of developing and implementing improved policy and practice.



American Samoa	Possibly
Federated States of Micronesia	Possibly
Guam	Probably
Northern Mariana Islands	Possibly
Palau	Possibly
Wallis and Futuna	Possibly
Cook Islands	Possibly
Kiribati	Possibly
Marshall Islands	Possibly
Pitcairn Islands	Possibly
Samoa	Possibly
Tuvalu	Possibly
Vanuatu	Possibly
Nauru	Possibly
Niue	Possibly
Tokelau	Possibly
Tonga	Possibly
Fiji	Possibly
Solomon Islands	Possibly
French Polynesia	Possibly
New Caledonia	Possibly
Papua New Guinea	Possibly

Figure 7. Is there adequate capacity for oversight, regulation and delivery in each PICT? (See Annex)

Governance of Palau's green tax

As noted above, arguably the most important factor in considering mitigation and offsets is the capacity of government and other stakeholders to oversee and govern these processes (Pilgrim & Ekstrom 2014). Palau's Protected Areas Network governance structure is a simple structure that could be adapted for governance of a national offsets fund.

Palau levies a US\$50 per person "Departure Tax & Green Fee" on tourists, of which \$15 is invested into environmental projects (plus \$15 for waste water projects and \$20 for general government revenue). The money is administered by the Protected Areas Network (PAN) Fund, a registered non-profit corporation governed by a nine-member Board of Directors. The Board of Directors' major responsibilities include governance, fiduciary and grant-making. A national law created the PAN Fund to serve as a financial trustee corporation for all monies received for the PAN, to support and finance PAN projects and programs thus administering, managing, fundraising, investing, monitoring and disbursing PAN monies for the financial sustainability of the PAN in Palau for conservation of ecological biodiversity and sustainable management and use of its natural resources.

Reference: <http://www.palaupanfund.org/>

4.4 Are other enabling conditions adequate to support mitigation hierarchy and offsets policies?

Implementation of the mitigation hierarchy and offsets is dependent on a number of 'enabling conditions'. Capacity, as discussed in the preceding section, is the most important factor. The policy and practice for environmental impact assessments (EIAs), which is where mitigation hierarchy policies and practices are usually located, is very important but subject to a separate current SPREP project. Five other enabling conditions are reviewed here:

- Is there an up to date NBSAP which is used effectively?
- Is there a comprehensive and accessible biodiversity database?
- Are there other functional strategic land-use plans?
- Is there functional protected area legislation?
- Are site-based offsets socio-politically feasible?

This is not a comprehensive list of potential enabling conditions. However, assessing this suite gives a good indication of the overall enabling state for PICTs to develop and implement improved policies and practices.

4.5 Is there an up to date NBSAP which is used effectively?

National Biodiversity Strategy and Action Plans (NBSAP) are a requirement under the Convention on Biological Diversity (CBD) and set out national governmental conservation priorities. All 14 independent PICTs have an NBSAP. The USA has not ratified the CBD, and its Pacific territories have not developed NBSAPs. Pitcairn and Tokelau have not developed NBSAPs. The French 2006 NBSAP (the Stratégie Nationale de la Biodiversité) includes high-level reference to the French territories including New Caledonia. A subsidiary and separate NBSAP was written for French Polynesia (Stratégie pour la biodiversité de Polynésie française) but this appears not to be in current use. A similar NBSAP was written for Wallis and Futuna (Stratégie Nationale de la Biodiversité Plan d'action Outre-mer Wallis et Futuna 2006-2010).

Some PICTs such as Palau use their NBSAP to drive government action, including assessment of environmental impact assessment reports and mitigation proposals. NBSAPs in other PICTs may be rather out of date, and/or not used to inform mitigation of development impacts.

4.6 Is there a comprehensive and accessible biodiversity database?

Comprehensive and accessible biodiversity databases support effective risk-screening, impact assessment and mitigation, as well as informing larger-scale land-use planning. They also can reduce the need for expensive and time-consuming additional survey work. The Cook Islands has an excellent database. Many Micronesian PICTs have good databases, but these are sometimes split between marine and terrestrial systems and different institutional hosts. PNG, Solomon Islands and some small PICTs lack any functional database.

The Cook Islands Biodiversity and Ethnobiology Database

The Cook Islands established the Natural Heritage Trust in 1999 to continue recording the nation's biodiversity and to develop and populate an online biodiversity database. The database had three goals

- to record all local plants and animals with images and key identification features
- to record relevant traditional and scientific knowledge
- to make this information available to the public

The use of a single database enables all data to be accessible within one standardized system, enables searches across species (such as all endemics or invasives of an island), and can encourage users to consider taxonomic groups (such as insects or echinoderms) that are often overlooked. By 2016, the database had information on 4200 species, including photographs of 2500. Well known groups, such as birds, lizards, fishes, flowering plants and ferns are essentially complete. This largely fulfils the Cook Islands' commitment under Article 7 of the CBD to develop inventories of its biodiversity.

The main challenges are finding the time for local biologists to find, identify and photograph the estimated 7000 species, the time to edit and upload the images, and the time to update the software. A change to open source software enabling online editing has been especially challenging because of a lack of funding and a dependence on volunteer programmers, but it is hoped that a new interface could be launched in 2017. The new database is currently housed at <http://cookislands.pacificbiodiversity.net> As well as being used for a variety of research and educational purposes, the database is used to inform management plans, project proposals and environmental impact assessments

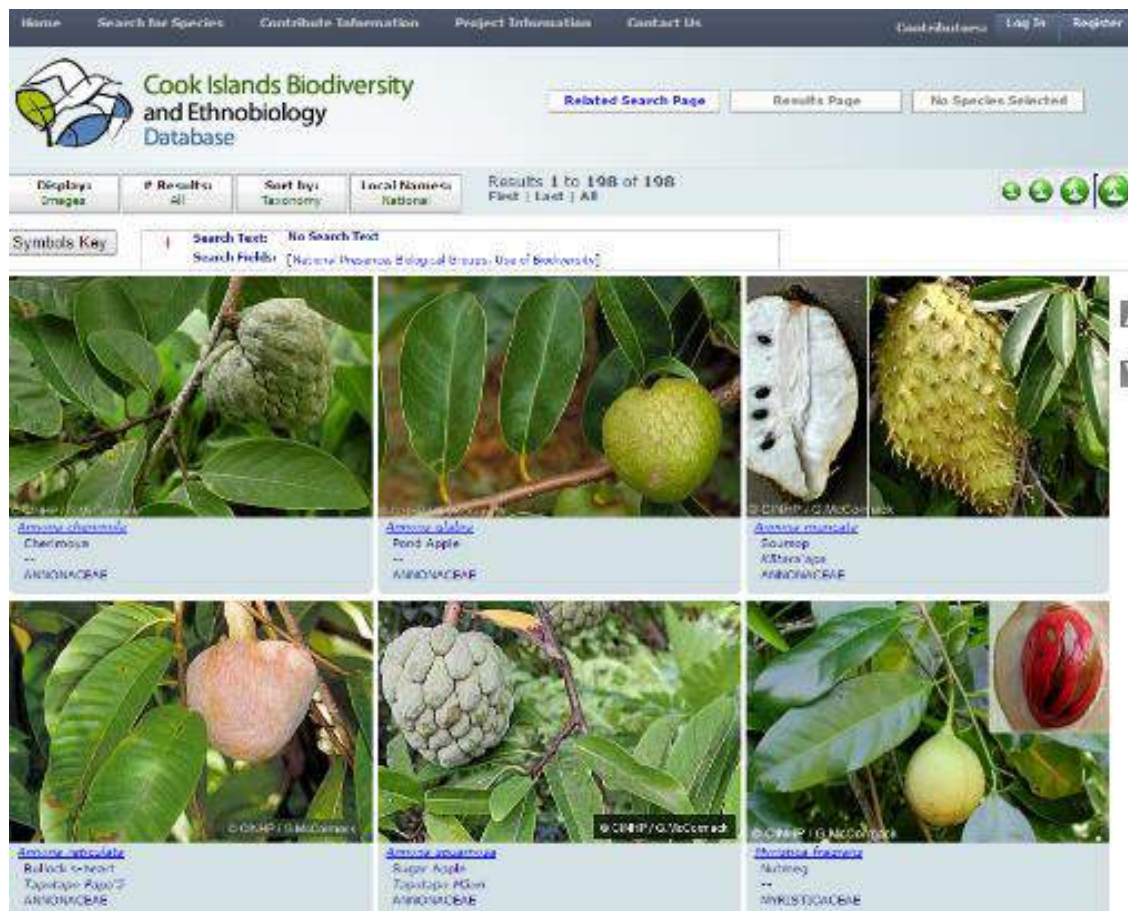


Figure 8. An example page of plants used for food from the Cook Islands Biodiversity and Ethnobiology Database

4.7 Are there other functional strategic land-use plans?

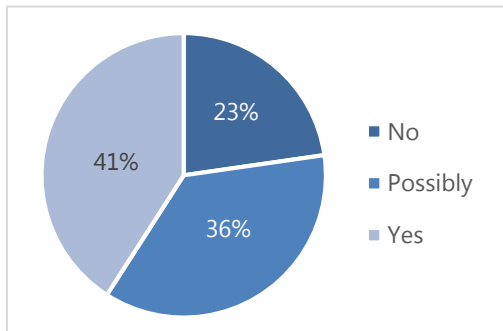
Strategic land-use plans, ideally based on a widely consulted Strategic Environmental Assessment process, are very important in designing and assessing mitigation plans and especially offsets. Offsets should ideally contribute to agreed national (or global) conservation targets and be situated in areas prioritised (but not currently funded) for conservation (IUCN 2014). A few PICTs such as Federated States of Micronesia have nationally agreed plans which map the prioritised areas for development and conservation (and other land-uses). Most PICTs have a range of land-use and planning maps and documents across different levels of government and government departments. Generally, these offer some background information but are not endorsed by a broad set of stakeholders and, in many cases, are not effectively applied.

Micronesia Challenge and the Federated States of Micronesia's Blueprint

Land-use plans underpin the Micronesia Challenge, a governmental commitment by Federated States of Micronesia, Guam, Palau, Marshall Islands and the Northern Mariana Islands to "effectively conserve at least 30 percent of the near-shore marine resources and 20 percent of the terrestrial resources across Micronesia by 2020." The Blueprint for Conserving the Biodiversity of the Federated States of Micronesia is based on a detailed process to identify and agree detailed maps of areas of biodiversity significance.

4.8 Is there Protected Area legislation adequate to permanently protect offsets?

Offsets are not necessarily formally designated protected areas. Nevertheless some sort of protected area legislation is generally an important enabling mechanism for offsets. In many PICTs, community-managed conservation areas are more culturally appropriate than formal protected areas. Most PICTs have some appropriate laws, but some very small PICTs rely on traditional practices. The quality of these laws is less important than the socio-cultural support for protected areas and the political will to enforce protected area regulations. This assessment considered the existence of laws, not the capacity to enforce laws and manage protected areas, nor the practice of effective management.



American Samoa
Federated States of Micronesia
Guam
Northern Mariana Islands
Palau
Wallis and Futuna
Cook Islands
Kiribati
Marshall Islands
Pitcairn Islands
Samoa
Tuvalu
Vanuatu
Nauru
Niue
Tokelau
Tonga
Fiji
Solomon Islands
French Polynesia
New Caledonia
Papua New Guinea

Figure 9. Is there Protected Area legislation adequate to permanently protect offsets in each PICT? (See Annex)

4.9 Are site-based offsets socio-politically feasible?

The avoidance, minimisation and restoration phases of the mitigation hierarchy are socio-politically feasible in all PICTs. However, site-based offsets can be socio-politically challenging where there is customary land-ownership, no registry of land ownership and legal and cultural obstacles to trading land. There might be cultural challenges to regulation in small island societies where the regulators and government are closely related to the project proponents. Socio-political feasibility was assessed as highest in PICTs with westernised land laws such as Guam or New Caledonia (where most of natural areas are government or provinces property), and lowest in PICTs with more traditional land laws such as PNG and the Solomon Islands.

More generally, environment departments need to successfully set regulations which are against the financial interests of the project proponents and sometimes against the short-term interest of other government departments, a challenge shared across the world. Lessons for successful offset implementation could be learned from the wide suite of conservation projects in the PICTs. Many have not succeeded, largely due to a failure on the part of practitioners to understand underlying differences between western and indigenous world-views and issues surrounding land and marine tenure arrangements. Given these challenges and the fact that offsets can never completely replace what is lost, global 'like-for-like' principles could be loosened to allow some offsets to function as non-equivalent compensation, for example, to fund conservation education and capacity-building.

Overall, the status of these enabling conditions is very variable between PICTs. Where these conditions are not in place, there will be constrained opportunities to develop detailed mitigation hierarchy and offset

Offsets in PNG: PNG LNG's considerations

The PNG LNG project must align its biodiversity management with IFC's Performance Standard 6, which means, inter alia, achieving a net gain in 'critical habitat'. Despite avoidance, minimisation and restoration actions, the project expects to have a residual impact on identified critical habitat. In planning how to offset this residual impact, PNG LNG recognised that:

1. *Papua New Guinea has no system, formal or otherwise, guiding the development of an offset plan.*
2. *Programs developed in jurisdictions with fragmented and degraded landscapes elsewhere have limited relevance in extensively forested tropical landscapes such as those in PNG.*
3. *Acquiring or managing land as an offset is not a likely option because most land in PNG is subject to various forms of customary, and hence inalienable, tenure and there is little land solely controlled by government.*
4. *Landholders successfully practice subsistence shifting cultivation; hence, to acquire lands for a biodiversity offset project would likely affect landholders' livelihoods.*
5. *There are limited offset opportunities on government-controlled lands in the Upstream Project Area.*
6. *Non-forested lands that may warrant restoration are rare in the Upstream Project Area and are mostly restricted to roadsides. Non-forested land is part of the population's agricultural base and provides for part of their livelihoods. Thus, there is little potential for undertaking offset projects on this type of land.*
7. *Protected area establishment and management in PNG is difficult because most land is in customary tenure.*

PNG LNG is still resolving these challenges in consultation with the PNG government and a wide range of stakeholders.

policies

5 Key findings: Status

This section reviews the status of policies and practice related to the mitigation hierarchy and offsets. ‘Policy’ can be a complex mix of old and recent laws, strategies and guidance. In reality, policy has very limited use unless it is applied or practiced. The assessment of practice is subjective depending on the assessors’ perspective and benchmarks. It can fluctuate significantly over time and is biased by individual cases. As such, the scores and descriptions offered in this review should be regarded as only indicative for informing further discussion on broad options and directions.

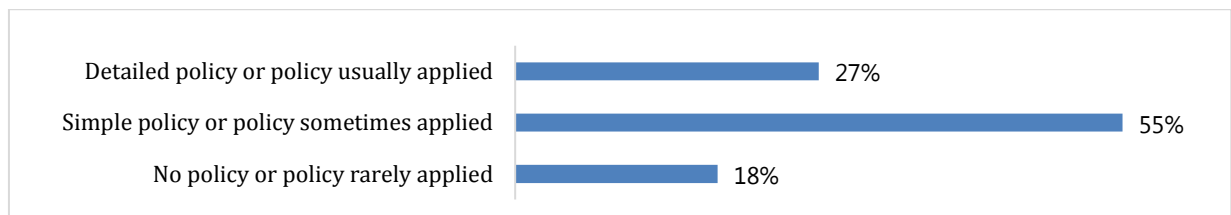


Figure 10. State of mitigation policies in each of the 22 PICTs: is there a detailed policy or policy usually applied, or simple or sometimes applied, or no policy or rarely applied (See Annex)

A number of PICTs are territories of, or have some more autonomous relationship with, the USA, France, New Zealand or the UK. American Samoa, Guam, Northern Mariana Islands, Wallis and Futuna, Pitcairn Islands and Tokelau, to a variable extent, use or incorporate environmental laws from the linked country. These linked countries all have policy to implement the mitigation hierarchy. The USA and France have laws requiring biodiversity offsets, while the UK and New Zealand have offsets guidance. All three provinces of New Caledonia have mitigation hierarchy policies but only Province Nord and Province Sud have offsets policies. French Polynesia has a basic mitigation policy but does not detail any requirement for offsets. This study has not reviewed the environmental laws of these linked countries as these have been well studied and documented elsewhere e.g.:

- <https://www.federalregister.gov/articles/2016/03/08/2016-05142/proposed-revisions-to-the-us-fish-and-wildlife-service-mitigation-policy> for the U.S. Endangered Species Act;
- <https://www.epa.gov/cwa-404/compensatory-mitigation> for the U.S. Clean Water Act;
- <http://www.biodiversityoffsets.net/biodiversity-law-under-development-in-france> for current development in France;
- <http://www.doc.govt.nz/about-us/our-policies-and-plans/guidance-on-biodiversity-offsetting> for New Zealand; and
- <https://www.gov.uk/government/collections/biodiversity-offsetting> for the U.K.

Of the independent Pacific Island countries, Federated States of Micronesia and Kiribati have policies which explicitly spell-out the required stages of avoidance, minimisation, restoration and compensation, and the Federated States of Micronesia also has State-level policies. The Palau Environmental Quality Protection Act states that environmental impact statements “shall consider mitigation measures proposed to minimize impact” and “shall contain any known alternatives for the action” such as “measures to provide for compensation of fish and wildlife losses, and water quality and wetlands losses including the acquisition of land, waters, and interests therein.” This Act also states that conditions applied to projects that impact water quality shall include “compensation to the fullest extent possible for functional losses to the local ecosystem by the unavoidably lost wetlands; and compensation for the loss of certain areas with the permanent preservation of other similar ecosystems.” Papua New Guinea is developing an offsets policy which will include a more detailed mitigation hierarchy policy (see previous Section: Opportunities). A number of other PICTs have policies mandating ‘mitigation’ without explicit reference to the steps of the mitigation hierarchy. Other PICTs have no policy reference to the mitigation hierarchy (Figure 11a). Similarly, some PICTs have

policies mandating 'compensation' without explicit reference to the principles of offsets, and other PICTs have no policy reference to the compensation or offsets (Figure 12a).

This study found that many national stakeholders, including government, were unfamiliar with the details of the policies relevant to the mitigation hierarchy and offsets. This is not surprising given the complexity of environmental policy, law and guidance in many PICTs – for example, a compilation of environmental law in the Solomon Islands required a whole stand-alone project (Price *et al.* 2015). This suggests that follow-up work should focus on the practice and the factors constraining practice, and to refer back to policy details when considering how to improve practice and whether to improve policy.

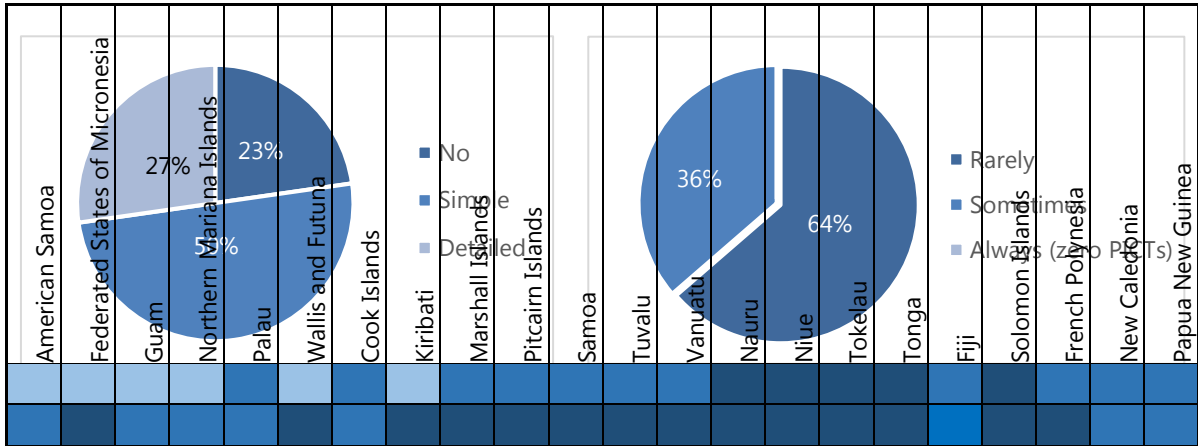
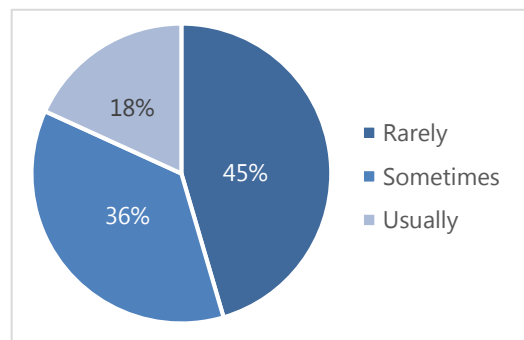
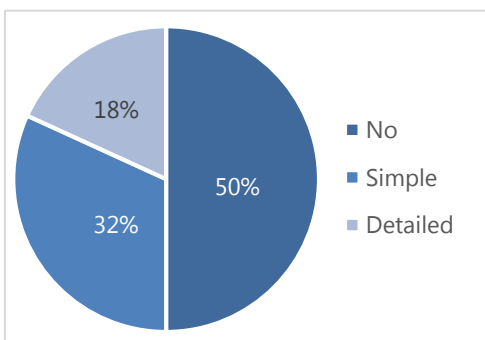


Figure 11a (left). Is there a mitigation hierarchy policy in each PICT?, and b (right) Is the mitigation hierarchy used in each PICT? (See Annex)



American Samoa	Federated States of Micronesia	Guam	Northern Mariana Islands	Palau	Wallis and Futuna	Cook Islands	Kiribati	Marshall Islands	Pitcairn Islands	Samoa	Tuvalu	Vanuatu	Nauru	Niue	Tokelau	Tonga	Fiji	Solomon Islands	French Polynesia	New Caledonia	Papua New Guinea
						na		na	na	na		na	na	na	na	na					

Figure 12a (left and above). Is there an offsets policy in each PICT? (See Annex)
12b (right and below) If there is an offset policy, is it applied in each PICT? (See Annex)

The on-ground practice of implementing the mitigation hierarchy and offset generally lags behind policy in the region, as in most of the world. Most PICT governments are constrained by technical, financial and socio-political capacity. Practice is good in some territories such as Guam and is improving in Papua New Guinea (despite policy still being under development) and New Caledonia (see Section 5.3). Some projects have gone well beyond national policy to meet global standards (e.g. the International Finance Corporation Performance Standards applied to PNG LNG) or to meet voluntary standards for reputational reasons (e.g. Barrick Gold's Porgera mine in PNG). Worldwide, an increasing number of companies have voluntary offsets policies to support objectives of no net loss or net gain on biodiversity (Rainey *et al.* 2014). The few examples of corporate voluntary offsets in PICTs are currently related to specific projects managed by relatively small proponents (e.g. the Makatea case study below) rather than multinational policies being applied to Pacific operations.

Many PICT stakeholders are understandably more interested in the ecosystem services rather than the intrinsic values of biodiversity per se. For example, projects meeting the current version of the International Finance Corporation's Performance Standard 6 have to explicitly assess and manage ecosystem services. This includes delivering a net gain through use of the mitigation hierarchy and offsets for any ecosystem services that meets the Standard's definition of Critical Habitat. There appears to be no such inclusion of ecosystem services in any PICT policies except those based on US regulations for fish habitat.

5.1 Mitigation hierarchy and offsets in the RESCCUE pilot project countries and territories: Fiji

Fiji has no offsets policy, laws or guidance and no offsets regulated by government to date. The Mangrove Management Plan for Fiji (2013) makes a strong recommendation for the development of Biodiversity Offsets as regulations of the Environmental Management Act. However, the Department of Lands are still deliberating on whether this Plan can be submitted to Cabinet for endorsement.

There have, however, been several 'mangrove biodiversity offsets' initiated by the private sector. At least three mangrove biodiversity offsets have been introduced through 'conditions of approval of Environmental Impact Assessments, by the Department of the Environment' – these are at Naisoso (see Box) and Vulani at the mouth of the Sabeto River, and on Nawi Island, Savusavu, Vanua Levu.

The Environmental Management Act 2005 provides for the management of the country's natural resources by providing a framework for sustainable development (sustainable development is one of two 'purposes' of the

legislation), specifically by controlling and managing developments, and directing pollution control and waste management (Part 5 and the Environmental Management (Waste Disposal and Recycling) Regulations). The Act establishes the National Environment Council (Part 2), it requires EIAs for any significant development (Part 4) and the EIA Processing Regulations (2007) determine how these are managed. The Act and Regulations do not mention offsets of any kind, however, a mitigation strategy may be required if included in the ToRs. The Act includes the following provisions: Section 29 (2) "The contents of an EIA report must include matters required by the terms of reference, mitigation measures and any other prescribed matter"; and Section 32. (1) "A proponent must prepare and implement any environmental or resource management plan, monitoring programme, protection plan or mitigation measure that is required as a condition of any approved EIA". The Department of Environment's Environmental Impact Assessment Guidelines (DoE 2008) do not mention biodiversity or any other offsets.

In practice, the current administration of the Environmental Management Act is weak and many opportunities which it affords are not developed or not used. For example, provisions for mitigation measures in the Act could be developed through appropriate analysis and consultation to include more prescriptive details for the mandatory use of the mitigation hierarchy including biodiversity offsets, and then regulations drafted for their enactment. However, currently the provisions for mitigation are not developed beyond high-level concepts such as 'best practice' and 'standard construction management'.

The current weakness in the administration of the Environmental Management Act could be rectified relatively easily and provisions for biodiversity offsets introduced as a regulation. However, a potentially more serious deficiency for Fiji is the absence of national protected area legislation (both marine and terrestrial). This is essential to ensure the protection in perpetuity of offsets. The Forest Reserve and Nature Reserve provisions in the Forest Decree have been used for 'protection purposes', but these are 'departmental' administrative statutes with archaic provisions and without any national context for the legislation. Nonetheless, some of Fiji's most important biodiversity conservation areas are currently 'protected' through this legislation i.e. Ravilevu, Tomaniivi, Wabu, Waisali and Colo i Suva, After many years of deliberation in the development of the Sovi Basin Reserve the iTaukei Land Trust Board rightly determined that the provisions of the Forest Decree do not represent adequate legislation for biodiversity conservation in the modern context for landowners, and have had to develop their own in the form of 'conservation leases'. Whilst this is a practical initiative in the circumstances, its target beneficiaries are landowners, and constitutes a poor substitute for national protected area legislation. And as has been demonstrated with the Sovi Basin Reserve, such a lease does not represent protection in perpetuity as a large portion of the Sovi Basin Reserve was excised for mining purposes by government immediately after the Reserve was leased to the National Trust for Fiji. That this excision was effected prior to any Environmental Impact Assessment being undertaken to assess the significance of the area for mining, demonstrates the current weakness of Fiji's environmental management administration, despite adequate legislation.

The absence of an appropriate national protected legislation has been known and discussed extensively since at least Fiji's National Environment Strategy (1993). The current FAO GEFPAS-FPAM Forestry and Protected Area Management Project in Fiji was in part designed very specifically to enable the introduction of both terrestrial and marine protected area legislation. It has failed to do this or even attempted to do this, and so there is no prospective legislation which is critical to the development of effective biodiversity offsets in Fiji.

5.2 Mitigation hierarchy and offsets in the RESCCUE pilot project countries and territories: French Polynesia

In French Polynesia, biodiversity is regulated by territorial and French laws, largely covered by the Code de l'Environnement. This includes the Permis de Construire process and non-compulsory guidance. Other guidance is given in territorial Strategic Development Plans (e.g. SAGE) and commune-level Development Plans. The Code de l'Environnement states that "une description des mesures prévues par le maître de l'ouvrage ou le pétitionnaire pour supprimer, prévenir et compenser les effets dommageables du projet sur l'environnement, ainsi que l'estimation des dépenses correspondantes. Un programme de surveillance des effets sur l'environnement sera, le cas échéant, projeté."

These regulations are not effectively implemented partly because there should be no impacts to endemic or threatened species and their habitats given their strong legal protection. Mitigation actions are usually included in the Environmental Impact Assessment following the 1976 French “Loi Nature et Paysage”. Other French laws such as the “Principe Pollueur Payeur”, “Loi sur l’Eau” and “Loi sur l’Air” are not applied in French Polynesia.

5.3 Mitigation hierarchy and offsets in the RESCCUE pilot project countries and territories: New Caledonia

In New Caledonia, the mitigation hierarchy and offsets have been applied to recent new mining projects. Both policy and practice are rapidly evolving. For example, Province Sud has developed a tool to quantify offset requirements:

Afin de disposer d’un outil d’aide à l’instruction des demandes d’autorisation au titre des différentes réglementations environnementale, les services de la province Sud ont développé un outil de calcul permettant d’évaluer le volume des mesures compensatoires pour tout type de projet générateur de dommages environnementaux.

Les principes directeurs de cet outils se fondent sur la doctrine nationale de mitigation:

- objectif de neutralité des projets (pas de perte nette de biodiversité)
- mesures en relation directe avec l’impact (équivalence écologique)
- mesures au plus proche de l’impact (temporal et spatial)
- mesures techniquement, foncièrement et financièrement faisables,
- mesures ne se substituant pas à des programmes publics ou privés préexistants (additionnalité)
- mesures pérennes et traçables (contrôle de l’efficacité possible)
- certaines dégradations ne sont pas compensables.

Cet outil permet de calculer de manière objective pour chaque projet le volume des mesures compensatoires à mettre en oeuvre sur la base de:

- paramètres environnementaux adaptés au contexte calédonien,
- de la nature de l’impact (étendue, réversibilité, effets distants,...),
- de l’avancée des techniques d’ingénierie relatives à la restauration des différents écosystèmes

5.4 Mitigation hierarchy and offsets in the RESCCUE pilot project countries and territories: Vanuatu

As in Fiji, Vanuatu has no offsets policy, laws or guidance and no national offsets to date.

Environmental Impact Assessment is introduced as Part 3 and Biodiversity and Protected Areas as Part 4 of the Environmental Protection and Conservation CAP 283 (EPC Act 2003). There is no mention or provisions for offsets. Mitigation measures are mentioned frequently but always in relation to climate change.

The Environmental Impact Assessment Regulations (2011) establish the Department of Environmental Protection and Conservation as the consenting authority. Mitigation is an integral component of the

regulations in relation to various different components and activities. As such, there is potential for introducing offsets.

The EPC Act has provisions for the establishment of 'community conservation areas'. Under Section 35 of the Act, the Director of Environment can negotiate with customary landowners for any site to be registered as a community conservation area if it is considered to have unique genetic, cultural, geological or biological resources, or to provide habitat for animal or plant species of national or international conservation importance.

Establishment of conventional, government-managed protected areas is provided for in Vanuatu's 1993 National Parks Act, which makes provision for the declaration of national parks and nature reserves. The act also empowers the minister to formulate regulations for the administration of national parks and nature reserves, and the implementation of management plans for them. This law appears to be unused, however, Vanuatu does have a significant list of 'protected areas' in a wide variety of types. According to the World Database on Protected Areas (July 2016), Vanuatu has one Marine Protected Area, one Marine Reserve, 3 Recreation Reserves, one 'Reserve', seven Forest Conservation Areas. However, only four of these have official IUCN Category designations.

Makatea phosphate mining proposal

Makatea is a remote atoll which was heavily mined for phosphate 50 years ago. The mined areas were not rehabilitated and remain heavily degraded and dangerous. A proposal to mine the remaining phosphate uses the mitigation hierarchy 'avoid, reduce, restore, compensate' to improve local support for the project.

To avoid significant impacts on biodiversity, part of the potential phosphate resource will remain untouched because:

- It is an important site for endemic birds and trees (and other biodiversity)
- It has cultural importance (old graves and legend places)
- It has scenic importance, enabling preservation of a strip along the cliff top and main road.

To reduce significant impacts on biodiversity:

- A biosecurity policy will reduce the risk of weeds and pests colonising the atoll from mining equipment
- The biosecurity policy will reduce the risk of weeds dispersing from their current locations
- Mine workers will not be allowed to harvest coconut crabs
- Operational procedures will reduce the impact of operations on soil and underground fresh water.

To restore the site:

- After mining the phosphate, the remaining coralline rocks and walls, much of which remains after the initial mining operations, will be crushed to allow rehabilitation of a safe vegetated environment. The extent to which this will restore the original biodiversity and ecosystem services is still uncertain.

No formal offsets are proposed, but to compensate for any significant residual impacts on biodiversity:

- Weeds currently present (and spreading) will be controlled
- Economic activities such as ecotourism will be promoted, and paths will be created
- Public equipment for waste water management and disposals will be constructed.

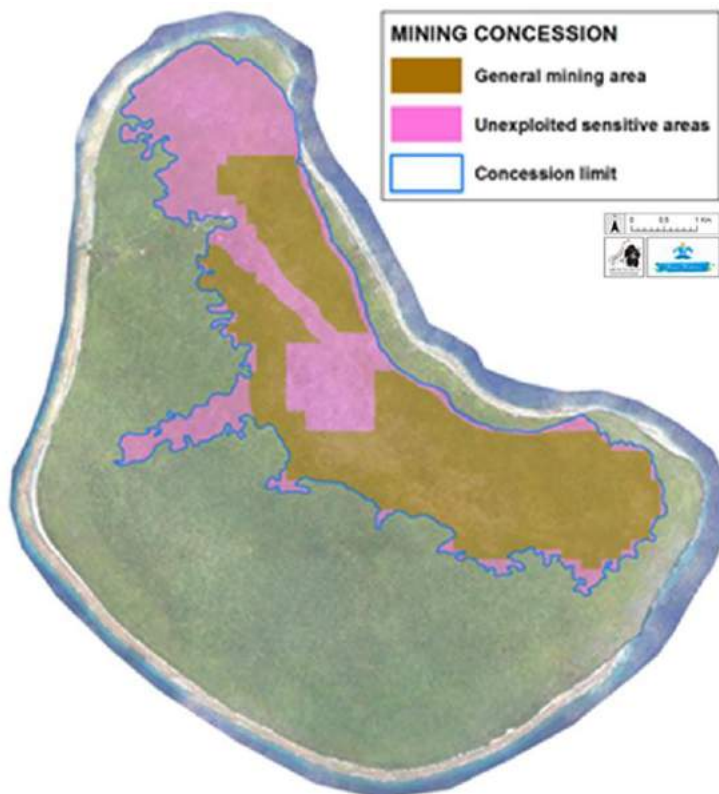


Figure 13. Mining concession showing proposed avoidance area (from SAS Avenir Makatea)

Voluntary mangrove offsets in Fiji

Naisosovu is a 45 ha island located at the mouth of the Sabeto River in Viti Levu, Fiji, and is separated from the mainland by a mangrove basin of approximately 110 ha. The mangrove basin borders the Sabeto River and acts as a flood distributary route for the river (Figure 14).



Figure 14. 2006 Aerial Photograph of an undeveloped Naisosovu Island with Sabeto River to the left and the Naisosovu River Mangrove Basin separating the island from the Mainland

In 2006, Relcorp Ltd, the developer, proposed an integrated resort development for the island comprising 97 residential lots, five tourism/resort lots and a marina. Environmental Consultants Fiji were commissioned to undertake an EIA which included a detailed Coastal Processes Study. This study was approved with conditions by the Department of the Environment.

The initial development plan was to locate the marina at the extreme end of the island accessed via the Sabeto river mouth. The EIA mangrove assessment found this area to have the best developed mangrove stand of the entire basin, and the coastal processes report recommended an alternative location for the marina. The developer concurred with these recommendations and the alternative location for the marina was accepted avoiding the loss of an area of significant mangrove habitat (Figure 15).



Figure 15. 2014 Masterplan of the Naisosovu Integrated Resort Development.

The development required boat access to the internal lots bordering the mangrove basin where the island sloped across mudflats to the mangroves themselves. To provide boat access a canal was required to be dredged and it was calculated that 8.8 ha of mangrove would be lost in the dredging of the canal. Following discussions relating to the impact of the loss of 8.8 ha of mangrove and potential mitigating measures, the developer consulted with the Fishing Rights Owners of the mangrove basin. An agreement was subsequently reached whereby the developer would apply to the Department of Lands for a lease to preserve all remaining mangroves (105 ha) as a mangrove reserve. The reserve would be managed according to a management plan which would allow for traditional fishing activities by the Fishing Rights Owners and active conservation measures for the reserve. This was included as a commitment of the EIA. The Department of Lands acted on the recommendations of the EIA and in 2011 a 99 year lease for Foreshore State Land was issued as a Mangrove/Marine Protected Area to Relcorp.



Figure 16. 2015 Google Image of the Naisoso Integrated Resort Development

In the absence of biodiversity offset legislation in Fiji or any administrative recognition of biodiversity offsets in the EIA process or for alternative mitigatory measures, the actions undertaken at Naisoso were nonetheless good biodiversity offset practice in respect of the mitigation hierarchy. The developer avoided affecting the best mangrove habitat on the banks of the Sabeto river by relocating the marina, and offset the loss of 8.8 ha of mangrove through the creation of a mangrove protected area through a formal lease with government.

However, certain commitments in the EIA remain to be implemented, in particular the requirement for a management plan to be prepared in consultation with the Fishing Rights Owners. The Departments of Lands and Environment have not followed up on this. In addition, it would have been more appropriate if the lease for the protected area or at least management control was vested in the National Trust of Fiji or an appropriate local NGO, with the annual lease rental being paid by Relcorp. To enable this would likely require a formal administrative framework which does not currently exist.

6 Roadmap possibilities

This study provides the context for discussing and developing 'roadmaps' to appropriately improve mitigation hierarchy and offset policy and practice in PICTs. Roadmaps should be co-developed by national stakeholders and will be workshopped during the next project stage. However, consultation and workshops usually benefit from having an outline proposal to consider. Different actions will be appropriate for different PICTs depending on the context for, and current status of, mitigation and offsetting. The following broad options are suggested to improve policy:

1. Consolidate current mitigation hierarchy and offsets policies (e.g. development and dissemination of best-practice guidance)
2. Consolidate current mitigation hierarchy policies; develop simple offsets policies (appropriate to the limited needs, capacity and enabling conditions)
(Simple means that policies can be regulated and implemented within the available capacity and enabling conditions; however, simple policies must not allow poor design or implementation, or allow offsets to justify poor development design, including avoidance and minimisation).
3. Develop simple mitigation hierarchy policies and *very simple* offsets policies (appropriate to the limited needs, capacity and enabling conditions)
4. Develop simple mitigation hierarchy and offsets policies (appropriate to the potential capacity and the enabling conditions)
5. Develop detailed mitigation hierarchy and offsets policies (appropriate to the potential capacity).
(Detailed means strict and complex policies which ensure relevance to all significant impacts, and ensure equivalence, additionality and other best-practice offset principles.)

All PICTs would benefit from improved practice, and all of these options should include actions to improve the planning, regulating, implementing, monitoring and auditing of mitigation and offsets.

The 22 PICTs can be provisionally categorised into the groups based on commonalities in the following factors:

- Needs: Are there likely business developments which offer opportunities for significant gains from improved policies and practice? (for this analysis, opportunities from deep sea mining are excluded as most policy is currently being developed at a regional level)
- Capacity, oversight and regulation: Is capacity potentially adequate for functional policies and practice?
- Enabling conditions: Are the necessary datasets and planning processes largely functional and fit for the purpose of supporting mitigation hierarchy and offsets practice?
- Status: What is the current status of mitigation hierarchy and offsets policies?

Analysis of the PICTs provisionally clusters them into five broad groups for consideration of roadmap development (Table 3):

	Group	Features	Needs	Capacity	Conditions	Status
American Samoa	one	high capacity, conditions and status	1	2	2	3
Federated States of Micronesia			1	2	3	2
Guam			3	3	3	3
Northern Mariana Islands			3	3	2	3
Palau			2	2	3	2
Wallis and Futuna			1	2	3	3
Cook Islands	two	low needs and capacity; moderate status	2	1	2	1.5
Kiribati			1	1	2	2.5
Marshall Islands			1	1	2	1.5
Pitcairn Islands			1	1	2	1.5
Samoa			2	1	2	1.5
Tuvalu			1	1	2	2
Vanuatu			2	1	2	1.5
Nauru	three	low needs, capacity and status	1	1	1	1
Niue			1	1	2	1
Tokelau			1	1	2	1
Tonga			1	1	2	1
Fiji	four	high needs; low capacity and status	3	1	1	1.5
Solomon Islands			3	1	2	1.5
French Polynesia	five	high needs; moderate capacity and status	3	2	2	2
New Caledonia			3	2	2	2
Papua New Guinea			3	2	2	2

Table 3. Grouping PICTs based on scores for four factors (Needs [max score except deep sea mining], Capacity, Enabling conditions [mean score] and Status [are there mitigation hierarchy and offsets policies]. Subjective scores – see Annex)

Note that the scoring and grouping is offered as a starting point for discussion – it is not definitive

Group 1: American Samoa, Federated States of Micronesia, Guam, Northern Mariana Islands, Palau and Wallis and Futuna

- Key features: high capacity; high enabling conditions; high policy status
- Needs: Limited opportunities except for infrastructure related to US-funded projects (and perhaps deep sea mining; and oil and tourism in Palau)
- Capacity, oversight and regulation: Adequate for functional policies
- Enabling conditions: Largely functional
- Status: Mitigation hierarchy and offsets policies exist; often same as US or French laws
- Roadmap consideration: Consolidate current mitigation hierarchy and offsets policies

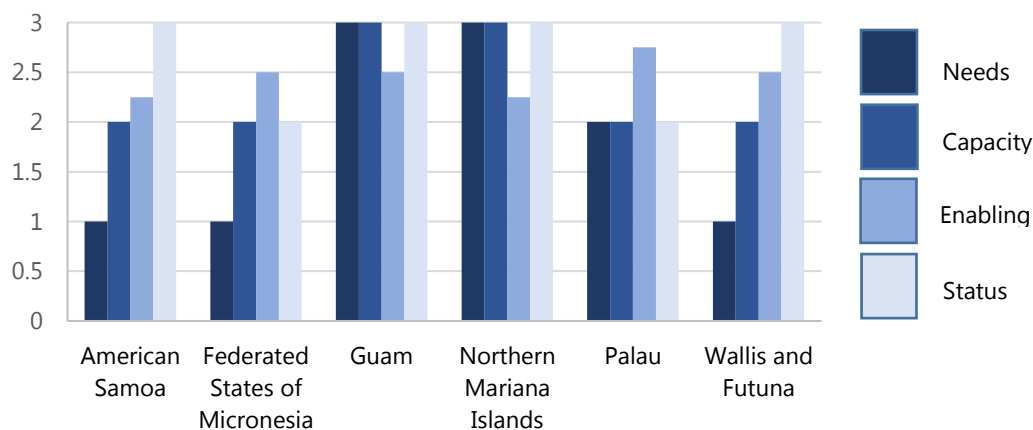


Figure 17. Indicative scores for Group 1 PICTs (Subjective scores – see Annex)

Group 2: Cook Islands, Kiribati, Marshall Islands, Pitcairn, Samoa, Tuvalu and Vanuatu

(although Samoa and Vanuatu might fit better with Group 4 as large islands with significant remaining forest)

- Key features: Low needs; limited capacity; moderately high enabling conditions; and moderately high policy status
- Needs: Limited opportunities (except perhaps deep sea mining)
- Capacity, oversight and regulation: Limited for functional policies
- Enabling conditions: Limited
- Status: Mitigation hierarchy policy exists but limited practice; offsets policy absent
- Roadmap consideration: Consolidate current mitigation hierarchy policies; develop simple offsets policies (appropriate to the limited needs, capacity and enabling conditions)

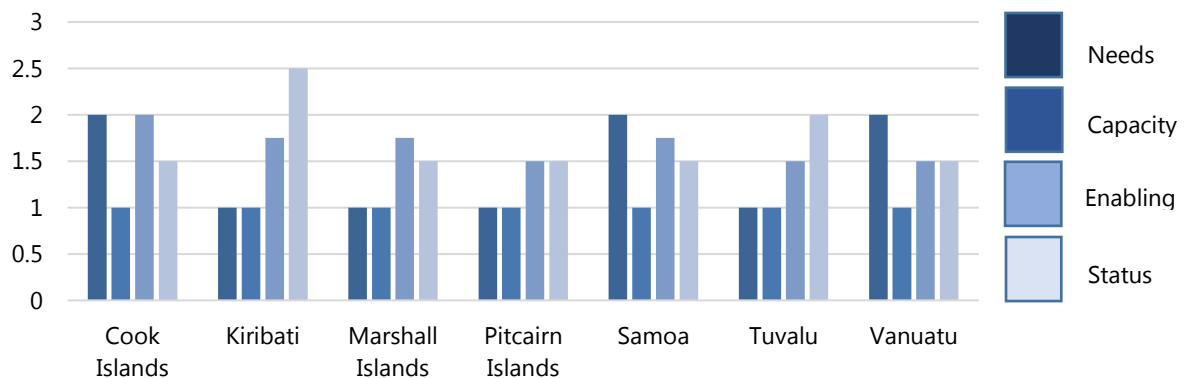


Figure 18. Indicative scores for Group 2 PICTs (Subjective scores – see Annex)

Group 3: Nauru, Niue, Tokelau and Tonga

- Key features: Low needs; limited capacity; limited enabling conditions; limited policy status
- Needs: Limited opportunities (except perhaps deep sea mining)
- Capacity, oversight and regulation: Limited for functional policies
- Enabling conditions: Limited
- Status: Mitigation hierarchy and offsets policies and practice absent or limited
- Roadmap consideration: Develop simple mitigation hierarchy policies and very simple offsets policies (appropriate to the limited needs, capacity and enabling conditions)

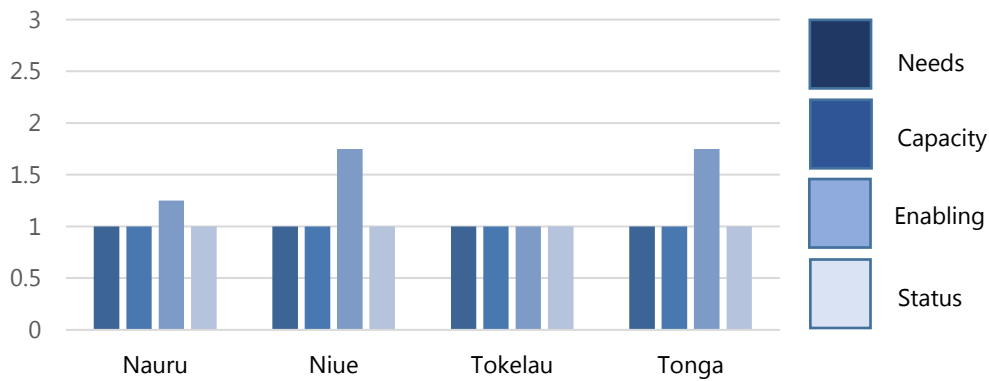


Figure 19. Indicative scores for Group 3 PICTs (Subjective scores – see Annex)

Group 4: Fiji and Solomon Islands

- Key features: High needs; limited capacity; limited enabling conditions; limited policy status
- Needs: Significant opportunities from a range of development types
- Capacity, oversight and regulation: Limited
- Enabling conditions: Limited
- Status: Limited policies and limited practice
- Roadmap consideration: Develop simple mitigation hierarchy and offsets policies (appropriate to the potential capacity and the enabling conditions)

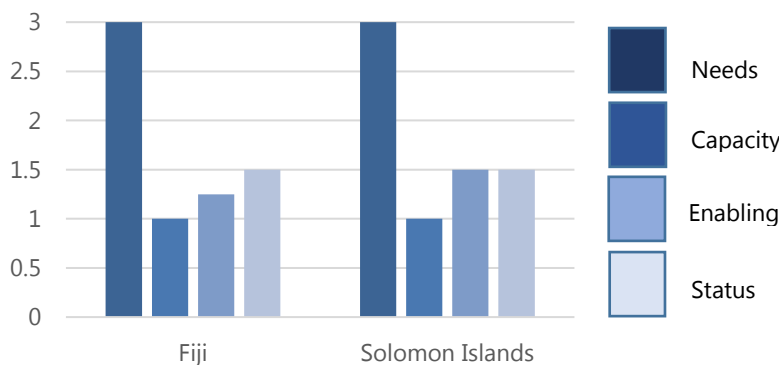


Figure 20. Indicative scores for Group 4 PICTs (Subjective scores – see Annex)

Group 5: French Polynesia, New Caledonia and Papua New Guinea

- Key features: High needs; moderate capacity; moderate enabling conditions; moderate policy status
- Needs: Significant opportunities from a range of business types

- Capacity, oversight and regulation: Limited at present but with potential for adequate capacity
- Enabling conditions: Limited (but largely good in New Caledonia)
- Status: Mitigation hierarchy and offsets policies and practices currently exist but are limited; (under active development in PNG)
- Roadmap consideration: Develop detailed mitigation hierarchy and offsets policies (appropriate to the potential capacity)

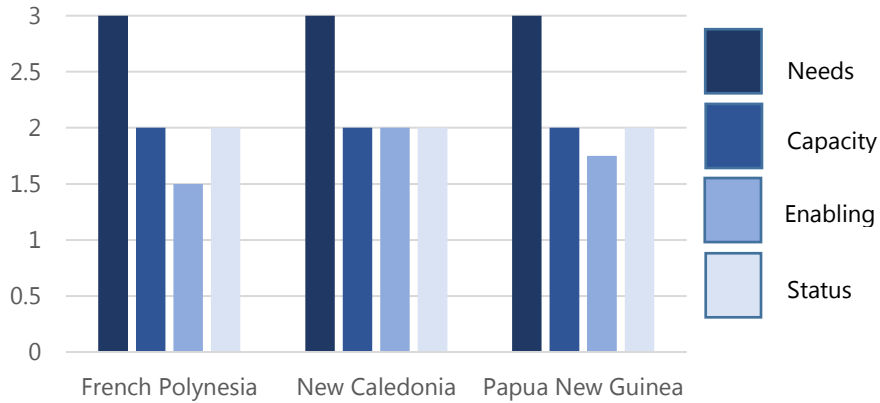


Figure 21. Indicative scores for Group 5 PICTs (Subjective scores – see Annex)

These roadmap considerations focus on policy development. All roadmaps should include the objective of improving mitigation and offsets practice. They should also look to strengthen the policy and practice of environmental impact assessment, which is the process for implementing mitigation and offsets.

7 Acknowledgments

This study acknowledges the time and insight offered by numerous collaborators and advisors including James Atherton, Mike Brooke (University of Cambridge), Antoine Escalas (TBC), Jean-François Butaud, Claire Fletcher (TBC), Dorothy Foliaki (DoE, Tonga), Holly Freifeld (USFWS), Robyn James (TNC), Kerry ten Kate (Forest Trends), Isoa Korovulavula (IAS, USP), Trina Leberer (TNC), Gerald McCormack (Cook Islands National Heritage Trust), Robin Mitchell (TBC), Philippe Raust (Manu SOP), SAS Avenir Makatea, Claude Serra (DIREN, French Polynesia) and Chris Swenson (USFWS). The review was improved by comments by Melanie Bradley (SPREP), Adam Fraser (Opus), Hugh Govan, Robyn James (TNC), Jean-Baptiste Marre (SPC), Julie Petit (INTEGRE), Fabien Quétier (Biotope) and Herman Timmermans (SPREP). We also thank Raphaël Billé for his very efficient and insightful project management.

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Annex I: Indicative scores for each question and PICT

Need	American Samoa	Federated S of Micronesia	Guam	Northern Mariana Islands	Palau	Wallis and Futuna	Cook Islands	Kiribati	Marshall Islands	Pitcairn Islands	Samoa	Tuvalu	Vanuatu	Nauru	Niue	Tokelau	Tonga	Fiji	Solomon Islands	French Polynesia	New Caledonia	Papua New Guinea
Are there significant resources for mining / oil / gas?	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	3	3	2	3	3
Are there significant resources for deep sea mining?	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
Is there significant land use for tourism?	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	3	1	3	2	1
Are there significant infrastructure projects?	1	1	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	3	3	2
Are there significant agribusiness projects?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	3
Is there significant logging / forestry?	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1	1	2	3	1	1	3
<i>Maximum needs score minus deep sea mining</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>3</i>
Opportunity																						
Is relevant new policy planned?	1	1	1	1	1	3	3	1	1	1	1	1	1	1	3	1	1	3	3	3	3	3
Capacity																						
Is there capacity for oversight, regulation, delivery?	2	2	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2
Enabling conditions																						
Is there an up to date NBSAP and used effectively?	1	3	1	1	3	3	2	2	2	1	2	2	2	2	3	1	2	2	2	1	2	2
Is there a comprehensive accessible database?	2	2	3	2	2	3	3	1	2	2	1	1	1	1	1	2	1	1	1	2	1	1
Are there other functional strategic land-use plans?	3	3	3	3	3	1	1	1	2	2	1	1	1	1	1	2	1	1	1	1	2	2
Is there legislation to permanently protect offsets?	3	2	3	3	3	3	2	3	1	1	3	2	2	1	2	1	3	1	2	2	3	2
<i>Mean enabling conditions score</i>	<i>2.3</i>	<i>2.5</i>	<i>2.5</i>	<i>2.3</i>	<i>2.8</i>	<i>2.5</i>	<i>2</i>	<i>1.8</i>	<i>1.8</i>	<i>1.5</i>	<i>1.8</i>	<i>1.5</i>	<i>1.5</i>	<i>1.3</i>	<i>1.8</i>	<i>1.5</i>	<i>1.8</i>	<i>1.3</i>	<i>1.5</i>	<i>1.5</i>	<i>2</i>	<i>1.8</i>
Status																						
Is there a mitigation hierarchy policy?	3	3	3	3	2	3	2	3	2	2	2	2	2	1	1	1	1	2	1	2	2	2
Is the mitigation hierarchy policy applied?	2	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	2	1	1	2	2
Is there an offsets policy?	3	1	3	3	2	3	1	2	1	1	1	2	1	1	1	1	1	1	2	2	2	2

If there is an offsets policy, is it applied?	1		3	3	2	1		1				2						1	1	2	2	
<i>Summary score (mean of policy status not practice)</i>	3	3	3	3	2	3	2	3	2	2	2	2	2	2	1	1	1	1	2	2	2	2

For each of tabulated questions, the following guidance was given to help standardise scores. It is noted that many scores are subjective and this simple scoring system is designed to elicit more engaged discussion from reviewers and future users of this report:

Are there significant resources for mining / oil / gas development?

Are there significant resources for deep sea mining?

3 = current operations or feasibility assessments

2 = potentially commercially viable resources present

1 = none known

Is there significant land use for tourism?

Are there significant projected future civil infrastructure projects?

Are there significant agribusiness projects?

Are there significant projected future civil infrastructure projects?

Are there significant agribusiness projects?

3 = projected future developments will significantly impact areas of significant biodiversity value

2 = projected future developments are likely to slightly impact areas of significant biodiversity value

1 = projected future developments are likely to have small impacts on areas of less significant biodiversity value

Is there significant logging / forestry?

3 = projected large-scale industrial forestry / logging

2 = projected small-scale industrial forestry / logging

1 = projected minimal industrial forestry / logging

Is new policy planned which could include the mitigation hierarchy and/or offsets?

3 = new policy (laws and/or guidance) of relevance are being actively developed

1 = no new policy known to be under consideration (*an exhaustive investigation is not warranted*)

Is there capacity for oversight, regulation and delivery of improved mitigation hierarchy and/or offsets policy?

3 = technical capacity and staff resources (including out-sourcing) is adequate to manage improved mitigation hierarchy and/or offsets policy

2 = technical capacity could be built and projected staff resources are realistic

1 = needs significant capacity-building and extra resourcing

Is there an up to date NBSAP which is used effectively?

3 = there is an up to date NBSAP which is used effectively

2 = there is an NBSAP somewhat out-dated and not used effectively

1 = there is no NBSAP

Is there a comprehensive accessible biodiversity database?

3 = biodiversity databases are reasonably comprehensive, updated and accessible

2 = databases are present but not comprehensive, up to date and/or accessible

1 = there is no significant database

Are there other functional strategic land-use plans of relevance to biodiversity conservation?

3 = other plans are up to date and used effectively

2 = other plans are somewhat out-dated and not used effectively

1 = there are no significant plans

Is there legislation adequate to permanently protect offsets?

3 = there are functional laws and guidance for effective formal government- or community-managed protected areas

2 = there are laws adequate for some sorts of protected areas

1 = there are no effective laws for any sort of protected areas

Is there a mitigation hierarchy policy?

- 3 = there is functional explicit mitigation hierarchy policy (laws and guidance)
- 2 = policy requirement to 'mitigate' without explicit details of the mitigation hierarchy
- 1 = no policy requirement to 'mitigate'

Is the mitigation hierarchy policy applied?

- 3 = mitigation hierarchy policy is applied well in most recent public cases
- 2 = mitigation hierarchy policy is applied poorly in most recent public cases
- 1 = mitigation hierarchy policy is not applied in most recent public cases

Is there an offsets policy?

- 3 = there is a functional offset policy (laws and guidance) [might be termed 'compensation']
- 2 = policy requirement for some sort of offset or compensation
- 1 = no policy requirement for any sort of offset or compensation

If there is an offsets policy, is it applied?

- 3 = offsets policy is applied well in most recent public cases
- 2 = offsets policy applied poorly in most recent public cases
- 1 = offsets policy is not applied in most recent public cases