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ESCAP
Economic and Social Commission for Asia and the Pacific
Green Economy in a Blue World
Pacific Perspectives 2012

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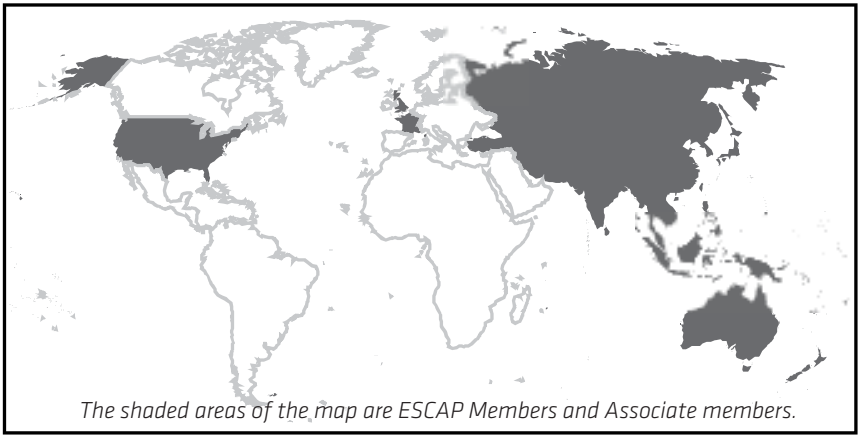

The shaded areas of the map are ESCAP Members and Associate members.

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Green Economy in a Blue World:

Pacific Perspectives

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Foreword

The Pacific is vital, valued and connected to our region and our world.

Pacific Island developing countries are all too often seen as separated by the ocean from each other and from mainland Asia. We can see the Pacific islands in an ocean of isolation, or we can choose to see them situated in an ocean of opportunity.

Green Economy in a Blue World: Pacific Perspectives offers green economy analyses, linked to a range of policy options, to better balance Pacific development in our pursuit of a more inclusive, resilient, and sustainable future.

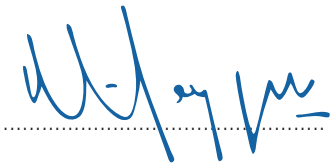
For Pacific island countries, the green economy is very much a blue economy, which is why the Pacific Small Island Developing States (PSIDs) chose this theme, in Samoa last year, to be conveyed by the Pacific to Rio+20. It was also why the special case of the Pacific island countries was again reaffirmed at the ESCAP Commission session earlier this year.

In the context of climate change and ocean acidification, it is clear that the vulnerability of small island developing states is increasing, but coping capacity is not. It is also clear that the strong economic performance of some Pacific island countries, particularly Papua New Guinea, has not always been accompanied by equally strong development gains. The challenge lies in turning opportunities into sustainable economic, social and environmentally responsible benefits for the people of the Pacific.

Green economy tools and policies, in the context of a blue world, can address many of the structural issues at the heart of the these challenges – helping to inform and advise Pacific nations as the curators of our largest natural global assets – the oceans on which human life itself depends.

Rio+20 recognized that there is no 'one size fits all' approach to the green economy. For green economy policies to make an impact, they must be adapted to fit the context of each member State. Sustainable development requires local strategies, with locally relevant policies, based on the specific terrestrial and marine environment, culture, and social circumstances. Production, transport and service delivery costs, for example, are higher in the Pacific than in any other area. The challenges of isolation, size and small populations make balancing economic, social and environmental development even more challenging.

This publication explores the concept of a green economy in the Pacific, including a summary of the opportunities, challenges and constraints. I am confident that it will support the efforts of our development partners and Governments in formulating policies for a more inclusive, sustainable and resilient Pacific.



Noeleen Heyzer
Under-Secretary-General of the United Nations
and Executive Secretary of ESCAP

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01

Section 01

CONTEXTUALIZING THE GREEN ECONOMY IN THE PACIFIC

This section provides a broad overview of the concepts and definitions of the green economy, and how the green economy is relevant to the Pacific.

1.1 SETTING THE STAGE

"The future we want", the outcome of the Rio+20 Summit[1], reinforced the global commitment towards balancing the economic, social and environmental pillars of sustainable development through the green economy approach, including enabling policy, legal, regulatory and institutional frameworks. Green economic policies, coupled with other macro-economic and social policies to promote inclusion, can be used to "incentivize" greater balance in developmental outcomes – particularly in favour of social inclusion, equity, and environmental sustainability. Pacific island developing countries, where in spite of previous efforts and significant resource outlays, vulnerability has increased and the capacity to cope has not. Overall economic performance in the Pacific has been weak; and while there has been some social development, including progress toward the Millennium Development Goals (MDGs), there are still significant gaps, particularly in the areas of poverty alleviation and environmental sustainability. The importance of poverty alleviation and environmental sustainability in the Pacific has received high-level recognition through the conclusion that "poverty eradication is the greatest global challenge facing the world today"[2] and through the Pacific Islands Forum conclusion that climate change is the single greatest threat in the Pacific[3] and managing the Pacific Ocean is one of the Pacific's most significant challenges[4].

CHALLENGES FACING THE PACIFIC

IIn August 2012, the Pacific Islands Forum (PIF), themed "Large Ocean States – the Pacific Challenge", highlighted the opportunities and challenges that the Pacific Ocean presents for the small island States which are scattered across such a vast area—roughly one third of the earth's surface (see box 1.1). At the Pacific Islands Forum, participants reconfirmed that climate change is the single biggest threat facing Pacific island countries. The Pacific Islands Forum participants also reiterated their support for the social inclusion and equity focus of the Rio+20 Summit outcomes (see box 1.2). A month prior to the Forum, Pacific leaders joined over 120 political leaders and around 50,000 other participants at the United Nations Conference on Sustainable Development to review the historic "Earth Summit" held 20 years prior.[5] The Rio+20 participants noted that they are "deeply concerned that one in five people on this planet, or over 1 billion people, still live in extreme poverty, and that one in seven – or 14 per cent – is undernourished, while public health challenges, including pandemics and epidemics, remain omnipresent threats"[6].

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1 The phrase "Rio+20 Summit" is used to refer to the United Nations Conference on Sustainable Development, which was held from 20 to 22 June 2012

2 General Assembly resolution 66/288, annex, p. 9-12, para 2.

3 This was acknowledged by the Rio+20 Summit when it agreed that: "Sea-level rise and other adverse impacts of climate change continue to pose a significant risk to small island developing States and their efforts to achieve sustainable development, and for many represent the gravest of threats to their survival and viability, including for some through the loss of territory" (para 178). It also said "climate change was one of the greatest challenges of our time".

4 Pacific Islands Forum, Statement by the PIF Chair to the Post Forum Partners, 13th August Rarotonga, Cook Islands.

5 The United Nations Conference on Environment and Development (also known as the "Earth Summit"), held in Rio de Janeiro, Brazil, in 1992

6 General Assembly resolution 66/288, annex. para. 19

Box 1.1: Key Decisions of the Pacific Islands Forum Meeting

The 2012 Pacific Islands Forum (PIF), "Large Ocean States – the Pacific Challenge" met from 27-31 August 2012 in Rarotonga, Cook Islands. Pacific island forum leaders made a number of key decisions.

The Statement by the PIF Chair to the Post Forum Partners provides a summary of the key decisions of the Pacific Island Forum:

"Theme: "Large Ocean Island States – the Pacific Challenge" is aimed at striking a balance between sustaining the development of our marine resources with the interests of preservation and conservation. The marine environment is pivotal to the character and wellbeing of island countries and the sea is the islands' most precious resource, representing the most tangible asset for both the present and future generations. The continued health of the oceanic and coastal systems is therefore essential and a vital force to the existence of island States. Leaders agreed to play a leading role in management of the Pacific Ocean, building on their aspirations to maximise sustainable economic returns for Forum Members from ocean resources, including fisheries and seabed minerals, in accordance with the precautionary approach of Rio Principle 15.

Regional Gender Initiative: Leaders endorsed the Pacific Leaders Gender Equality Declaration and committed to supporting women's political representation, including, amongst other issues, advocating for increased representation of women in the private sector and local level governance boards and committees; and considering specific legislative changes to allow temporary special measures such as reserved seats. Australian Prime Minister Julia Gillard announced that her Government would be earmarking $A320 million to achieve gender equality in the Pacific under the "Pacific Women Shaping Pacific Development" scheme over the next decade. The objectives of this proposal are threefold: increase the proportion of women in leadership and political roles; improve economic opportunities for women through better access to finance and markets; and improve safety for women through prevention of violence and access to justice.

Pacific Plan: The Pacific Plan, which remains the master strategy for strengthening regional cooperation and integration, will be reviewed in 2013. It is a high-level framework to articulate the priorities for the Pacific region and is now well recognized by development partners, and the wider international community.

Rio+20: The Rio+20 Conference outcome document ("The future we want") contains several outcomes that are particularly relevant for the Pacific region. These include, inter alia, a reaffirmation on the "special case" for small island developing States; endorsement of the convening of a Third International Conference on Small Island Developing States (possibly in the Pacific region); recognition of the important roles of oceans and fisheries, and the need for regional and national actions to achieve sustainable development; and endorsement of the development of a set of Sustainable Development Goals (SDGs). Leaders fully endorse the hosting of the Conference in the Pacific region, and Leaders will lend their full support to the Pacific Island country selected as the venue for it. Mindful of the importance of the Conference, Leaders called on development partners and the wider international community

to demonstrate their support for the success of the 2014 Conference and its preparatory process. Leaders have tasked the Forum Secretariat, in collaboration with CROP and United Nations agencies, to work closely with Forum Island Countries to develop a Pacific position on the post-2015 development agenda and Sustainable Development Goals, and to contribute effectively to the relevant global processes, including the sixty-eighth session of the General Assembly, in September 2013. Leaders have also called for Pacific representation on the Sustainable Development Goals Working Group and the Finance Working Group proposed in the Rio+20 outcome document, and we seek your support in this regard.

Climate Change: Climate change remains the single greatest threat, and Leaders welcomed and acknowledged the work of relevant regional organizations in the area of climate change. We welcome with appreciation Australia's commitment of A$58 million in new funding over four years to support FICs with improved data on weather, climate and sea levels to inform climate change adaptation planning, as well as new support for communities to build resilience to natural disasters." (verbatim statement)

Source: Pacific Islands Forum, Statement by the PIF Chair to the Post Forum Partners, 13th August Rarotonga, Cook Islands.

Both the Pacific Islands Forum and the Rio+20 Summit highlight the challenges facing the Pacific in achieving inclusive and sustainable development. Sustainable development is defined to include economic growth which is sustainable, inclusive and equitable; and for which the value of natural resources and ecosystems is integrated into the framework for economic, social and human development "while facilitating ecosystem conservation, regeneration and restoration and resilience".[7] The preservation of natural resources and ecosystems and environmentally sustainable growth are of critical importance for the Pacific. While the top priorities of the Pacific Leaders are addressing the threat of climate change and overcoming the challenge of managing the Pacific Ocean, the need for greater gender equality[8] and sustainable economic performance are also evident in the Pacific. The Pacific Ocean provides environmental, economic and social benefits to the global community. Thus there is a need to support the stewardship role of the people of the Pacific through recognizing the unique challenges faced.

[7] General Assembly resolution 66/288, annex, para. 4.
[8] The Pacific Leaders Gender Equality Declaration was endorsed by the Pacific Islands Forum.

Box 1.2: Rio+20 Summit outcomes

The outcome statement of Rio+20, entitled, "The Future We Want", "committed to freeing humanity from poverty and hunger as a matter of urgency" (para. 2). The Rio+20 outcome statement elaborates that to achieve this goal, it is necessary to promote "sustained, inclusive and equitable economic growth" and "integrated and sustainable management of natural resources and ecosystems that supports, inter alia, economic, social and human development while facilitating ecosystem conservation, regeneration and restoration and resilience in the face of new and emerging challenges" (para 4). And while putting "people at the centre of sustainable development", participants also agreed on the need to "work together to promote sustained and inclusive economic growth, social development and environmental protection and thereby to benefit all" (para 6).

It is against this backdrop that the Rio+20 Summit, "affirmed that green economy policies in the context of sustainable development and poverty eradications should:

(a) Be consistent with international law;

(b) Respect each country's national sovereignty over their natural resources taking into account its national circumstances, objectives, responsibilities, priorities and policy space with regard to the three dimensions of sustainable development;

(c) Be supported by an enabling environment and well-functioning institutions at all levels with a leading role for Governments and with the participation of all relevant stakeholders, including civil society;

(d) Promote sustained and inclusive economic growth, foster innovation and provide opportunities, benefits and empowerment for all and respect of all human rights;

(e) Take into account the needs of developing countries, particularly those in special situations;

(f) Strengthen international cooperation, including the provision of financial resources, capacity-building and technology transfer to developing countries;

(g) Effectively avoid unwarranted conditionalities on official development assistance (ODA) and finance;

(h) Not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade, avoid unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country, and ensure that environmental measures addressing trans-boundary or global environmental problems, as far as possible, are based on an international consensus;

(i) Contribute to closing technology gaps between developed and developing countries and reduce the technological dependence of developing countries using all appropriate measures;

(j) Enhance the welfare of indigenous peoples and their communities, other local and traditional communities and ethnic minorities, recognizing and supporting their identity, culture and interests, and avoid endangering their cultural heritage, practices and traditional knowledge, preserving and respecting non-market approaches that contribute to the eradication of poverty;

(k) Enhance the welfare of women, children, youth, persons with disabilities, smallholder and subsistence farmers, fisherfolk and those working in small and medium-sized enterprises, and improve the livelihoods and empowerment of the poor and vulnerable groups in particular in developing countries;

(l) Mobilize the full potential and ensure the equal contribution of both women and men;
(m) Promote productive activities in developing countries that contribute to the eradication of poverty;
(n) Address the concern about inequalities and promote social inclusion, including social protection floors;
(o) Promote sustainable consumption and production patterns;
(p) Continue efforts to strive for inclusive, equitable development approaches to overcome poverty and inequality." (para 58)

Through the Rio+20 outcome statement the special case of the Pacific was also recognized, "we reaffirm that Small island developing States remain a special case for sustainable development in view of their unique and particular vulnerabilities, including their small size, remoteness, narrow resource and export base, and exposure to global environmental challenges and external economic shocks, including to a large range of impacts from climate change and potentially more frequent and intense natural disasters." The participants called for "continued and enhanced efforts to assist small island developing States in implementing the Barbados Programme of Action and the Mauritius Strategy. We also call for a strengthening of United Nations System support to small island developing States in keeping with the multiple ongoing and emerging challenges faced by these States in achieving sustainable development".

Source: General Assembly resolution 66/288, annex, 27 July 2012.

The Rio+20 Summit participants committed to developing Sustainable Development Goals (SDGs) to guide interventions and sustainable development policies. The SDGs are expected to be coherent with and integrated into the United Nations post-2015 development agenda, thus serving as a driver for the achievement of sustainable development. Furthermore "sustainable development goals should be action oriented, concise and easy to communicate, limited in number, aspirational, global in nature and universally applicable to all countries while taking into account different national realities, capacities and levels of development and respecting national policies and priorities" (paras. 245-251). The post-2015 development agenda is likely to include a broad framework which reflects the multifaceted nature of development, including: (a) environmental sustainability, productive employment and decent work, and inequality; (b) the enablers of development or strategies; (c) strengthened consultations at the conception stage to build ownership and to avoid the perception of a donor-centric agenda; and (d) institutional building and structural transformations.[9] The development of the SDGs is envisioned to be a country-driven process which will take into consideration the needs and priorities of countries. For example the Pacific island countries are likely to provide specific contributions to the development of SDGs related to climate change and oceans, in addition to providing contribution to the process as a whole.

9 UN System Task Team on the Post-2015 Development Agenda, "Realizing the Future We Want for All", Annex II Strengths and Weaknesses of the MDG Framework, Report to the Secretary General, New York, 1 July, 2012.
10 ESCAP, Pacific Regional Report for the 5Year Review of the Mauritius Strategy for Further Implementation of the Barbados Programme of Action for Sustainable Development of SIDS, p.39, 2011
11 Vina R. Bidesi, How 'the other half' fishes: Accounting for women in fisheries in the Pacific in Atu Emberson-Bain, Sustainable Development or Malignant Growth? Perspectives of Pacific Island Women, 1994..
12 ESCAP, Pacific Regional Report for the 5Year Review of the Mauritius Strategy for Further Implementation of the Barbados Programme of Action for Sustainable Development of SIDS, p.85, 2011.

THE NEED FOR SUSTAINABLE NATURAL CAPITAL AND ENVIRONMENT

Natural capital in many Pacific island countries has steadily eroded over the past few decades due to poor waste management; overexploitation of natural resources; abundance of invasive species; and increasing damage from natural disasters and climate change. [10] Resource-extractive activities, including commercial fishing, logging and mining, have resulted in extensive environmental degradation and loss of biodiversity. Figure 1.1 shows the number of species under threat and the increases in those numbers between 2008 and 2010. The loss of natural capital undermines food, water and nutritional security. In particular, the degradation of oceans due to overfishing, pollution and other factors (for example climate change-induced damage to coral reefs) diminish the productive capacity of marine environments as a source of income, cultural identity and food security. This was found to be case as early 20 years ago [11]. Additionally, deforestation destroys the capacity of trees to mitigate climate change through obstructing or capturing carbon emissions.[12]

Figure 1.1 Threatened species by type

	Mammals	Birds	Reptiles	Amphibians	Fish	Molluscs	Other inverts	Plants	Total	2008 Total
American Samoa	1	8	4		8	5	52	1	79	77
Cook Islands	1	15	2		9		25	1	53	50
Fiji	6	13	6	1	11	3	87	65	192	190
French Polynesia	1	32	1		20	33	26	47	160	149
Guam	2	14	2		6	6		4	34	35
Kiribati	1	6	1		9	1	72		90	87
Marshall Islands	2	4	2		9	1	66		84	85
Micronesia (F.S.)	7	10	4		14	4	104	5	148	144
Nauru	1	2			9		62		74	73
New Caledonia	9	15	13		24	11	86	257	415	355
Niue	2	8	3		7		23		43	41
Nrthn Mariana Islands	5	15	1		8	4	47	5	85	85
Palau	4	4	2		12	5	97	4	128	126
Papua New Guinea	39	37	11	11	41	2	169	143	453	446
Samoa	2	7	3		11	1	52	2	78	73
Solomon Islands	20	20	6	2	15	2	139	16	220	211
Tonga	2	4	3		10	2	33	4	58	56
Tuvalu	2	1	2		9	1	70		85	83
Vanuatu	8	7	3		14	1	78	10	121	118

Source: ESCAP, Statistical Yearbook for Asia and the Pacific, http://www.unescap.org/stat/data/syb2011/index.asp, Original source: Threatened species listed by IUCN as critically endangered, endangered or vulnerable, 2011.

Unregulated mining activities and marine-based waste disposal further threaten natural capital. Across the Pacific, there is a noticeable escalation of mining projects and penetration into new and more remote areas by foreign mining companies, including experimental sea-bed mining operations due to start production in the next few years. Since there is little knowledge about the impact of mining activities in the ocean bed, there is potential that mining activities like ocean dredging, sea-bed extraction activity and the discharge of mine tailings and other waste material[13] could seriously threaten the rich deep-sea biodiversity of the Pacific [14]. In this context regulatory frameworks for mining activities, which ensure the

[13] Jan H. Steffan, The Lawmaking Process at the International Seabed Authority as a Limitation on Effective Environmental Management, cited in Dennis Small, Deep Seabed Mining: Frontier to Oblivion, Pacific Ecologist, Issue 20, Winter 2011; IUCN, Deep Sea Mineral Resources: The Challenge of Environmental Sustainability, 2011.

[14] According to a recent IUCN paper, the deep sea is one of the least studied ecosystems, with a mere 0.0001 per cent of the deep seafloor having been subject to biological investigation (ibid).

mitigation of negative environmental impacts and increase economic and social benefits to local economies, do not exist in most countries and need to prepared and enforced as soon as possible. Apart from launching the Cook Islands national regulatory framework for sea-bed mining, a first in the Pacific islands region, the 2012 PIF Meeting also saw the signing and exchange of eight (8) Maritime Boundary Agreements between the Leaders of Cook Islands, Niue, Kiribati, Tokelau, Tuvalu, Nauru and the Marshall Islands. Such frameworks and agreements will provide the foundation for improved governance, protection, conservation and management of resources within respective national jurisdictions [15].

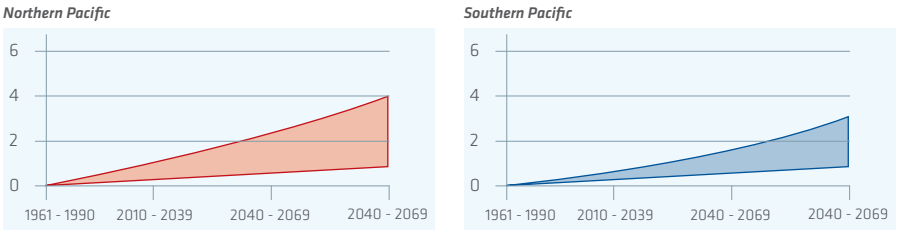
The harsh impacts anticipated from climate change may further impede efforts to achieve sustainable development. The Pacific region is particularly vulnerable to climate change induced sea-level rises and increased frequency and intensity of natural disasters. The International Panel on Climate Change 2007 report identified Small island developing States, particularly atolls in the Pacific and Indian Ocean, as being among those most vulnerable to climate change [16] as has been acknowledged by the Rio+20 Summit and reconfirmed by the 2012 PIF Leaders Meeting. According to the Secretariat of the Pacific Regional Environment Programme (SPREP), some of the main climatic challenges facing the Pacific include: sea level rises and intense flooding which threatens water supply, coastal infrastructure and land areas; and climate variability and increased frequency and intensity of natural disasters which could have negative impacts on food security (caused by declines in fresh water availability, crop production and fisheries), coral reef and forest biodiversity, and the spread of certain diseases (especially those spread through contaminated water) [17].

The effects of climate change in the future are likely to be intensified as natural disaster frequencies increase, and temperature and precipitation patterns continue to change (see Figure 1.2). Additionally, the risk of climate change is highlighted in a recent study by WWF which reveals that humans are now consuming resources and releasing carbon at rates that exceed the earth's capacity to sustain or absorb them.[18] Population growth and increasing urbanization rates, which are projected to be high in the Pacific islands, will exacerbate the climate change challenges faced by Pacific island countries (see Figure 1.3), given the limited and low-lying nature of the land areas in many of the island States. Urban areas are particularly susceptible to natural disasters, such as flooding and landslides. [19]

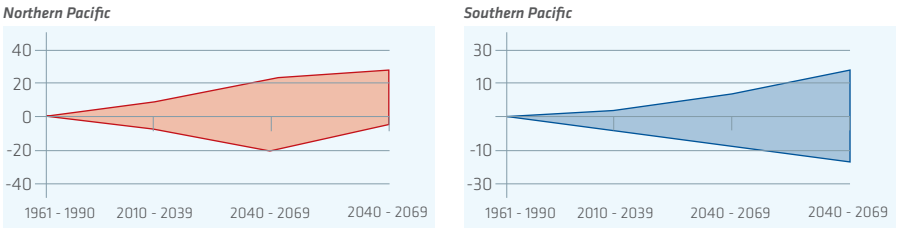
[15] PIF Chair's statement to PFD Partners, 13 August 2012, Rarotonga, Cook Islands
[16] Mimura, N., L. Nurse, R.F. McLean, J. Agard, L. Briguglio, P. Lefale, R. Payet & G. Sem, Small Islands. Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, 2007.
[17] SPREP, Factsheet Pacific Climate Change, http://archive.iwlearn.net/www.sprep.org/factsheets/pdfs/pacificclimate.pdf, 2008.
WWF, Report on 'State of the Planet, 2010.
[18] WWF, Report on 'State of the Planet, 2010.
[19] UN Habitat, Enhancing Urban Safety and Security; Global Report on Human Settlements, 2007.

Figure 1.2 Model-based projected temperatures and precipitation for 2010-2069
Projected changes in temperatures and precipitation for the period covering 2010-2069 are from International Panel on Climate Change 2007. Seven different models were used to project future changes; the figure displays the range of the projections as a band. The period covering 1961 to 1990 is the baseline.

Projected increase in temperature in C°



Projected percentage change in precipitation



These projections and methodology used to develop these projections has not been endorsed by ESCAP, but presented for illustration purposes only. .

Source: Mimura, N., L. Nurse, R.F. McLean, J. Agard, L. Briguglio, P. Lefale, R. Payet & G. Sem, Small Islands. Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, 2007.
The analysis is based on Ruosteenoja, K., T.R. Carter, K. Jylhä and H. Tuomenvirta, Future climate in world regions: an intercomparison of model-based projections for the new IPCC emissions scenarios. The Finnish Environment 644, Finnish Environment Institute, Helsinki, 2003.

Figure 1.3 Urbanization

	Total Population (Thousands)		Urbanization ratio (urban population as % of total		Annual population growth (2010-2030	
	2010	2030	2010	2030	Total	Urban
Fiji	861	958	52	62	0.5	1.2
French Polynesia	271	318	52	57	0.8	1.4
Guam	180	222	93	95	1.1	1.1
Kiribati	100	132	44	51	1.4	2.1
Micronesia (FS)	111	129	23	30	0.8	2.1
New Caledonia	251	314	58	63	1.1	1.6
Papua New Guinea	6858	10185	13	18	2.0	3.8
Samoa	183	200	20	24	0.4	1.2
Solomon Islands	538	841	19	29	2.3	4.3
Tonga	104	121	23	30	0.8	1.9
Vanuatu	240	371	26	38	2.2	4.1

Source: United Nations Department of Economic and Social Affairs, Population Division World Population Prospects: The 2010 Revision, available from http://esa.un.org/unpd/wpp/index.htm and World Urbanization Prospects: The 2009 Revision, available from http://esa.un.org/wup2009/unup/wup/index.htm, (accessed 24 January 2012).

There has been mixed progress in the Pacific of ensuring environmental stability (MDG goal 7). While there has been progress in enhancing coastal and marine resource management and developing strategies for disaster risk management; however, many countries have not made significant progress in increasing access to improved water or basic sanitation (see Figure 1.4). The lack of suitable land, especially on atolls, for landfills continues to be a major constraint in waste management and disposal.[20] Further, the improper disposal of waste in the Pacific threatens fragile marine and terrestrial ecosystems. Progress towards sustainable development and achievement of the MDGs has also been hampered by fiscal challenges from falling revenues and high debt levels, which has in turn reduced the capacity of Governments to finance much needed investments in infrastructure, and economic and social services.21 Similarly, many small islands have limited capacity to adapt to the projected impacts of climate change due to constraints in financial resources, available technology, inadequate human resources and expertise, and limited infrastructure and institutions. 22

[20] SPREP, Pacific Regional Solid Waste Management Strategy, http://www.sprep.org/attachments/Pacific_RSWMS_2010-2015.pdf, 2009.
[21] SPREP, Pacific Regional Solid Waste Management Strategy, http://www.sprep.org/attachments/Pacific_RSWMS_2010-2015.pdf, 2009
[22] Mimura, N., L. Nurse, R.F. McLean, J. Agard, L. Briguglio, P. Lefale, R. Payet & G. Sem, Small Islands. Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, 2007.

Figure 1.4 Access to clean water and basic sanitation

	Access to improved water sources								
	% of rural			% of urban			% of total		
	1990	2000	2008	1990	2000	2008	1990	2000	2008
Pacific islands	38	38	39	91	90	90	47	45	46
Cook Islands	87	87	88*	99	99	98	94	95	95*
Fiji				92	93				
French Polynesian	100	100	100	100	100	100	100	100	100
Guam	100	100	100	100	100	100	100	100	100
Kiribati	33	50	53*	76	77	77*	48	62	64*
Marshall Islands	97	98	99	94	93	92	95	95	94
Micronesia (FS)	87	92	94*	93	94	95	89	92	94*
Nauru						90			
Niue	100	100	100	100	100	100	100	100	100
Northen Mariana Islands	100	97	97	98	98	98	98	98	98
Palau	98	95	94*	73	78	80*	81	83	84*
Papua New Guinea	32	32	33	89	88	87	41	39	40
Samoa	89	88	87*	99	92	90*	91	89	88*
Solomon Islands		65	65*		94	94*		70	70*
Tonga		100	100		100	100		100	100
Tuvalu	89	93	97	92	95	98	90	94	97
Vanuatu	49	66	79	91	93	96	57	72	83
Asia and the Pacific	64	74	83	95	96	96	74	82	89
World	63	71	78	95	96	96	77	83	87

	Access to improved sanitation								
	% of rural			% of urban			% of total		
	1990	2000	2008	1990	2000	2008	1990	2000	2008
Pacific islands	43	43	42	83	83	81	50	49	49
Cook Islands	91	99	100	100	100	10	96	100	100
Fiji	55	55		92	96		68	70	
French Polynesian	97	97	97	99	99	99	98	98	98
Guam	98	98	98	99	99	99	99	99	99
Kiribati	21	22	22*	36	47	49*	26	33	35*
Marshall Islands	41	48	53	77	80	83	64	69	73
Micronesia (FS)	20	16	15*	55	59	61*	29	26	25*
Nauru						50			
Niue	100	100	100	100	100	100	100	100	100
Northen Mariana Islands	78	93	96	85	92	94*	84	92	94*
Palau	54	52	52*	76	82	96	69	80	83*
Papua New Guinea	40	42	41	78	75	71	47	46	45
Samoa	98	100	100	100	100	100	98	100	100
Solomon Islands	18	18	18*	98	98	98	29	31	32*
Tonga	96	96	96	98	98	98	96	96	96
Tuvalu	76	79	81	86	87	88	80	83	84
Vanuatu		36	48		57	66		41	52
Asia and the Pacific	30	38	43	66	68	69	42	49	54
World	35	41	45	76	77	77	53	57	61

The * indicates that the 2005 data is displayed due to the fact that 2008 data is not available.

Source: ESCAP, Statistical Yearbook for Asia and the Pacific (United Nations publication, Sales No. E.11.II.F.1), www.unescap.org/stat/data/syb2011/index.asp. Millennium Development Goals global database, 2011.

THE NEED FOR INCLUSIVE GROWTH

More than 10 million people, scattered across one third of the earth's surface make up the population of the Pacific island developing countries. Those people live in Pacific island countries which are economically vulnerable and ecologically fragile. The small size, limited resources, geographic dispersion and isolation from markets of Pacific island countries places them at a disadvantage economically, prevents economies of scale and increases the exposure to external conditions. In particular, Pacific island countries are highly susceptible to increases in food and energy prices and instability in global financial markets.

Overcoming the resource constraints caused by limited natural resources, such as energy, minerals, water and land, is a major challenge for Pacific island countries.[23] Constrained natural resources have created a high dependence on foreign inputs and put pressure on the available natural capital. The remoteness and small economic size of Pacific island countries increases the cost of imports and limits the ability to attract imports. The pressure caused by resource constraints has resulted in poor management decisions and a decline in natural capital. One example of constrained natural resources is evident in the energy sector where the dependence of Pacific island countries on fossil fuels has created a major threat to energy security and economic stability.

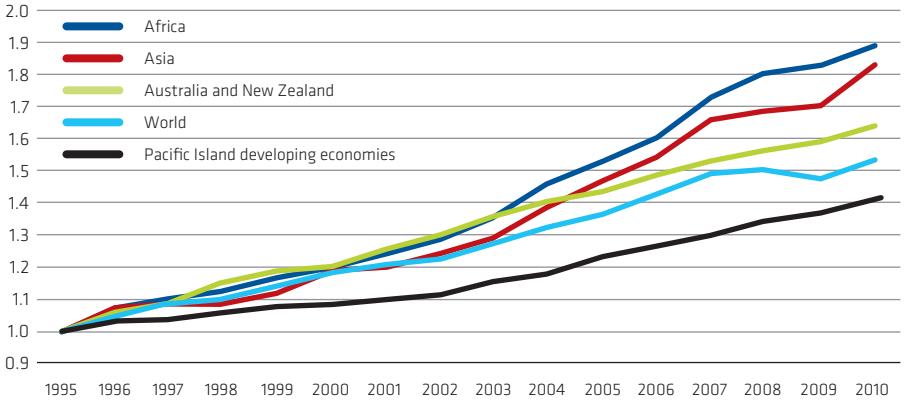
Over the last two decades, economic growth in the Pacific has not kept pace with other developing countries (see Figure 1.5). Overall the aggregate GDP growth of the Pacific island developing countries was 6.5% in 2011 representing an increase from the 4.6% achieved in 2010.[24] However, growth rates are very uneven across Pacific island countries and the aggregate growth is dominated by the resource-rich and biggest country, Papua New Guinea (see figure 1.5). The high growth rates in Papua New Guinea and the Solomon Islands are due mainly to the high demand for and prices of their commodity exports while growth in countries like the Cook Islands, Palau, Samoa and Tonga is dependent on aid, remittances, tourism and construction. In the smaller atoll countries, growth has been driven by Micronesian fisheries licenses, aid, trust fund income and some remittance are the main contributors. Even in the economies experiencing strong economic growth, the growth has not been matched with decent employment opportunities. The Pacific has a current youth bulge, thus the relatively high youth unemployment threatens social stability, especially in urban areas.

In the Pacific, the effects of the 2008-2009 global financial crisis have been acutely felt through declining incomes, higher unemployment, a rising cost of living, and escalating poverty levels.[25] With ongoing global uncertainties and the high prices of oil and food, the economic performance of the Pacific island developing economies as a group is expected to slacken slightly in 2012 though a few countries were projected to make some improvements. [26] However, the downside risk of rising oil prices is expected to be worth as much as a 2 percent point drop in GDP growth rates of the Asia-Pacific region in 2012 and the Pacific with its high dependence on imported fuel and the prohibitive costs of transportation is expected to fare no better. [27]

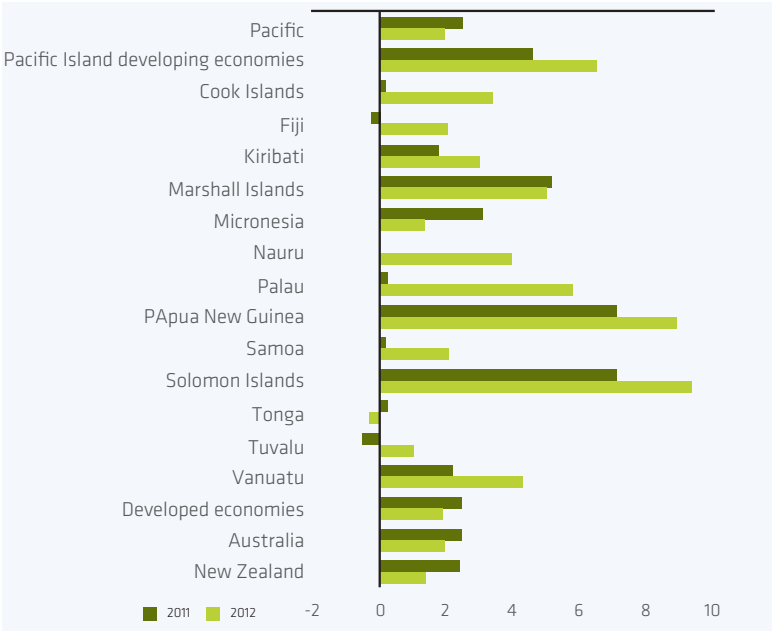
[23] ADB, ESCAP, & UNEP, Green growth resources, and resilience: Environmental Sustainability in Asia and the Pacific, United Nations and Asian Development Bank publication ST/ESCAP/2600, RPT124260, 2012.
[24] ESCAP, Economic and Social Survey for Asia and the Pacific, 2011.
[25] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.
[26] ESCAP, Economic and Social Survey for Asia and the Pacific, 2011.
[27] Ibid.

Figure 1.5 GDP growth in the Pacific

Index of real GDP growth of the Pacific as compared to other regions, 1995-2010 (1995 = 1.0)



GDP growth rates in the Pacific, 2011 and 2012

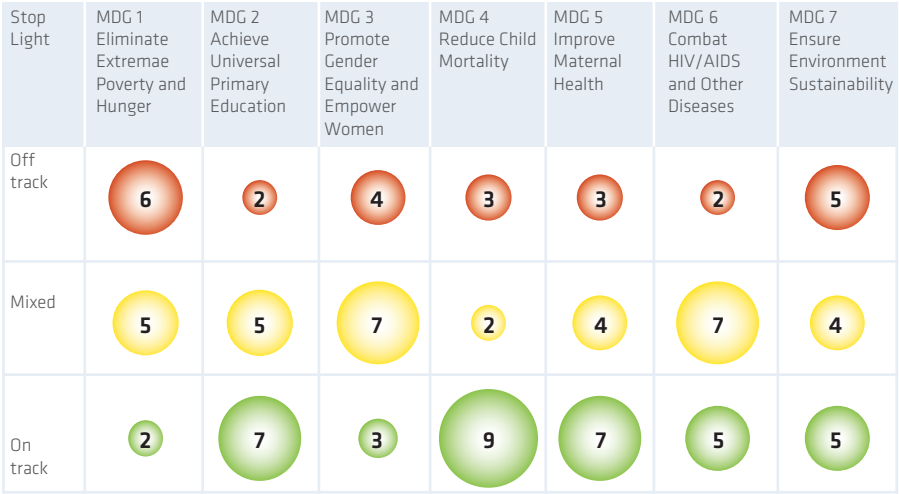


Source: ESCAP, Economic and Social Survey for Asia and the Pacific, 2011 and ESCAP, Statistical Yearbook for Asia and the Pacific, 2011. Available online from: http://www.unescap.org/stat/data/syb2011/index.asp. Original source: United Nations Statistics Division, National Accounts Analysis of Main Aggregates, 2010; online database.

In the Pacific, weak economic growth coupled with the persistent paradox[28] of the per capita resource outlays not producing the expected results has resulted in mixed success in achieving the MDGs (see Figure 1.6). Most Pacific island countries have strengthened their long history of educational provision and have achieved or almost achieved MDG2, universal primary education. There has been a substantial improvement in child health and maternal health (MDG 4 and 5). Additionally, some progress has been made in gender equality (MDG3) and eliminating HIV/ AIDS, tuberculosis and malaria (MDG6). However, most countries in the Pacific are not on-track to meet MDG1, eliminate extreme poverty and hunger. While some countries in the Pacific have recorded a decrease in the poverty rate, many countries have actually experienced an increase.[29]

Abject poverty and starvation are almost unheard of in the Pacific; however, poverty and inequality in Pacific island countries is prevalent. According to the Pacific Island Forum MDG tracking report, there are currently 2,600,000 or a fifth of the total Pacific islands population living in poverty.[30] Around 75 per cent of these reside in resource-rich Papua New Guinea a country which happens to enjoy the highest growth rates of 6-7% in the region.

Figure 1.6 MDG progress in the Pacific



The stop light size represents the number of countries in each category, based on data from 14 countries (Cook Islands, Fiji, Micronesia (Federated States of), Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu). Note that many countries lack baseline data and thus the baseline has been estimated.

Source: Pacific Islands Forum Secretariat, Pacific Regional MDG Tracking Report, Pacific Islands Forum, 2011.

28 The World Bank first mentioned the "Pacific Paradox" in the 1980s to show how a region like the Pacific with the highest aid per capita in the world was not growing as fast or as much, either economically or developmentally.

29 Note that in the Pacific (MDG 1), the absolute poverty line ($1.25 dollars a day) is not typically used to measure poverty; instead the National Basic Needs Poverty Line of each country is the primary measure of poverty. The national line represented the minimum income needed to buy sufficient food and meet basic requirements.

30 Poverty in each Pacific island country is defined by the national basic needs poverty line (BNPL). Figures are from: Pacific Islands Forum Secretariat, 2012 Pacific regional MDGs tracking report. 2012.

Eight countries are unlikely to meet the MDG 1 target of halving poverty by 2015 and only two countries are on-track to meet the target. Similarly, eight countries are not on-track to meet the target of achieving full and productive employment and decent work for all including women and young people by 2015.[31] Inequality as measured in terms of the Gini coefficient (higher value means higher inequality) is also increasing in some Pacific countries (for example, Fiji, Samoa and Tuvalu).[32] As in other regions of the world, some groups are more vulnerable to poverty than others, such as women, youth and children, older persons and persons with disabilities. The Pacific's record on gender, be it women representation in political processes or in violence against women is one of the worst in the world and thus the significance of the recent Pacific Islands Forum decision to highlight the issue.

Renewed geopolitical interest in the Pacific[33]; and the increasing appreciation of the Pacific for its natural resources, has brought an increase in aid-donor and investor interest that may offer an opportunity to stimulate higher growth and redress poverty and inequality in the region. However, there are significant risks as well in not only further widening the development gaps between countries and between groups, but also in favouring intense resource use and financial returns over equitable growth and ecological sustainability. The PIF Leaders have committed to addressing these risks by supporting the principles of inclusive, sustainable development (Principle 15 of the Rio+20 declaration) for the management and development of their resources.

THE GREEN ECONOMY IN A BLUE WORLD

The green economy approach was developed to attempt to minimize the trade-off between economic development and the environment. Although there are different green economy approaches, the Rio+20 Summit Outcome emphasised that a green economy" should contribute to eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems" (para 56). In this respect, green economy policies should promote the needs and wellbeing of both people and the planet. The Rio+20 Summit Outcome also noted that while there are different "approaches, visions, models and tools available to each country to achieve sustainable development, green economy is one of the important tools available for achieving sustainable development".

Unlike the conventional development model where financial and physical capital is seen to be given priority over human and natural capital, the green economy deliberately seeks to invest more in social and environmental outcomes.[34] The reason for seeking a rebalancing of the development equation is that the pursuit of financial gains and economic growth at the expense of the other two dimensions of sustainable development is seen to be the main causes of persisting inequalities and environmental damage and resource depletion. It represents in a way a loss of faith in the trickle-down theory and the "invisible hand" of

[31] Pacific Islands Forum Secretariat, 2012 Pacific regional MDGs tracking report. 2012.
[32] Pacific Islands Forum Secretariat, 2012 Pacific regional MDGs tracking report. 2012.
[33] The US Secretary of State Hilary Clinton attended the 2012 PIF Leaders Meeting. She was the highest US official to ever attracted a PIF meeting.
[34] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.

conventional economics. It is not an argument for stopping or discouraging financial and economic growth; rather it is an argument for the promotion of 'the right kind of growth'.[35]

At a basic level, a green economy tool or policy refer to targeted and integrated investments and policies aimed at directly addressing the challenges of poverty eradication, climate change and the sustainable management and development of oceans. While taking the Rio+20 Summit outcome did not include a prescriptive approach for green economy it did "acknowledge that a mix of measures, including regulatory, voluntary and others applied at the national level and consistent with obligations under international agreements, could promote green economy in the context of sustainable development and poverty eradication" (para 63).

Prior to the Rio+20 meeting, leaders from the Pacific had already expressed support for green economy through a number of political declarations and regional agreements. In 2011, at the Rio+20 Pacific preparatory meeting in June 2011, Pacific leaders expressed for green economy in the context of the Pacific (see Box 1.3). At the ESCAP Commission in 2012, Pacific leaders argued that the special case in the Pacific should be given special consideration by the international community.[36] This consideration was given high-level support through ESCAP resolution 68/1 which formally recognized the special case of Pacific small islands developing States. Earlier on in 2005 and in 2010 the Ministerial Conference on Environment and Development in Asia and the Pacific (MCED-4 and 5) initiatives were supported with the aim of promoting green economy and growth[36].

Box 1.3: Rio+20 Pacific preparatory meeting outcomes

Pacific island countries collectively outlined a broad position on green economy policies through the Rio+20 preparatory processes. Pacific leaders decided that green economy provides an opportunity to create "more economically vibrant, environmentally sustainable, climate change resistant and socially equitable nations and communities. At the Pacific Rio+20 preparatory meeting in 2011, Pacific island Governments agreed on a set of recommendations concerning green economy policies. These include:

- National country analyses to be completed and to form the basis of country-specific strategies for greening economies, building on the solid evidence of challenges and opportunities which face Pacific island countries;
- Enabling policy, legal, regulatory and institutional frameworks including national macro-economic and structural reform policies, as well as law reform;
- Fiscal and Budget Reforms as necessary to achieve a low carbon green economy and sustainable development. They are also required if environmental costs are to be internalized. The reform process should aim to harmonize the imperatives of environmental sustainability, social inclusiveness and economic growth.
- Climate change financing provides a significant opportunity for resourcing the

[35] See Apia Meeting, speech by Samoa PM. See also European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Rio+20: towards the green economy and better governance, 20 June 2011

[36] ESCAP Commission resolution 68/1.

[37] Ministerial Conference on Environment and Development in Asia and the Pacific papers and declarations can be found on online at: http://www.unescap.org/mced6.

climate-resilient and low carbon elements of green economy policies. This requires the engagement of a range of ministries to explore combining these resources with the existing allocations in domestic budgets. A clear articulation of priorities within national policy and systems is required to guide resources effectively and in a sustainable manner. It also requires innovative modalities of access through global funds, and improved donor practice and flexibility through bilateral funding as well as better coordination and articulation of needs across the Pacific region.

- Innovative national financing options and tax incentives are already being implemented in the Pacific and experiences from these different examples should be captured and shared to foster similar approaches in other Pacific island countries.
- National Sustainable Development Strategies, or national development plans, provide the best framework to integrate the opportunities that green economy policies may offer to sustainable development for Pacific island developing countries. It should therefore be retained as the basis for developing and implementing sustainable development policies.

Source: Outcome Document of the Final Rio+20 Pacific Preparatory Meeting, http://www.unescap.org/EPOC/pdf/Outcomes-Document-Final-Rio+20-Pacific-Prep-Meeting.pdf, 2011.

In February 2010 during the Pacific-UN Conference on the Human Face of the Global Economic Crisis[38], it was agreed that the global economic crisis represents "an opportunity to reorient economies to low-carbon development, building greater self-reliance and resilience for the future'". It recommended regional efforts to improve energy management and the conservation of natural resources (especially oceans) and short-term social protection policies such as labour-intensive employment schemes to improve environmental conditions, to promote green jobs and to prepare for greater use of green technologies.

The theme of the 2012 PIF Forum Leaders Meeting "Large Ocean Island States – the Pacific Challenge" is also a good encapsulation of the "green economy in a blue world". The 2012 Pacific Islands Forum Leaders communiqué lists the Rio+20 Summit outcomes that are particularly relevant to the Pacific region: (a) a reaffirmation on the 'special case' for Small Island Developing States; (b) endorsement of the convening of the Third International Conference on Small Island Developing States; (c) recognition of the important roles of oceans and fisheries, and the need for regional and national actions to achieve sustainable development; and (d) the endorsement of the development of a set of Sustainable Development Goals (SDGs). It also tasked the Forum Secretariat, in collaboration with CROP and the UN agencies, to work closely with Forum Island Countries to develop a Pacific position on the post-2015 development agenda and Sustainable Development Goals, and to contribute effectively to the relevant global processes, including the 68th UN General Assembly in September 2013.

[38] Port Vila Conference

1.2. KEY SECTORS IN THE PACIFIC FOR A GREEN ECONOMY APPROACH

The green economy approach in the Pacific is not merely a way to reduce resource-intensiveness or pollution but also a way to achieve resilient, inclusive and sustainable development through enhancing livelihoods and fostering new economic opportunities. The idea of green economy provides a new way to approach sustainable development in the Pacific. By integrating the three pillars of sustainable development into a green economy framework, decision-makers can make policy decisions based on a more complete picture. Greening agriculture and forests, fisheries, energy and tourism has strong potential for development gains in the Pacific.

FEATURES OF A GREEN ECONOMY

Traditional economic development models treat natural resources as similar to any other good and thus their value is directly linked to market supply and demand. Growth strategies are focused on accumulation of physical, financial and human capital, while neglecting the preservation of social and natural capital. This type of development model has resulted in the gross misallocation of capital into economic sectors which has produced skewed outcomes with high ecological costs and escalated social inequality and poverty.[39] Therefore, the goal of achieving a balance among the three interdependent and mutually reinforcing pillars of economic development, social development and environmental protection has been difficult.

In a green economy, the economy and environment are mutually supportive partners not competitors; natural capital has value; and environmental sustainability is necessary for the future. This approach minimizes the trade-off between economic development and the environment and green opportunities are seen as drivers of economic growth[40]. According to the UN Issues Management Group on Green Economy, "a green economy is one whose growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution; enhance energy and resource efficiency; and prevent the loss of biodiversity and ecosystem services"[41].

Green economic policy leads to eco-efficient growth through more sustainable use and management of the natural capital. The main features of a green economy include: (1) preserving and investing in natural capital; (2) improving the efficiency of using natural resources and ecosystem services; (3) strengthening environmental management and promoting environmentally sustainable goods and services; and (4) developing pathways that result in both economic growth and environmental protection[42].

Strategies towards a green economy are not defined by a specific sector but address systems as a whole. Development strategies and policies are typically approached from a

[39] UNEP, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication: A Synthesis for Policy Makers, 2011.
[40] ESCAP, Low Carbon Green Growth Roadmap for Asia and the Pacific: Turning resource constraints and the climate crisis into economic growth opportunities, http://www.unescap.org/esd/environment/lcgg/index.asp, 2012.
[41] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.
[42] ESCAP, Low Carbon Green Growth Roadmap for Asia and the Pacific: Turning resource constraints and the climate crisis into economic growth opportunities, http://www.unescap.org/esd/environment/lcgg/index.asp, 2012.

national perspective; however, Pacific islands are surrounded by "a blue world" and the biotic boundaries do not correspond with national boundaries. The ecosystem services[43] available to Pacific islands countries extend beyond provisioning services (food, water, timber, etc.) to include also cultural services (i.e. spiritual, recreational and tourism benefits) and other supporting services[44]. Therefore the concept of green economy in the Pacific cannot only be considered from a purely national perspective. Coordinated regional and global agreements should complement the national policies to ensure the preservation and sustainable utilization of the shared marine and coastal ecosystems in the Pacific.[45]

The green economy has been criticised for not systematically supporting social outcomes given its primary focus on the economic and environmental nexus of sustainable development. The green economy approach is one of the important tools for supporting sustainable development. As noted by the UN Issues Management Group on Green Economy, "with sustainable development as an overall or end goal, the green economy represents an attempt to mobilize more action-oriented, mainstream and bottom-up pathways to sustainable development[46]." The exact nature of green economy policies will depend very much on the context and circumstances faced at the national and local levels. According to the OECD, "the mix of public policies for a green economy will differ across countries based on their specific socio-economic conditions, institutional settings, resource endowments and environment pressure points"[47].

GREENING ECONOMIC ACTIVITIES IN THE PACIFIC

Greening of industrialised or large developing countries often focuses on reducing CO2 emissions and waste. The need for greening through reducing emissions and waste is not as obvious in the Pacific. In 2010, Pacific island countries only produced 0.03 per cent of global CO2 emissions thus eliminating all CO2 emissions in the Pacific would have virtually no effect on the global level of emissions. Even though some Pacific countries have relatively high per capita emissions, because populations are small the contribution to global emissions is minimal.

Although Pacific economies are already relatively 'green' in terms of carbon emissions and usage, there is still considerable scope for green economic policies in the context of preserving natural capital, improving resource efficiency and providing opportunities for poverty reduction through sustainable growth and decreased vulnerability to variability in resource prices.[48]

In the Pacific, green economy has strong potential to improve the resource efficiency, minimize environmental impact and result in economic growth in the agriculture and forestry; fisheries, energy and tourism sectors. Green economy policies challenge policy and decision-makers to look beyond short-term revenues and focus on environmental sustainability and community livelihoods in the long term.

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43 Ecosystem services are defined as the benefits people obtain from ecosystems.

44 World Resources Institute, Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis, http://www.millenniumassessment.org/documents/document.356.aspx.pdf, 2005.

45 ESCAP, ADB and UNEP, Green growth resources, and resilience: Environmental Sustainability in Asia and the Pacific, 2012.

46 UNEMG Website, Working towards a Balanced and Inclusive Green Economy: A United Nations System-wide Perspective, http://www.unemg.org/MeetingsDocuments/IssueManagementGroups/GreenEconomy/GreenEconomyreport/tabid/79175/Default.aspx, 2011.

47 OECD, Towards Green Growth, http://www.oecd.org/dataoecd/37/34/48224539.pdf, 2011.

48 ESCAP, Low Carbon Green Growth Roadmap for Asia and the Pacific: Turning resource constraints and the climate crisis into economic growth opportunities, http://www.unescap.org/esd/environment/lcgg/index.asp, 2012.

Agriculture and Forestry

Agriculture is a major source of income and employment and is one of the key sectors relevant for a transition to a green economy.[49] The rising demand for food, due to rising populations, and declining availability of arable land has put pressure on agricultural systems. Both commercial and subsistence agricultural systems have drawbacks – conventional commercial agriculture is highly energy and input intensive and often relies on extensive use of environment damaging chemical fertilizers, herbicides, and pesticides; while subsistence farming is usually small-scale with low-productivity.

Greening agriculture requires increasing the efficient use of inputs (water, energy, fertilizers, etc.); identifying ways for creating opportunities for individual farms to work together to see gains in economies of scale; reducing waste and environment impact; and developing practices that are sustainable in the long run. In many cases, greening agriculture can boost efficiency with little time or monetary investment, for example, building inexpensive food storage facilities can reduce crops lost to pests and natural hazards. Evaluating local farming techniques can often reveal ways to increase efficiency and decrease waste in the production, storage, distribution and marketing of agricultural products which can in turn provide increased income and food security for the rural poor with very little investment. Research and capacity building in the areas of soil fertility management; efficient and sustainable water use; crop and livestock diversification; and improving market access for smallholder farmers and cooperatives can result in a systemic shift toward greener agricultural practices over time[50]. In the Pacific, transforming agricultural systems is over the long-run is also

Figure 1.7 Land tenure in the Pacific

	Public	Freehold	Customary
Cook Islands	Some	Little	95%
East Timor	Some	Some	Most
Fiji	4%	8%	88%
Kiribati	50%	<5%	>45%
Marshall Islands	<1%	0%	>99%
Micronesia (Federated States of)	35%	<1%	65%
Nauru	<10%	0%	>90%
Niue	1.50%	0%	98.50%
Palau	Most	Some	Some
Papua New Guinea	2.50%	0.50%	97%
Samoa	15%	4%	81%
Solomon Islands	8%	5%	87%
Tokelau	1%	1%	98%
Tonga	100%	0%	0%
Tuvalu	5%	<0.1%	95%
Vanuatu	2%	0%	98%

The table shows the percentage of public, freehold or customary land in Pacific island countries. Note that public land includes land owned by government at any level.

Source: Australian Agency for International Development, Making Land Work: Volume One: Reconciling Customary Land and Development in the Pacific (Canberra, 2008), Available from www.ausaid.gov.au/Publications/Documents/MLW_VolumeOne_Bookmarked.pdf.

[49] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.

[50] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.

constrained by land tenure systems which restrict land ownership and thus negatively affect investment (see Figure 1.7).

Case studies in Asia have revealed that improving the efficiency of agriculture can result in a win-win-win scenario: a decrease in the need for inputs results in lower production costs; sustainable practices have less environmental impact and can increase the quality and value of the product; and switching to community-based, minimal agrochemical agriculture provides employment opportunities and improved farmer health. [51]

Political support is vital for shifting to greener agriculture. Policymakers can reduce barriers to investing in natural capital by providing individuals with options for securing long-term land tenure. Governments and other entities can also support sustainable farming: through public procurement of sustainable agricultural products for government-sponsored food programmes; by providing payments for ecosystem services (PES) as a way to incentivize sustainable farming practices; by building public awareness of local, sustainable or organic food in order to increase consumer demand for it; and by providing easier access to credit for sustainable farms (see Box 1.4).

Box 1.4 Green Agriculture Opportunity Example: Vanuatu Organic Cocoa

Vanuatu has one of the oldest cocoa industries in the South Pacific with production generally between 1,000 to 1,200 tons every year. To take advantage of the emerging organic cocoa market, local farmers formed the Vanuatu Organic Cocoa Grower's Association (VOCGA), as an umbrella apex market cooperative with 10 primary cooperatives. The VOCCA supplies organically certified dry cocoa beans at premium prices to the French chocolate manufacturing company KAOKA.

VOCGA shareholders consist of 1,205 village based small holders who strictly adhere to the organic standards (Bio Equitable) of a certifying agency (ECOCERT). The average number of cocoa trees per shareholders is about 1,100 trees, representing about 1 hectare of cocoa. The members have no cash expenditure in producing wet beans as the branch managers collect and distribute seeds, no fertilizers are used, and apart from bush knives and harvesting hooks, household labour is the only input. In terms of returns to small holders, VOCGA members growing 2000 trees on 2 hectares earned more than double non-members (2,500 vatu per day as compared to 1,100 vatu per day if the farmers produced their own dried beans and sold it to other suppliers).

The 10 cooperatives of VOCGA ferment and process the cocoa locally in one of 25 processing facilities, which creates additional income and employment opportunities. Each facility has its own management committee and purchases wet beans from the 1205 individual VOCGA shareholder members. Dried beans are then sold to VOCGA apex based on agreed pricing

[51] ADB, ESCAP, and UNEP, Green Growth, Resources and Resilience: Environmental Sustainability in Asia and the Pacific (ST/ESCAP/2600 (RPT124260), Bangkok, 2012.

formulas and grading standards. The contractual formula is linked to the world market price, with mechanisms that ensure a minimum price in case the world market price falls below vatu 1700/kg – this translates into good pricing being received by each VOCGA processing unit. For instance, in 2007, the market value of cocoa fell and the average price received throughout Vanuatu was 181,041 vatu/tonne; however, VOCGA units received 218,000 vatu/tonne due to the negotiated pricing contract.

To keep the ECOCERT certification active, all VOCGA members must comply with strict laws pertaining to labour issues; avoid the use of harmful chemicals; protect the landscape, soil and biodiversity; and undergo extensive supervision. The costs for compliance, supervision, technical support, and guidance are met by KAOKA. Besides the obvious advantage to the environment and as well as the higher incomes for village smallholders, participation in VOCGA has also provided rural youth exposure to management—the Board of Directors of VOCGA and the primary cooperatives are predominantly youth in their twenties.

Note: The 23 February 2012 vatu 10,000,000 was equal to $113,250.28.
Source: FAO, The Vanuatu Organic Cocoa Growers Association (VOCGA): A Case Study of Agriculture for Growth in the Pacific, http://www.faopacific.ws/Portals/167/publications/AG%20for%20Growth%20Reports/VOOCGA%20Final.pdf, 2009.

Closely related to greening of agriculture, greening of forestry is a key element of moving toward a green economy. In addition to providing income through tangible products such as timber, forests safeguard biodiversity, regulate carbon storage, and protect watersheds.

In the forestry sector, unregulated and illegal logging, and the conversion of natural forest into commercial land for agriculture and livestock has depleted much of the primary forest area in the Pacific. Primary forest in the Pacific declined at an average rate of 1.3 per cent per annum between 2005 and 2010.[52] Both total and primary forest area in the Pacific declined at an average annual rate that was roughly four times the global average between 2000 and 2010 (see Figure 1.8). In a green economy, land management decisions should be based on the environmental and social costs of deforestation along with the economic benefits. Effective regulations that recognize forests as having ecological value for carbon storage, biodiversity and water conservation are vital for reducing this trend.[53] Policy makers can further support forest governance systems through providing appropriate rights for local stakeholders. Additionally, international arrangements like REDD+[54] can attract investment for sustainable forestry projects.

52 ESCAP. Statistical Yearbook of Asia and the Pacific 2011, 2011
53 Recommendations for a more stringent policy and regulatory framework for the mining and minerals sector are outlined in ESCAP (MSI+5) p87.
54 Reducing Emissions from Deforestation and Forest Degradation (REDD) is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. "REDD+" goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks; http://www.un-redd.org/AboutREDD/tabid/582/Default.aspx

Figure 1.8 Forest area in Pacific islands

	Total forest area								Primary forest				
	km2			% of land area			Average % change per annum in area		% of total forest area			Average % change per annum in area	
	1990	2000	2010	1990	2000	2010	90-00	00-10	1990	2000	2010	90-00	00-10
Pacific islands	365,141	351,857	338,060	67.5	65.1	62.5	-0.37	-0.40	93.5	92.0	85.6	-0.56	-1.09
American Samoa	184	181	180	92.0	90.3	90.0	-0.19	-0.03					
Cook Islands	149	155	160	62.1	64.6	66.7	0.40	0.32					
Fiji	9,529	9,804	10,140	52.2	53.7	55.5	0.29	0.34	51.4	45.4	44.3	-0.96	0.09
French Polynesia	550	1,050	1,550	15.0	28.7	42.3	6.68	3.97			25.8		
Guam	259	259	260	47.9	47.9	48.1	0.00	0.05					
Kiribati	122	122	120	15.0	15.0	14.8	0.00	-0.12					
Marshall Islands	126	126	130	70.0	70.2	72.2	0.03	0.28	63.5	63.3	61.5	0.00	0.00
Micronesia (F.S.)	637	639	640	91.0	91.2	91.4	0.03	0.02	62.8	68.9	75.0	0.96	0.87
New Caledonia	8,390	8,390	8,390	45.9	45.9	45.9	0.00	0.00	51.4	51.4	51.4	0.00	0.00
Niue	206	196	190	79.2	75.4	73.1	-0.50	-0.31			31.6		
Northern Mariana Islands	340	320	300	73.9	69.5	65.2	-0.62	-0.63	29.4	28.2	26.7	-1.05	-1.17
Palau	380	396	400	82.6	86.1	87.0	0.41	0.10					
Papua New Guinea	315,230	301,330	287,260	69.6	66.5	63.4	-0.45	-0.48	99.4	98.0	91.2	-0.59	-1.19
Samoa	1,300	1,710	1,710	45.9	60.4	60.4	2.78	0.00					
Solomon Islands	23,240	22,680	22,130	83.0	81.0	79.1	-0.24	-0.25	47.5	48.7	49.9	0.00	0.00
Tonga	90	90	90	12.5	12.5	12.5	0.00	0.00	44.4	44.4	44.4	0.00	0.00
Tuvalu	10	10	10	33.3	33.3	33.3	0.00	0.00					
Vanuatu	4,400	4,400	4,400	36.1	36.1	36.1	0.00	0.00					
Asia and the Pacific	15,803,099	15,741,490	15,892,390	30.4	30.3	30.6	-0.04	0.10	27.6	28.7	25.4	0.35	-0.03
World	41,683,990	40,845,726	40,330,638	31.7	31.0	30.7	-0.20	-0.13	33.7	34.1	33.7	-0.09	-0.25

Source: ESCAP, Statistical Yearbook for Asia and the Pacific, http://www.unescap.org/stat/data/syb2011/index.asp, Original source: FAO Global Forest Resources Assessment, 2012.

Fisheries

Globally, fisheries provide animal protein and food security to over 1 billion people.[55] Inshore and coastal subsistence fisheries traditionally provide sources of food and livelihood for many Pacific islanders; however, little has been done to protect this natural capital.[56] According to a World Bank study in 2000, the annual cost of overfishing to the subsistence sector of five Pacific island countries was estimated to be around $67 million (the cost of importing the protein equivalent from subsistence fishing). [57]

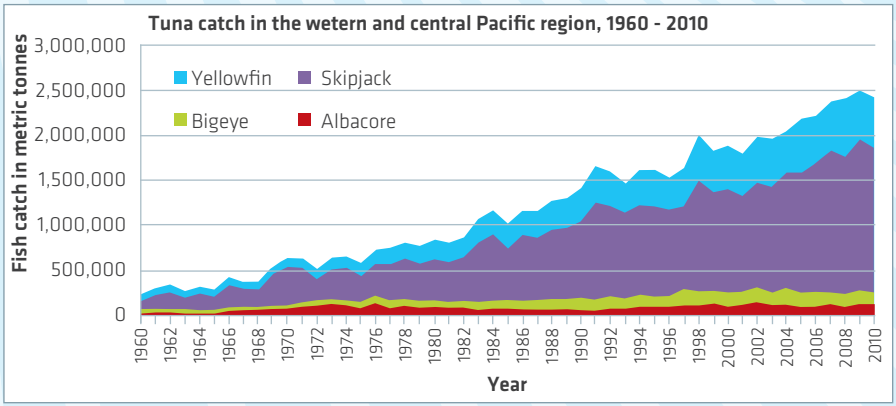
Additionally, offshore fish stocks are threatened by overfishing, marine pollution and loss of habitat due to climate change and other factors. Of all commercial fish stocks, slightly over half of all stocks are "fully exploited", 19 per cent are "overexploited", and 8 per cent are "depleted"[58]. In the Pacific, tuna fishing is a key source of employment, income and food; however, tuna stocks are reaching overexploitation (see Box 1.5).

[55] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.
[56] Vina R. Bidesi, How 'the other half' fishes: Accounting for women in fisheries in the Pacific, in Atu Emberson-Bain, Sustainable Development or Malignant Growth? Perspectives of Pacific Island Women, 1994.
[57] World Bank, Cities, Seas and Storms- Managing Change in Pacific Island Economies: Vol. 3: Managing the use of the ocean, Washington, D.C., Papua New Guinea and Pacific Islands Country Unit, 2010.
[58] FAO, The State of World Fisheries and Aquaculture 2008, 2009

Box 1.5 – Sustainable Tuna Fisheries Management in the Western and Central Pacific

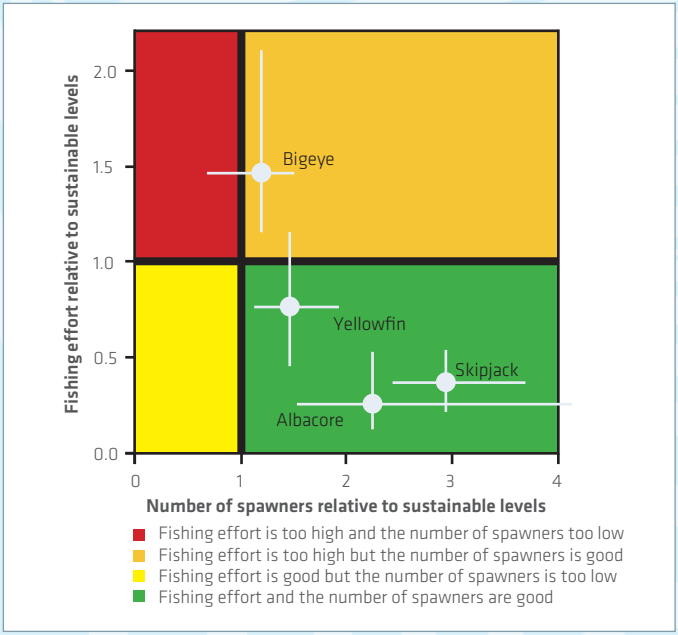
The Pacific is the world's largest source of tuna. The tuna fisheries sector provides a source of income, employment and food security for people living across the Pacific islands. However, if the tuna industry is not sustainably managed, future generations may not be able to recognize these benefits.

According to the 2010 Tuna Fisheries Stock Assessment report published by the Secretariat of the Pacific Community (SPC), the annual tuna catch in the Pacific has more than doubled over the last three decades; and while tuna are not currently threatened, the current fishing levels are too high for some species.



To ensure that tuna fisheries are sustainable, SPC recommends that Pacific countries work to: (1) Decrease the fishing of bigeye by at least 32 per cent; (2) Maintain current levels of yellowfin fishing in the western equatorial Pacific; and (3) Consider developing limits on skipjack fishing. Following these recommendations will help ensure the sustainability of tuna fisheries in the future.

Box 1.5 – Sustainable Tuna Fisheries Management in the Western and Central Pacific (continued...)



Source: This text box is based on the results and data presented in:
(a) Harley, Shelton; Williams, Peter; Nicol, Simon and Hampton, John. The western and central Pacific tuna fishery: 2010 overview and status of stocks, Secretariat of the Pacific Community, Noumea, New Caledonia, 2011, Available from: www.spc.int/oceanfish/;
(b) Secretariat of the Pacific Community, Policy brief 14/2012, Available from: www.spc.int/DigitalLibrary/Doc/FAME/Brochures/Policy_Brief14_12.pdf.

As marine resources are shared, transforming the fisheries sector will be most effective if they are developed collectively by countries. One way policy makers can support sustainable fishing is by reducing subsidies to unsustainable practices – according to UNEP estimates, in 2010, there were $19 billion in subsidies that promoted overfishing. [59] In this respect, Pacific leaders have called for "the removal of maritime subsidies that harm the environment and deplete resources, particularly vessel and fuel subsidies that encourage distant water fishing."[60] Other policy tools may include regulations that limit the total catch or the number of boats that are given licences to fish commercially. Policy makers can also encourage private enterprises to use environmentally friendly fishing equipment through increasing the demand for sustainably caught fish and by providing access to financing for green equipment purchases.

[59] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.
[60] PSIDS, Draft Options Paper – delivering on the 'Blue Economy' at Rio+20, 2011.

At the community-level, "green" fisheries management techniques have been practiced in the Pacific for generations and can be further encouraged. For example, in Fiji, there are a number of locally managed marine areas which ensure sustainable resource management in local areas (see Box 1.6). The Coral Triangle Initiative also demonstrates the commitment of Pacific people to protect fisheries. Other regional fisheries initiatives include the work of the Forum Fisheries Agency,[61] an advisory body providing expertise, technical assistance and other support to its members who make sovereign decisions about their tuna resources and participate in regional decision making on tuna management; the Western and Central Pacific Fisheries Convention (WCPFC),[62] an international fisheries agreement that seeks to ensure, through effective management, the long-term conservation and sustainable use of highly migratory fish stocks (i.e. tunas, billfish, marlin) in the western and central Pacific Ocean; and Parties to the Nauru Agreement,[63] which brings together eight Pacific island countries to sustainably manage tuna.

Box 1.6 – Local resource management – locally managed marine areas (LMMA)

A combination of increased commercial fishing and local subsistence harvesting has resulted in Pacific coastal waters being overfished. The decreasing fish populations have increased the food security pressure of people living in rural, coastal areas.

In this context, locally managed marine areas (LMMA) have emerged as local resource management systems that incorporate local cultural values with modern techniques of monitoring the sustainability of natural resource consumption. This method is rooted in long practiced Pacific traditions of preserving food sources, such as seasonal bans and "no-take" areas. For example, Fiji's long-established marine tenure system consists of fishing grounds, qoliqolis, which are under the control of the communities adjacent to them. They have restricted the volume of harvest, limited the types of fishing practices, and imposed a tabu (prohibition or moratorium) on certain species for a stipulated time.

The Ucunivanua village in Fiji provides an example of the benefits of LMMAs to the local communities. In the early 1990s, Ucunivanua village elders realized that the marine resources they depended on were becoming scarce, for example, collection of kaikoso clams, a staple food and an important source of income, went from taking a few hours for several bags of large clams to taking an entire day for a half-bag of small clams. Residents of the village collaborated with the University of the South Pacific (USP) to address this issue. USP provided the villagers with basic environmental education and community planning training, and helped the village set up a 24 hectare tabu area in front of the village. The village chose a group of 20 men and women to be on the tabu area management team. These men and women were taught basic monitoring techniques, such as sampling clam populations; recording and analysing results; and developing baseline measures of clam populations in the tabu area. Since the inception of the tabu, clam populations have increased more than 100 per cent in both the tabu and adjacent harvest areas, according to monitoring data collected by the tabu area management team.

[61] Pacific Islands Forum Fisheries Agency Webpage, http://www.ffa.int/about.
[62] Western and Central Pacific Fisheries Commission Webpage, http://www.wcpfc.int/about-wcpfc.
[63] Nauru Agreement Webpage, www.ffa.int/nauru_agreement.

The success of Ucunivanua resulted in other villages employing similar community based resource management techniques and achieving positive outcomes. As this trend accelerated, a Fiji LMMA Network was established. This network has become a forum where communities with LMMA projects can share methods and results; good-practices and lessons learned; and present results to policy makers of the Fijian government. As a result, the government formally adopted the LMMA approach and designated a division within the Fisheries Department to work with LMMA managers.

One key LMMA feature is that the local community makes all decisions regarding resource use. Ucunivanua and other villages have been able to generate income through commercial sale of their harvest, licensing fishing permits, and charging hotels for use of marine resources such as diving in a tabu site. This demonstrates that ecosystem management can not only promote sustainable resource but can also broaden the sources of income and employment for communities.

Source: Bill Aalbersberg, http://www.wri.org/publication/content/8089.

Renewable Energy

Pacific Leaders have recognised the 'crippling effect' of heavy reliance on imported fuels.[64] This dependence is directly linked with the depth of the impact of the global fuel crisis and the accompanying inflationary pressure.[65] Many Pacific Governments have had to meet price shortfalls through subsidies in order to mitigate the effects of fuel prices. Reducing dependence on fossil fuel through improving energy efficiency and adoption of alternate energy sources will help protect development from fluctuation in global energy prices. Additionally, expansion of renewable energy sources could translate to economic opportunity and job creation in the Pacific. In Papua New Guinea one community has already seen job creation in the area of bio-fuel generation (see Box 1.9). Not surprisingly, moving away from imported fossil fuel has become a priority for many Pacific countries. [66]

Renewable energy and energy efficient technology markets have become more mature and competitive, and thus have become more cost-effective, flexible, and suitable for small-scale deployment.[67] These technological options provide the opportunity to increase energy access and security in the Pacific, especially in rural areas and outlying islands; for example, many homes throughout the Pacific now have solar water heaters. Some of the countries in the Pacific have already made commitments to renewable energy targets. The Cook Islands intend to produce 50 per cent of electricity from renewable energy sources by 2015 and 100 per cent by 2020. Nauru and Tonga aim to generate 50 per cent of electricity through renewables by 2015 and 2012, respectively.[68,69] Tuvalu aims to have 100 per cent of energy generated through renewable sources by 2015.[70]

64 Port Vila Outcome Statement (E/ESCAP/66/1), 9 Feb 2010.
65 ESCAP (MSI+5) p34 para 3.2. According to estimates in the MSI+5 Review, imports in the region use up an average 14-20% of foreign exchange earnings.
66 Resources for Transforming Economies, including through Climate Financing, Rio+20 Pacific Preparatory Meeting, Apia, 21-22 July 2011.
67 UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.
68 Nauru, National Sustainable Development Strategy 2005-2025, 2009, p. 83.
69 Tonga, A Ten Year Road Map to Reduce Tonga's Vulnerability to Oil Price Shocks and to Achieve an Increase in Quality Access to Modern Energy Services in an Environmentally Sustainable Manner, June 2010, p. xi.
70 Tuvalu, Tuvalu Experiences and Level of Interest in Appliance Standards and Labeling, Planning Workshop for Pacific Appliance Labelling and Standards (PALS) Program, SPC Headquarters, Noumea, New Caledonia, 5-6 December 2011, p. 1.

Shifting energy consumption and use in the Pacific will not occur overnight and will likely require policy support which enables businesses to move towards renewables and energy efficient technologies. Direct subsidies, tax credits, easy access to credit and phasing out subsidies to fossil fuels can create incentives for businesses and consumers to switch towards greener energy sources. For example, Fiji now requires commercial banks to hold 2 per cent of their deposits and similar liabilities in loans to the renewable energy sector. Technology transfers from development partners and greater financing options for renewable energy, such as the Clean Development Mechanism (CDM), can also encourage greening of the energy sector.

Tourism

Globally, the tourism industry is valued at $1 trillion a year, accounting for about 30 per cent of the world's export of commercial service[71] . Tourism is a very important sector for many countries in the Pacific, and has the potential to be a key source of income for several others (see Figure 1.9). Notably, tourism is more than half of GDP for the Cook Islands and Palau.

Figure 1.9 Inbound tourism in Pacific island countries

	Inbound tourism expenditure						Inbound tourist		
	Million USD			% of GDP			Arrivals in thousands		
	1990	2000	2009*	1990	2000	2009*	1990	2000	2010*
American Samoa	10						26	44	
Cook Islands	16	36	105 (08)	27.3	44.6	51.6 (08)	34	73	102
Fiji	202	189	422	15.0	11.0	13.8	279	294	632
French Polynesia	171		438	7.4		9.7	132	252	154
Guam	936						780	1,287	1,196
Kiribati	1	3	3	2.4	4.0	2.1	3	5	5
Marshall Islands							5	5	5 (09)
Micronesia (F.S.)								20	26 (08)
New Caledonia	94	111	141	3.7	3.3	1.5	87	110	99
Niue			2				1	2	6
Palau		53	99 (07)		44.2	58.4 (07)	33	58	84 (09)
Papua New Guinea	41	21	1	1.2	0.6	0.0	41	58	147
Samoa	20	41	116	17.9	17.7	22.2	48	88	129
Solomon Islands	7	4	4	3.4	1.1	0.6	9	5	19 (09)
Tonga	9	7	16	7.7	3.7	4.6	21	35	45
Tuvalu							1	1	2
Vanuatu	39	56	119 (07)	21.8	19.9	21.9 (07)	35	58	97

* If 2009 or 2010 data was not available, then data from one-year or two-years prior is displayed in the table. In these cases the year is displayed in parentheses.

Source: ESCAP, Statistical Yearbook for Asia and the Pacific, 2011 United Nations publication, Sales No. E.11.II.F.1 (Bangkok, 2012). Available from: www.unescap.org/stat/data/syb2011/index.asp. Original source: UNWTO Factbook.

[71] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.

Tourism offers high potential for revenue generation and employment; however, it can also have a negative impact on the environment. Traditionally tourism involves a high use of water, energy and other resources: transporting people; providing accommodation; demanding additional energy for heating, cooling, lighting, and electricity (as compared to residential energy consumption); maintaining pools, golf courses and facilities; excess waste disposal; etc. Large scale tourism also poses challenges to biodiversity by inappropriate dumping of sewage or runoffs from building in natural habitats, and destruction of mangroves. Unplanned and poorly managed tourism activities can disrupt indigenous communities and have detrimental effects on cultural heritage.

Specific impacts of tourism have included: the alienation of large tracts of land for resort and hotel construction, infrastructure and golf courses; coastal pollution from hotel/resort wastewater discharge and sewage; marine pollution from motorised vehicles and ships; excessive ground water extraction and the large-scale diversion of freshwater sources from local use to resorts (and golf courses) resulting in declining domestic water quality and access; damage to coral reefs and lagoons from the construction of infrastructure (i.e. marinas and harbours) and recreational tourist activities (i.e. diving); and dredging of mangrove ecosystems with the resultant loss of biodiversity, subsistence fish stocks, and disaster protection due to coastal erosion.[72] An example of this destruction is the Denarau luxury resort in Fiji, where 130 hectares of mangrove forest were destroyed to make way for an 18-hole golf course and an artificial marina.[73] In addition to the environmental damages of tourism, resorts and hotels on small islands face exorbitant fuel bills as a result of heavy dependence on imported diesel[74] thus renewable energy systems and improved energy efficiency have the potential to produce immediate and substantial economic and environmental benefits.

In the Pacific, greening tourism has the potential to reduce ecological damage and disruptive social and cultural impacts associated with traditional tourism. The negative effects of traditional tourism are of increasing concern to consumers and the demand for green or sustainable tourism has been growing rapidly. Based on a UNEP study, more than a third of tourists are found to favour environmentally-friendly tourism and are willing to pay higher prices[75]. Tourism in a green economy would include activities that can be "maintained, or sustained indefinitely in their social, economic, cultural, and environmental contexts: sustainable tourism"[76]. A shift in tourism practices could help the Pacific benefit from the growing global demand for eco-tourism destinations. International certification programmes, such as Green Globe, provide a valuable framework for tourism businesses to be recognized for their green practices and provide information on how to become green; for example, using local produce, clean energy, and eco-waste management. Some smaller-scale, community-based eco-tourism businesses have already begun operating in the Pacific. [77]

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[72] C. Michael Hall, Trends in ocean and coastal tourism: the end of the last frontier, in Ocean and Coastal Management, 44, p.607-608, 2001.
[73] Ibid.
[74] In Fiji, for example, resort and hotel fuel (electricity) bills comprise more than 50 per cent of total costs. See WWF and Tourism: Towards a Sustainable Future, paper presented to the Rio+20 Pacific Preparatory Meeting, Apia, Samoa, 21-22 July 2011.
[75] UNEP, Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication, http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf, 2011.
[76] Ibid. pp. 416
[77] ESCAP, Pacific Green Growth Framework Partnership: Interim Report, Sept 2010.

Sustainable management of the tourism sector is vital. If the tourism sector is not sustainably managed, the wastes generated by tourism may not only threaten future tourism opportunities but also the livelihoods of the people in the Pacific that depend on marine habitats for food and income.

Another benefit of sustainable tourism is the potential to localize jobs which will in turn reduce poverty and inequality in the Pacific. For example, local sourcing of food and equipment could increase employment opportunities in the agricultural and industrial sector, and promoting natural and cultural tourism activities can decrease the environmental impact of tourism while at the same time increasing cultural employment opportunities. Investments in energy efficiency and renewable sources of energy could create jobs and reduce dependency on imported fuel and decrease the cost of energy, water, and waste management over the long run.

Shifting toward sustainable tourism is dependent on convincing businesses of the benefits. Governments could incentivize sustainable tourism through a number of tools. For example, easier access to credit, tax relief, or time-bound subsidies to private businesses to cover the initial capital needed to invest in green technologies, such as equipment that reduces waste or improves energy efficiency. Governments can also discourage harmful tourism with zoning laws, protected areas, and regulations on water, waste and emissions. Generating awareness related to the increasing demand for sustainable tourism and the higher revenues associated with sustainable tourism activities could result in voluntary shifts in tourism practices.

1.3. ENABLING CONDITIONS

Natural resources are essential for life. Although global recognition of the importance of protecting natural capital is increasing, much environmental damage and depletion has already occurred. In the Pacific, land and marine-based pollution; overexploitation of natural resources; invasive species; and increasingly frequent natural disasters and climate change have resulted in extensive environmental degradation and loss of biodiversity. However, transformation towards a green economy is unlikely to occur based only on public recognition of the importance of the environment. There is no 'one size fits all' approach to green economy. A green economy requires local strategies with locally relevant policies that are based on the terrestrial and marine environment; cultural and social traditions; and other contextual factors. In many cases greening can occur with little to no investment; however, to fully succeed will require financial investment; political commitment; and a socially inclusive and participatory process.

INSTITUTIONAL FRAMEWORKS

To enable a transition to a green economy, developing effective and well-coordinated policy, institutional, regulatory and legal frameworks are critical. As previously noted, "A shift towards green growth requires a fundamental system change, restructuring both the visible (physical infrastructure) as well as the invisible structure of the economy (market prices,

fiscal policies, institutions, governance and lifestyles)"[78] .
At the international level including in the Pacific, Governments have recognised the need for strengthening institutional frameworks for sustainable development[79]. However, strengthening policy, institutional, regulatory and legal frameworks is very challenging and requires political commitment and collaboration across government offices. Many countries in the Pacific have highly complex frameworks covering the topic of sustainable development therefore ensuring national and sub-national level coordination is challenging. For example, a national assessment of the Tonga sustainable development institutional framework revealed that the effective use of the legislation is challenged by: the lack of implementation and enforcement, unclear management roles, weak coordination, lack of capacity for effective enforcement of legislation, need for institutional strengthening, overlapping and duplication of functions, overlapping jurisdiction and insufficient monitoring and enforcement (see Section 3 for additional details on the Tonga assessment and other specific challenges faced by countries).

There have been many initiatives at national and regional levels to implement policies in social, environmental and economic areas, but few have taken a comprehensive sustainable development approach to diagnosing and solving problems. For sustainable development to occur, the 'right balance' between the economic, social and environmental pillars is necessary. A piecemeal approach which addresses economic, social and environmental issues separately may not translate into inclusive, sustainable development. Developing and implementing a coordinated set of national policies in the social, environmental and economic spheres is a challenging task.

National sustainable development strategies (NSDS) have the most potential in developing and implementing sustainable development policies at the national level[80] (see Box 1.7). A NSDS should comprise, "A co-ordinated set of participatory and continuously improving processes of analysis, debate, capacity-strengthening, planning and investment, which seeks to integrate the short and long term economic, social and environmental objectives of society – through mutually supportive approaches wherever possible –and manages trade-offs where this is not possible."[81]

Green economy policies at the national level should be incorporated into existing sustainable development frameworks, not pursued through a separate framework. NSDS provide the best option for integrating green economy in development planning, and all Pacific Island developing states have a NSDS which covers the three pillars of development.

Although the NSDS aims to bring together relevant stakeholders in a participatory and consultative process, the coordination across government ministries and other stakeholders is a major challenge. Additionally, in some cases, policy and legal frameworks and even

78 ESCAP, Pacific Green Growth Framework Partnership: Interim Report, Sept 2010.
79 The Rio+20 Summit recognized the importance of institutional frameworks for sustainable development.
80 This has been reinforced through the Barbados Programme of Action and Mauritius Strategy for its implementation and through the Pacific Islands Forum Pacific Plan
81 OECD, The DAC Guidelines: Strategies for Sustainable Development, http://www.oecd.org/environment/environmentanddevelopment/2669958.pdf, 2001.

national level plans are driven by pressure from development partners and international conventions and agreements rather than national priorities. New requirements to develop climate change adaptation strategies in order to receive financing may add additional pressure on Pacific nations. Mainstreaming multilateral agreements and international commitments into development plans is a challenge that requires careful consideration.
Budget allocation and implementation of the NSDS often pose difficulties. NSDS implementation plans include achievable and measurable targets. NSDS implementation planning requires integration of regional, national and sectoral plans. For some countries, managing the successful implementation of the existing NSDS plan may have more value than introducing new policies, plans or institutional initiatives. Thus the transition to a green economy should be appropriately sequenced in the context and priorities for each country.

Green economy policies require consideration of the environment in economic decision making and economic governance. This implies close collaboration between finance and planning entities, economic ministries, environment departments or ministries and other central and line ministries such as education, health and foreign affairs. According to the OECD "in most countries new institutional arrangements will need to be established to guide the development of green growth strategies and to overcome the institutional inertia and silos that exist around economic and environment policy making".[82] While some countries in the Pacific (such as Palau and the Federated States of Micronesia) have established inter-ministerial 'Sustainable Development Committees', the challenge for these is to function as overall governing bodies to guide and integrate the national sustainable development process rather than being just another committee.

Box 1.7 National Strategic Development Strategy (NSDS) Assessment Reports

In 2010, Pacific small island developing states completed a 5-year review of the Mauritius Strategy for the Implementation of the Barbados Plan of Action for the Sustainable Development of Small Island States (MSI+5). The review included NSDS implementation assessment reports for Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

The assessment reports identified good practices and constraints. Most NSDSs in the Pacific cover sustainable development and stakeholder participation is increasing; however, many countries have inadequate legal and institutional frameworks; limited budgets which hinder effective policy implementation; insufficient capacity to effectively monitor the implementation of policies; and the current planning and budget processes have not resulted in full implementation.

Despite the constraints Pacific island countries face with respect to NSDS implementation, there have been many gains in the environment sector. A few of the best practices are presented below, by sub-sector:

[82] OECD, Tools for delivering on green growth, 2011

Climate Change	Samoa established a Climate Risk Profile, identified adaptation measures and introduced public awareness programmes; The Federated States of Micronesia instituted an Executive Decision by the President to mainstream and integrate climate change issues; Papua New Guinea established the Office of Climate Change and Environmental Sustainability in 2007;
Natural Disasters	Samoa strengthened community resilience, disaster preparedness and management institutions, policy and planning frameworks;
Marine Resources	Palau established a nationwide network of marine protected areas and introduced aquaculture to promote food security while reducing pressure on wild fish stocks;
Fresh Water Resources	Palau improved access to their extensive water resources resulting in virtually universal access to improved water;
Land Resources	The Federated States of Micronesia made progress in dealing with sensitive issues such as land tenure system to support food production and consumption needs; Fiji developed the National Action Plan on Combating "Desertification" 2006 to address land degradation;
Energy	Marshall Islands developed an energy plan which proposes 20 per cent improvement in energy generation efficiency; 30 per cent improvement in the efficiency of energy use, and 20 per cent of electricity generation through renewable energy;
Biodiversity of Resources	Palau was the first country in the world to fulfil all of its commitments for protected areas under the Convention on Biological Diversity, with 37 legally constituted protected areas, Palau now exceeds the target set by the Micronesia Challenge;
Waste Management	Samoa, with the help of the Government of Japan and SPREP, introduced a model landfill project with the sorting of waste and appropriate disposal measures and recycling initiatives.

Source: Fiji, National Assessment Report on Green Economy; Reserve Bank of Fiji, Press release, "Reserve Bank introduces agriculture and renewable energy loans ratio", 10 February 2012, available from www.reservebank.gov.fj/docs2/Press%20Release%20No%206%20-%20RBF%20Introduces%20Agriculture%20and%20Renewable%20Energy%20Loans%20Ratio.pdf.

PLACING ECONOMIC VALUE ON NATURAL CAPITAL: PRICE SIGNALS

The natural capital included in terrestrial and marine ecosystems are essential for life (food, air, water, shelter, energy, medicine and clothing). Despite their importance, no economic value is adequately associated with the preservation of natural capital. Production systems typically externalize these costs and do not fully incorporate social and environmental costs into transactions. As a result this leads to 'incorrect' price signals that encourage overconsumption of socially detrimental goods as opposed to consumption of socially beneficial goods.

A part of green economy policy development is to better reflect the real cost of production into pricing. Green economy policies address such market failures through recognizing environmental costs in production and in consumer prices, creating incentives for eco-efficiency which turns a vicious cycle of unsustainable production and consumption into a virtuous cycle of sustainability.

In the Pacific, land and sea have particularly deep cultural and spiritual significance.[83] Many of the ecosystem services received by those living in the Pacific have a lack of direct monetary value, such as benefits from biodiversity, the provision of clean air, water purification services, breeding grounds for fish, natural disaster protection, and climate change mitigation and adaptation services (such as the carbon reservoirs in natural ecosystems).[84] This highlights the importance of better recognising the value of natural capital.

'Incorrect' price signals can be corrected by policy tools which internalize the cost of an externality, for example taxes, levies, and tradable permit schemes. The term 'green tax and budget reform (GTBR)' was coined to describe fiscal instruments to influence consumption and production patterns and provide incentives in support of sustainability. GTBR attempts to shift the tax burden from income and company tax towards pollution and waste,[85] in a 'polluter pays' approach. Green tax and budget reform includes two main elements:

1. Taxes: levies on activities and products that raise the price towards the real cost, including social and ecological costs, of production and consumption;
2. Subsidies: incentivizing eco-efficiency[86].

Taxes based on the 'polluter pay' principle charge producers at the point where they are responsible for the creation of the pollutant. Similarly, instruments based on the "user pay" principle charge for the extraction or use of natural resources. Both types of instrument provide incentives for reducing emissions and other pollutants, and thus result in using natural resources more efficiently. For example, lower tariffs on renewable energy or organic products; tax incentives for hotels to use locally grown organic food; taxes on agro-chemicals like nitrogen fertilisers and pesticides; and higher import duties on cars with large engines.[87] Another example of green tax is the introduction of carbon taxes which have been employed by many countries, including Australia (see Section 2.1 on sustainable energy).

Market-based tools which internalize environmental costs can be complemented by the removal of subsidies in areas that deplete natural resources. These subsidies artificially lower the prices of high-natural capital goods which encourages over consumption. For example, an artificially low cost of fuel deters firms from adopting resource efficiency measures that would have been economically beneficial in the absence of the subsidies.

Subsidy reform could have a few dimensions in the Pacific. A review of the current subsidy regime to identify subsidies, such as fossil fuel subsidies, that create incentives for unsustainable consumption could be a step towards subsidy reform.

83 Atu Emberson-Bain, Sustainable Development or Malignant Growth: Perspectives of Pacific Island Women, 1994.
84 Taholo Kami, A green economy – Investing in Nature/Natural Capital, IUCN Oceania paper presented to Rio+20 Pacific Preparatory Meeting, Apia, Samoa, 21-22 July 2011.
85 ESCAP Webpage, Green Growth, http://www.greengrowth.org/GTBR.asp.
86 ESCAP Webpage, Green Growth, http://www.greengrowth.org/GTBR.asp.
87 Ibid.

Box 1.8: Taxes and Renewable Energy Lending Regulations in Fiji

In situations where social costs (for example pollution) and benefits (for example clean air) are not internalized, incentives like duty exemption of environment-friendly goods can rectify the underlying inaccurate price signal, which in turn decreases the consumption of environment-damaging goods and increases consumption of environment-friendly goods. The Government of Fiji has recently introduced duty exemption of certain environment-friendly goods in an effort to "correct" price signals. The tax exempt products in Fiji in 2011 included alternative energy automobiles (liquid petroleum gas, compressed natural gas and solar vehicles); machinery and equipment to be used in the initial establishment of bio-fuel factories; chemicals required for bio-fuel production; energy conservation goods, such as energy efficient lamps and fluorescent tubes/bulbs; renewable energy goods, such as wind turbines, hydro turbines, solar panels, solar water heaters, solar water pumps; equipment related to the harnessing of electricity from geothermal sources; steam cogeneration plants (gasifiers) and technologies and accessories related to renewable energy; water storage tanks; and other environmentally friendly products.

Fiji is also moving towards introducing an E-Tax – an environment tax on anything that has a detrimental effect on the environment. The revenue raised from an E-Tax is intended to provide infrastructure development that would help protect the environment, for example waste management collection and disposal.

The Reserve Bank of Fiji recently issued a directive for the commercial banks to dedicate 2 per cent of deposits and loan liabilities to the renewable energy sector. This directive will provide incentives for larger investments in the renewable energy sector, which will not only protect the environment, but also reduce dependence on imported fossil fuel. The Reserve Bank of Fiji Governor Barry Whiteside has noted that "promoting renewable energy in a small open developing economy such as Fiji is imperative given its vulnerabilities to adverse movements in oil and food prices and their negative impact on foreign reserves".

Source: Fiji's National Assessment Report on Green Economy;
http://www.reservebank.gov.fj/docs2/Press%20Release%20No%206%20-%20RBF%20Introduces%20Agriculture%20and%20Renewable%20Energy%20Loans%20Ratio.pdf

The creation of tradable permit markets can place a value on ecosystem services, such as carbon sequestration, watershed protection, biodiversity benefits, etc. By placing a value on these ecosystem services, the services can enter into the economic marketplace. This will incentivize landholders into maintaining ecosystems in order to profit from the trading of environment-based permits.

INTEGRATING ECONOMIC AND ENVIRONMENTAL INDICATORS

Developing evidence-based green economy policies require indicators that can capture the social, economic and environmental situation. Historically, social, environmental and economic statistics have been isolated in three discrete spheres. Although separate social, environmental and economic statistics do provide value for description and analysis of the three pillars of development, integrating natural capital and economic capital is necessary for analysis to identify sustainable development opportunities and threats in production and

consumption patterns. Also, integration of environment and economic statistics provides a framework for monitoring the success of price signals policies, environmental regulations and other green initiatives.

Traditionally gross domestic product (GDP) has been used as the definitive indication of the health of an economy. Attempts to compile aggregate measures of economic activity began in the 1920s in the United Kingdom. After the Great Depression and the Second World War, aggregate measures of economic activity to develop economic stabilization policy and for wartime economic planning were seen as essential. In 1947, the League of Nations Committee of Statistical Experts emphasized the importance of international statistical standards for the production of economic statistics to address policy needs. This decision represents the origin of the System of National Accounts (SNA), first published by the United Nations in 1953, and the measurement of GDP[88]. Since 1953, the world has changed: globalization has skyrocketed and the importance of social and environmental factors has become apparent. While GDP (and national accounts) still provide the best framework for measuring economic production, income and accumulation, GDP is not enough. GDP does not measure the health of the environment, social welfare or economic sustainability.

The need for placing the environment into the well-established system of national accounting framework was first recognized at the global level in the early 1990s in Agenda 21 at the first Rio Conference. [89] Agenda 21 called upon the United Nations Statistics Division to develop a System on Environmental Economic Accounting. In this regards, the System of Environmental Economic Accounts (SEEA) was developed as a satellite account to the SNA to support sustainable development decision making. In 2012, the United Nations Statistical Commission adopted the SEEA as a statistical standard.

The SEEA provides politicians, economists, decision makers and others with a way to see the big picture in terms of the economy and environment. Thus indicators related to green economy, beyond GDP, and sustainable development can be captured and used to develop and monitor sustainable development, environmental degradation and climate change policies.

The SEEA adds stocks and flows of environmental assets to the national account asset boundary. Although ecosystems and the services they provide do not typically align with administrative barriers, geographic regions estimated based on using land cover area units as proxies[90]. A few of the key indicators that can be provided through the compilation of the SEEA main accounts include: natural resource stocks and flows; resource use of production and consumption; generation of emissions and waste by economic activity and households; emissions into water, air and soil; environmental protection expenditures and resource management; regulatory services provided by ecosystems; greenhouse gas emissions by type of economic activity; resource efficiency indicators;[91] Environmentally-adjusted

88 United Nations Statistics Division Webpage, Historic Versions of the System of National Accounts, http://unstats.un.org/unsd/nationalaccount/hsna.asp.

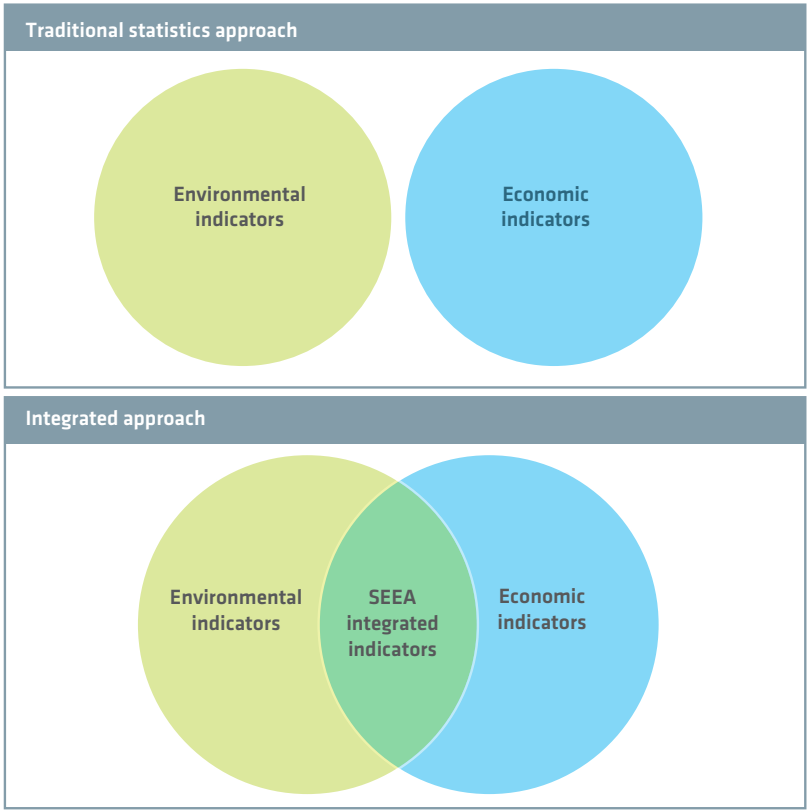
89 The first SEEA was published by the United Nations in 1993. The SEEA was developed by a working group of experts from international organizations, national statistical offices, researchers from universities and consultants

90 United Nations Statistics Division, System of Environmental Economic Accounting 2012, 2012.

91 United Nations Statistics Division, System of Environmental-Economic Accounts, http://unstats.un.org/unsd/envaccounting/Brochure.pdf , 2012.

aggregates of value added, adjusted for depletion of natural resources; and many other indicators. Experimental ecosystem accounts for the SEEA are also under development and will be published in 2013.

Figure 1.10 Integrating economic and environment statistics



Improving the ability to measure the environment and the economy in a holistic fashion is the key to understanding the complex relationships between human-activity and our environment. Timely, high-quality data are imperative for developing and monitoring green economic growth and investment; green jobs; and other aspects of green economy.

SUSTAINABLE LIFESTYLES

The transformation to sustainable lifestyles, including production and consumption habits, is fundamental to green economy[92]. Principle 8 of the Rio Declaration stresses the need to break away from a development paradigm that encourages consumption and production

[92] Kevin Petrini, UNESCO Office for the Pacific States, Education for Sustainable Development, paper presented to Rio+20 Pacific Preparatory Meeting, Apia, 21-22 July 2011.

patterns that are wasteful and ecologically unsustainable. Societies must find ways to have sustainable livelihoods (for both present and future generations) within ecological limits.

Many cultural values in the Pacific are already in line with sustainable resource use and environment management, such as the obligation to take care of natural assets; the principles of redistribution and self-reliance; and sustainability practices including crop rotation, seasonal (marine) harvesting bans and low-resource use farming methods. Additionally, the small size of many island communities and their isolated, rural and outer island locations predispose the region to sustainable resource use. This aligns well with the Rio principles of sustainable development, which stress the rights and responsibilities of citizens and local communities to actively participate in environmental management and development[93].

Economic and Environment Ministers in the Pacific have acknowledged the need to find ways for "improving consumer awareness and creating new consumer consciousness about making informed choices for environmentally sustainable products, services and lifestyles." [94] This is likely to need appropriate demand side management tools that are tailored to meet specific country needs.[95]

As a transformational tool, education is recognized as "critical for promoting sustainable societies and improving our capacity to address environment and development issues."[96] So far, it has been implemented by way of the Pacific Education for Sustainable Development (ESD) Framework (2006) and a corresponding Action Plan (2008-2014). Green labelling, such as that used to identify organic food products and the energy efficiency of certain electrical products, could be another means of informing consumers.

INVESTING IN INFRASTRUCTURE AND ENERGY

Sustainable infrastructure means delivering housing, transport, energy, water, waste and sanitation services without overusing resources. Examples of sustainable infrastructure include eco-efficient transportation (public transport/non-motorized transport); energy-efficient buildings (green buildings); innovative integrated urban planning which is responsive to climate change risks; waste-to-energy efficiency; and the use of low carbon, renewable energy systems. Sustainable infrastructure development can result in job creation and economic growth.

In disaster-prone areas such as the Pacific, it makes economic sense to invest in disaster-resistant (and climate-change resistant) infrastructure. Although the carbon footprint of energy sectors in Pacific countries is only a small proportion of the global energy carbon footprint, energy reforms in the Pacific not only provide the benefit of reduced emissions, but also generate economic savings, result in social benefits and increase energy security, in particular in transport and electricity.[97] There is mounting evidence that shifting to low carbon energy systems can result in economic and social benefits, for example, in Bangladesh, the introduction of PV solar home systems and biogas cooking stoves has generated more than 20,000 jobs and resulted in numerous health benefits, especially for women. [98]

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[93] Rio Principles 10 and 11.
[94] Ministerial Declaration on environment and development in Asia and the Pacific, 2010, adopted by the Sixth Ministerial Conference on Environment and Development in Asia and the Pacific, Astana, 2 October 2010 (E/ESCAP/MCED(6)/11).
[95] Ibid.
[96] UNESCO, Pacific Education for Sustainable Development Framework, September 2006.
[97] Resources for Transforming Economies, including through Climate Financing, Rio+20 Pacific Preparatory Meeting, Apia, 21-22 July 2011.
[98] UNEP, Global Green New Deal, Policy Brief, March 2009; AEA/ UKAID, Energy Systems in a Low Carbon Economy, 2011.

A major benefit of alternative energy in the Pacific context is in reducing the dependence on fossil fuel imports. It has been estimated that as much as 40 per cent of fossil fuel bills could be cut merely by introducing efficiency measures.[99] However, the development of alternative low-carbon technologies requires careful planning in order to avoid negative environmental impacts such as loss of food, forest land, biodiversity, or water resources.[100] Transforming the sector will require adequate planning and investment to develop technical expertise, institutional capacity, carefully planned policies and regulatory frameworks (including tax regimes)[101]. The need for planning is further highlighted by the high initial costs barrier of renewable energy technology and the difficulties small (uncompetitive) economies face in accessing international finance facilities, such as the Clean Development Mechanism (CDM). [102]

Micro-credit schemes and renewable energy/electrification subsidies may provide a solution for overcoming hurdles. Additionally, regionally coordinated efforts to promote the fair eligibility criteria and funding allocations of global (and regional) funding mechanisms may increase Pacific access to funds.[103]

At the global level, the support for clean energy and low carbon growth is now demonstrated in the three Rio+20 energy goals: universal energy access; a 40 per cent reduction in energy intensity; and a global energy mix including at least 30 per cent renewable energy, to be achieved by 2030.[104] In the Pacific, a transformation toward these goals has already begun with nearly all countries developing strategies and targets for promoting the use of renewable energy.[105] For example, Tonga, which is almost 100 per cent dependent on imported petroleum for its energy needs, has produced a cross-sectoral 10 year energy road map which aims to lower fossil fuel-based electricity by 50 per cent and provide electricity from renewable sources for most rural communities.[106]

The Pacific has also seen some successes in the use of solar energy, for example, in Kiribati and Tonga small-scale solar energy enterprises provide energy and electrification for a number of rural and outer island communities.[107,108]The potential of bio-fuel from 'energy crops' like sugarcane and coconuts may offer additional opportunities – in Vanuatu and the Marshall Islands, coconut oil has been successfully trialled for power generation at the community level. [109]

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[99] Ibid.
[100] AEA/UKAID, Energy Systems in a Low Carbon Economy, 2011.
[101] At a recent Energy Forum in Vienna (21-23 June 2011), the UNDP noted that as much as 90 per cent of clean energy investment was made in G20 countries with only 10 per cent going to the rest of the world.
[102] Report on the Summary of Outcomes and Proceedings from the Niue Pacific Climate Change Roundtable Meeting, 14-17 March, 2011.
[103] The lack of resources and poor access to international funding were addressed at the High Level Conference on Climate Change in the Pacific, Vanuatu, 4 March 2011 which included an undertaking by the Joint Pacific-EU Initiative on Climate Change.
[104] Vienna Energy Forum, 21-23 June 2011.
[105] ESCAP, Pacific Regional Report for the 5Year Review of the Mauritius Strategy for Further Implementation of the Barbados Programme of Action for Sustainable Development of SIDS (MSI+5), http://www.sidsnet.org/msi_5/docs/regional/pacific/Pacific_Regional_Synthesis-MSI5-Final.pdf, p.37.
[106] Asipeli Palaki, Tonga Energy Road Map 2010-20, paper presented to Rio+20 Pacific Preparatory Meeting, Apia, Samoa, 21-22 July 2011.
[107] The Kiribati Solar Energy Company manages over 2,000 installations.
[108] The Ha'apai Solar Electrification Programme in Tonga operates more than 500 installations.
[109] ESCAP, Pacific Regional Report for the 5Year Review of the Mauritius Strategy for Further Implementation of the Barbados Programme of Action for Sustainable Development of SIDS (MSI+5), http://www.sidsnet.org/msi_5/docs/regional/pacific/Pacific_Regional_Synthesis-MSI5-Final.pdf, p.36.

Box 1.9 Coconut oil – a renewable fuel and energy source for the Pacific

Diesel fuel is the main source of electrical generation and the main fuel for transport by sea and land in the Pacific.

Coconut oil can act as a diesel substitute and it has been trialled in several Pacific countries. Filtered and cleaned coconut oil blended with diesel, or used pure in modified engines, has been successfully demonstrated to be an alternative energy source. Blended coconut oil can be used in diesel combustion engines without pre-heating the fuel before starting the engine, an advantage as compared to pure coconut oil. Trials have demonstrated that coconut oil can replace diesel fuel with less than 5 per cent of the carbon footprint. Additionally, coconuts are abundant in many small Pacific island countries and coconuts do not have specific storage requirements. Unused coconuts can also be sold as a cash crop. However, as coconuts are an integral part of the diets of many people in the Pacific the link between biofuel production and food security will need to be carefully monitored.

In 2008, North Queensland & Pacific Biodiesel formed a joint venture with W.M. Middleton & sons, to operate a biodiesel plant on the Kulili estate on Karkar Island. The project aims to generate fuel from locally produced copra in order to replace the diesel fuel used by the Kulili estate plantations. By June 2009, the operation achieved 100 per cent substitution. The plantations currently runs all generators, trucks, tractors and boats on 100 per cent coconut biodiesel; and at the time of writing no mechanical issues have been noted and the overall volume of fuel consumption has been comparable to diesel. The project currently produces 3200 litres of biofuel per day. The process to transform copra to biofuel takes 3 days from start to finish.

The joint venture was privately funded by both partners and operates within strict financial constraints. It purchases copra at the top mill buy price and sells biodiesel to the plantations below the wholesale fuel price, which demonstrates that a commercial biodiesel plant can operate under real pricing conditions. A good-practice for biodiesel ventures to consider are demonstrated through this joint venture: purchasing chemicals in bulk and selling both bi-products of copra (copra meal and glycerol) increases profitability. The copra meal has a market in stock feed and glycerol is used as a base for soaps and degreasers. Not only does this increase profits, but it means that there is no waste from production and it maximize the employment opportunities of local communities.

The experiences from Karkar Island have been used to create a mobile biodiesel plant that can be purchased and deployed to remote locations. The District of Pomio, East New Britain has ordered a mobile plant to supply fuel for the whole district. This plant is owned by local landholders and the Pomio women's association, and it will be staffed by local men and women.

Source: Stephen Welsh, CEO, North Queensland & Pacific Biodiesel, Cairns, Australia

Encouraging investment in natural capital promises a number of benefits towards three-pillared sustainable development: creating (green) jobs, protecting the environment, enhancing food security and promoting sustainable livelihoods and socially inclusive growth, thus reducing poverty and inequality (see Box 1.10). Biodiversity conservation can also strengthen resilience to natural disasters and climate change. Coastal ecosystems like mangroves have the capacity to sequester large volumes of carbon, especially in the sediment,[110] and to mitigate the effects of climate change and natural disasters. Reforestation can generate economic returns (as well as social benefits) through plantation forestry as well as by selling carbon storage credits to countries with emission reduction targets.[111]

Box 1.10: Investing in Natural Capital – Sovi Basin Trust Fund

The Sovi Basin in Fiji is the country's most important land ecosystem in terms of its biological and landscape heritage. The 19600 hectare Basin is composed of hard granite rock which has slowly eroded over time to form low rolling hills, and the entire landform is covered with tropical lowland forest, making it the main storehouse of Fiji's land-based biodiversity.

As an alternative to logging and destroying the forest and the biodiversity for other commercial activities, Conservation International, the Fiji government, and local landowners have entered into an agreement to create new protected areas in the Basin. In this process, Fiji Water, a premier bottled water supplier, and Conservation International set up the Sovi Basin Trust Fund which finances the 99 year lease with the landowners to establish the Viti Levu Conservation Corridor. The fund is also used to finance other obligations and activities in the lease, such as compensating landowners for foregone timber royalties, providing opportunities for community development, and implementing a co-management plan for the protected area. The lease allows the landowners to access the protected area for traditional food-gathering and fishing purposes. The fund is currently endowed at $3.75 million through contributions from Fiji Water and the Global Conservation Fund. An additional $225,000 has been earmarked from the Global Environmental Facility (GEF). The Trust pays communities through the National Trust of Fiji.

The Fund also provides annual payments to a Community Conservation Development Trust which provides money for scholarships and projects. Each of the villages has their own development committee who are represented in the community trust governing mechanism, allowing for community decision making for management and disbursement of funds aimed at community development. Reflecting the spirit of community ownership, the lease for establishing the protection area was reached through long-term negotiations with all the affected villages.

Sources: http://www.forumsec.org/resources/uploads/attachments/documents/2011FEMM_FEMS.05_Report.pdf, http://www.cbd.int/doc/world/fj/fj-nr-04-en.pdf,http://www.un.org/esa/forests/pdf/aheg/aheg1/SIDS2.pdf, http://www.conservation.org/how/partnership/corporate/Pages/fiji_foundation.aspx, http://whc.unesco.org/en/tentativelists/1374/

[110] Joshua Bishop, IUCN Wet Carbon: Using Carbon Markets to Mitigate Climate Change, Restore Wetlands and Secure Livelihoods, 9 December 2010.

[111] ESCAP, Pacific Regional Report for the 5Year Review of the Mauritius Strategy for Further Implementation of the Barbados Programme of Action for Sustainable Development of SIDS (MSI+5), http://www.sidsnet.org/msi_5/docs/regional/pacific/Pacific_Regional_Synthesis-MSI5-Final.pdf, p.85-86.

PROMOTING EMPLOYMENT

Green economics can provide opportunities for economic growth and jobs in green sectors – those producing and using green goods, services, and energy. These opportunities include a wide range of activities from manufacturing solar panels to producing eco-products (such as food) to manufacturing products using "green" principals. In the Pacific, green economic opportunities include eco-tourism, organic agriculture, renewable energy production, as well as others.[112]

Agricultural systems are a crucial source of livelihoods, nutrition and income. The agricultural traditions in the Pacific provide a 'safety net' that safeguards the food security and welfare of women and children, the elderly, the sick, the poor and the unemployed, and cushions against the shocks of rising fuel/food prices. Better conservation of ecosystem services and green farming are likely to result in improved long-term household incomes, stronger social safety nets, as well as improved yields for subsistence farmers. [113] Sustainable production also offers potential economic opportunities through the development of agro-forestry, sustainable forest management, aquaculture, and organic agriculture which provides access to high-value niche markets.[114]

Tourism is a major source of foreign income and employment in the Pacific; however, rising visitor numbers and tourism earnings are often diluted by leakages on account of foreign ownership and sourcing of inputs, and the industry contributes to high fuel and food imports. [115] Linking tourism and agricultural sectors may help increase the amount of revenue retained in the country by reducing food imports and promoting the local agricultural sector (including organic farms) and present additional opportunities for biofuel production and use.[116] Barriers to organic agriculture, such as the high cost of international organic certification and low domestic demand for organic food, could also be reduced through linkages between tourism and agriculture. [117]

Although environmentally-friendly growth does improve the sustainability of the planet, it does not guarantee good working conditions or quality of employment; automatically reduce poverty; or address gender equity issues – in fact, moving toward new economic sectors could result in some job loss for those employed in the sectors which are replaced by a "green" business. Also, in some cases green business may have higher labour intensity that the less green alternatives; for example, organic agriculture is estimated to required 30 per cent more labour than conventional agriculture.[118]

Men and women, including those living in poverty, need the opportunity for developing new skills that would be relevant for the jobs created through green economic policies; and should be informed of these employment opportunities.[119]

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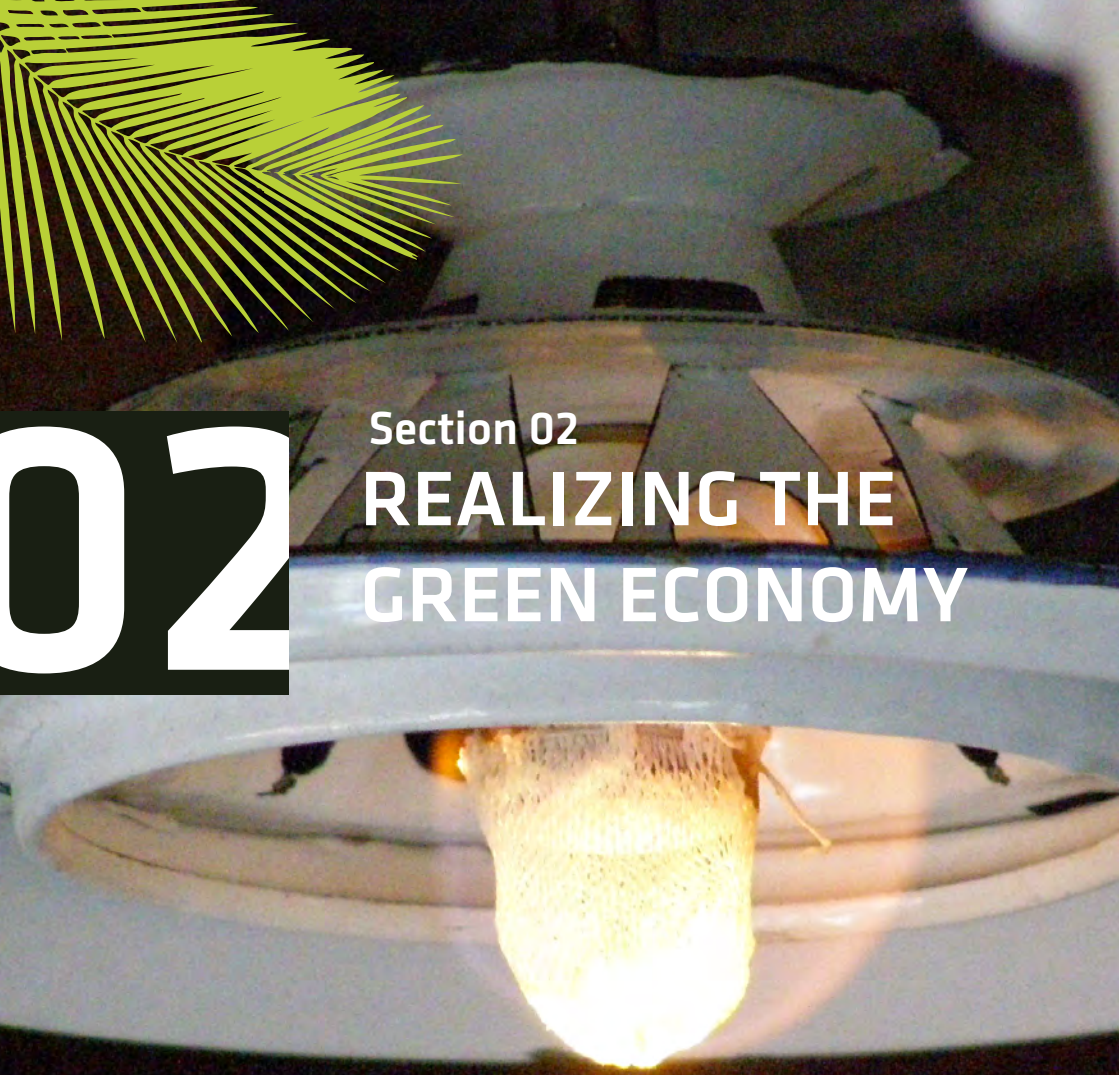
[112] ILO/Ron Duncan & Carmen Voigt-Graf, Pacific Labour Market Scenarios, Jan 2010.
[113] UNEP, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication: A Synthesis for Policy Makers, 2011.
[114] ESCAP, Pacific Green Growth Framework aPartnership: Interim Report, Sept 2010.
[115] Ibid.
[116] Ibid.
[117] Grant Vinning, Marketing organics in the Pacific Islands, Dec 2008
[118] Grant Vinning, Marketing organics in the Pacific Islands, Dec 2008.
[119] AEA/UKAID, Green jobs in a low carbon economy, 2011.



02

Section 02
REALIZING THE GREEN ECONOMY

This section contains three topical analyses that provide a deeper look at the potential for green energy in the Pacific, the role of private sector and public-private partnerships in a green economy, and the different modalities for financing green economic initiatives in the region. These analyses were contributed by practitioners who have had significant experiences of working in the Pacific.

The Pacific contains some of the most fossil-fuel dependent countries in the world; however, there is considerable untapped potential for energy efficiency and renewable energy. Thomas Lynge Jensen from United Nations Development Programme (UNDP) Pacific Centre contributed the analysis on the potential of greening energy in the Pacific.

Jackie Thomas from World Wildlife Fund (WWF) contributed the analysis which explores the role of businesses in advancing green economies. The section also highlights several WWF 'green' projects with a strong private sector engagement.

Coral Pasisi from Pacific Islands Forum Secretariat contributed a summary of financing mechanisms available to Pacific countries for green projects.

The opinions expressed in this section are those of the authors and do not necessarily reflect the positions of ESCAP or its member States.

2.1. GREEN TRANSFORMATION IN THE ENERGY SECTOR

Prepared by Thomas Lynge Jensen [120]
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The Pacific includes some of the most fossil-fuel dependent countries in the world. There is considerable untapped technical and economic potential for improving energy efficiency and renewable energy in the Pacific – at national level, energy efficiency investments are the quickest and cheapest way to reduce demand for fossil fuels while the benefits of renewables will be realised only in the long term. A sustainable energy future will require new thinking and new systems - essentially a transformation in the way we produce, deliver and consume energy, which will not happen overnight. There is a need for long term planning and continuous political support. Several different policy instruments that support sustainable energy production and utilisation including setting targets, fiscal and price based instruments, investment cost reduction/financial incentives and technical standards are already being used in the Pacific. Policy needs differ from country to country thus tailor-made, country-specific policy instruments are vital.

INTRODUCTION

Green growth is about "fostering economic growth and development while ensuring that natural assets continue to provide the ecosystem services on which our well-being relies". [121] Thus it is development where the environmental and social pillars of sustainable development are given equal footing with the economic one. [122] Therefore, the transition to a green energy economy should emphasize "meeting the energy needs that a growing population and development aspirations demand while strongly diverging from the environmental pressures inherent in the current energy system".[123] Such a transition will require substituting investments in carbon-intensive energy sources with investments in clean energy as well as efficiency improvements - a process that will be among the earliest drivers of greener growth. [124,125] In the context of green growth key energy concepts include:

- Energy services: end use applications of an energy delivery system that meets tangible and/or intangible life and livelihoods needs and social services (e.g., recreation, lighting, cooking, communications, transportation, heating); [126]
- Energy efficiency: reduction in the energy used to provide a given level of energy services to a household, building or facility;[127] and,
- Renewable energy: naturally occurring energy systems that are self-replenishing or vast in resource, including biomass, solar, wind, among others. [128]

A greener energy future will require new thinking and new systems - essentially a transformation in the way we produce, deliver and consume energy. Such drastic changes to energy infrastructure and equipment on a national scale are a complex undertaking. The energy sector poses a particular challenge in the context of green growth due to its size, complexity, path dependency and reliance on long-lived assets.

[120] The views expressed in this chapter are those of the author and do not necessarily reflect the views of the United Nations Development Programme (UNDP), its Executive Board or its members states.
[121] OECD and IEA, OECD Green Growth Studies – Energy, Preliminary Version, 2011, p. 5.
[122] UNEP, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy Makers, 2011b.
[123] OECD and IEA, OECD Green Growth Studies – Energy, Preliminary Version, 2011, p. 24.
[124] UNEP, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy Makers, 2011b.
[125] OECD and IEA, OECD Green Growth Studies – Energy, Preliminary Version, 2011.
[126] UNDP, Expanding Access to Modern Energy Services - Replicating, Scaling Up and Mainstreaming at the Local Level, May 2006, p. 7.
[127] ADB, TA 6485-REG: Promoting Energy Efficiency in the Pacific, final report, prepared by Econoler International, May 2011, p. 3.
[128] UNDP, Expanding Access to Modern Energy Services - Replicating, Scaling Up and Mainstreaming at the Local Level, May 2006, p. 7
[129] UNDP, Energy and Poverty in the Pacific Island Countries – Challenges and the Way Forward, 2007, p. 14

OVERVIEW OF CURRENT ENERGY SITUATION IN THE PACIFIC ISLAND COUNTRIES

Energy Access

Energy access in the Pacific varies significantly. Nearly all the households in Niue, Nauru, Palau, Tokelau, Cook Islands, Samoa, Tonga and Tuvalu have both electricity and fossil fuel access, but significant energy access gaps exist in electricity and/or fossil fuel access in Papua New Guinea, Solomon Islands, Vanuatu, Fiji, Marshall Islands, the Federated States of Micronesia and Kiribati. There are, of course, low income households in most Pacific countries, which use little petroleum fuel or electricity because of their high costs, even though these can be easily accessed. In general, biomass access (used for cooking, lightning, copra drying, etc.) is not a problem in the Pacific, except in urbanized atolls (e.g. the southern parts of South Tarawa, Funafuti atoll in Tuvalu, Ebeye in Marshall Islands) and in cities such as Port Moresby in Papua New Guinea and Honiara in the Solomon Islands.

Petroleum and Liquid Fuels

Oil is the lifeblood of the global economy and the Pacific includes some of the most petroleum-dependent countries and territories in the world. [130] Although gross oil consumption is low relative to that of other regions, the intensity of oil use is high.[131] Given that oil typically accounts for about 95 per cent of commercial energy use, it is difficult to overstate the importance of petroleum, the need for secure supplies and the impacts of high oil prices on the Pacific region. In 2007 the UNDP studied the impact of rising oil prices on developing countries of the Asia-Pacific region and developed an Oil Price Vulnerability Index (OPVI) to measure the countries' vulnerability to increasing oil prices. Vanuatu, Solomon Islands, Samoa and Fiji were among the seven most vulnerable countries.[132] High oil prices are of concern to Pacific nations since they represent a supply shock which can significantly weaken sound macroeconomic policy management through increasing inflation, reducing growth, and weakening balance of payments.[133] A recent Asian Development Bank (ADB) funded assessment for selected Pacific countries estimated the value of diesel oil imports in 2009 and compared to total imports as well as goods and services exported (see Figure 2.1).

Figure 2.1 Oil Imports in Selected Pacific Island Countries (2009)

	Total Oil Consumption (Ktoe)	Oil Component of Imports of Goods and Services (%)	Oil Component of Goods and Services Exports (%)	Oil Imports as percentage of GDP
Cook Islands	19	31	20	29
PNG	840	3	3	2
Samoa	69	18	30	9
Tonga	45	30	103	15
Vanuatu	33	14	16	7

For the Cook Islands the value represents imports and exports of goods only, as data on service trade is not available.
Source: ADB, 2011

130 Johnston, Peter, Regional Energy Policy for the Pacific Islands (REPPI), initial discussion draft, prepared for SPC, 24 February 2010, p. 11.
131 ADB, Taking Control of Oil - Managing Dependence on Petroleum Fuels in the Pacific, 2009, p. viii.
132 UNDP, Energy and Poverty in the Pacific Island Countries – Challenges and the Way Forward, 2007, p. 4.
133 ADB, Taking Control of Oil - Managing Dependence on Petroleum Fuels in the Pacific, p. viii.

Furthermore it has been estimated that each $10 a barrel increase in the world price of oil directly reduces national income by more than 2.4 per cent in Kiribati, by about 2 per cent in Palau and Tonga, by 1.5 per cent in the Federated States of Micronesia, Solomon Islands and Tuvalu, and by about 1 per cent in the other countries.[134]

Refined petroleum fuels in the Pacific are expensive due to small volumes, long transport supply chains, and the limited negotiating strength of individual countries. Further, prices are unstable, price monitoring and contract administration are often weak, and storage facilities and inter-island transport are often inadequate.[135] There are prospects for reducing petroleum imports through local substitutes, but the region will remain heavily dependent on oil for the foreseeable future, so it is vital to improve supply arrangements. This may not be easy, as major oil companies have been disengaging from the region.

Electric Power

Electricity production accounts for roughly 40 per cent of petroleum fuel use in the region. [136] In Papua New Guinea, Vanuatu and Solomon Islands, overall electrification rates remain very low at about 20 per cent of households or less. Most of the Pacific countries have electrification rates between 50 per cent to nearly 100 per cent. Cook Islands, Nauru, Niue, Palau, Samoa, Tokelau, and Tuvalu have an electrification rate that is 90 per cent or higher. [137] In many Pacific countries, charges to consumers on the main grid systems do not cover the full cost of supply, resulting in insufficient funds for effective operations and maintenance. As a result, system losses can be as high as 30 per cent, roughly double those of developed countries. Rural electrification is typically through diesel systems supplemented by renewable energy, mostly solar photovoltaic and some small hydro power generation, which tends to be heavily subsidised and often poorly managed.[138] Improving the electrification rates in the Pacific would be extremely costly, both in initial costs and in operations and maintenance and could actually increase petroleum-fuel consumption in some countries.

Renewable Energy

Although the Pacific is overwhelmingly dependent on imported petroleum fuels for commercial energy for transport, electricity, business and households, hydropower has been a significant contributor in some of the larger countries (e.g. Fiji and Samoa). [139] In addition, biomass is widely used for cooking and agricultural drying (especially copra), but as a percentage of gross energy consumption it varies considerably by country. Other renewable energy resources are a small percentage of supply in most of the region, although important in some locations.

Prior to 2008 most renewable energy electrification efforts, with the exception of the use of hydro-energy, were to bring electricity to un-electrified areas.[140] Since 2008, the development of renewable energy resources has been extended to grid-connected renewable energy

134 Levantis, Theodore, Oil price vulnerability in the Pacific, Pacific Economic Bulletin, Volume 23, Number 2, 2008, pp. 219-220.
135 Johnston, Peter, Regional Energy Policy for the Pacific Islands (REPPI), initial discussion draft, prepared for SPC, 24 February 2010, p. 11.
136 Ibid., p. 13.
137 UNDP, Energy and Poverty in the Pacific Island Countries – Challenges and the Way Forward, p. 14.
138 Johnston, Peter, Regional Energy Policy for the Pacific Islands (REPPI), initial discussion draft, prepared for SPC, 24 February 2010, p. 13.
139 SPREP, Pacific Regional Energy Assessment 2004 - Regional Overview Report, Vol. 1, 2005 p. 25.
140 IUCN, Replication of National Development Bank of Palau's Energy Loan Program to ADFIP Member Institutions - Concept for Regional Support Project, Draft, June 2011, p.1.

specifically to reduce dependence on diesel fuel. Today, several renewable energy resources have become both economically and technically feasible alternatives to fossil fuels and the rate of expansion of renewable energy use is increasingly significantly.[141]

Transport Energy Use

Land, sea and air transport accounts for roughly half of the region's petroleum fuel use, declining somewhat if bunkering and re-exports for international shipping and aviation are omitted. The majority of this consumption is for road transport. Roads are often poor, vehicles are poorly maintained, and there appears to be a trend toward larger, fuel-inefficient vehicles in recent years. It is extremely difficult to reduce fuel use for transport significantly as consumption is spread among many thousands of vehicles that can have lifetimes of more than ten years, so capital replacement is slow. Without practical means for more efficient transport fuel use, overall petroleum consumption will not decline significantly.

National Energy Planning, Policy and Tools for Implementation

Energy policies have been developed over the past six years for all Pacific island countries with strategic action or detailed implementation plans in place for many. These are generally linked to broad national development strategies and are a considerable improvement over earlier efforts.[142] However, there is often no clear sense of priorities, expected outcomes, or timescales for these policies and plans. [143] In addition legislation, guidelines, regulations and other administrative and legal tools necessary to implement policies tend to be weak. A number of Pacific island countries have established targets for renewable energy production (e.g. as a percentage of total electricity supply by a specified year), but frequently these targets are not well linked to known indigenous energy resources, expected costs of development and operation, local training needs, net benefits, budgetary needs, or actions to achieve the goals.[144] In general, implementation and enforcement including integration of energy policies and action plans into national planning and budgetary processes have been and continue to be a major challenge.

Recent examples of detailed implementation plans include the Tonga Energy Road Map (TERM) 2010-2020 and the Implementation Plan associated with the Cook Islands Renewable Energy Chart (CIREC). At the end of 2011 the Government of Vanuatu began the preparation of a Vanuatu National Energy Roadmap.

POTENTIAL FOR SUSTAINABLE ENERGY UTILIZATION IN THE PACIFIC ISLAND COUNTRIES

Renewable energy and energy efficiency have been called the 'twin pillars' of sustainable energy. Therefore, it generally makes sense to address them as synergistic and complementary, but they are seldom assessed together in the Pacific islands.[145] For outer island electrification in particular, efficiency options should be assessed as part of renewable energy investment plans.

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[141] IRENA, Orientation Note - IRENA Workshop: Accelerated Renewable Energy Development on Islands with Emphasis on the Pacific Islands, Draft, October 2011, p. 3.
[142] Johnston, Peter, Regional Energy Policy for the Pacific Islands (REPPI), initial discussion draft, prepared for SPC, 24 February 2010, p. 9.
[143] Ibid., p. 9.
[144] Ibid., p. 18.
[145] Johnston, Peter, Regional Energy Policy for the Pacific Islands (REPPI), initial discussion draft, prepared for SPC, 24 February 2010, p. 18.

Energy Efficiency and Conservation

Energy efficiency is generally considered as the lowest cost option to tackle the current and future constraints in energy supply and the quickest way to reduce demand for fossil fuels.[146,147] In Pacific island countries, the most important rationales for new energy efficiency policies lie in alleviating the large financial burden of oil imports, reducing energy investment requirements, and making the best use of existing power supply capacities to maintain and improve access to affordable electricity supplies. [148] The optimization of end-user energy consumption is usually associated with technological changes but can also be achieved by improving energy management processes or by adjusting operational procedures (e.g., readjusting temperature set-points of thermostats to a higher level to save on air conditioning energy use).

With regard to energy efficiency potential, recent country findings include:

- Palau: at national level in general energy efficiency investments are far more attractive than renewable energy; [149]

  Samoa: energy efficiency opportunities are still largely untapped and present a major opportunity for reducing energy costs with low capital intensive investments; [150]
- Tonga: the current untapped energy efficiency opportunities present the greatest opportunity for reducing energy costs with low capital intensive investments;[151] and,
- Vanuatu: energy efficiency opportunities are largely untapped, particularly in the industrial sector that has not been the focus for reducing energy costs and emissions. [152]

Thus although a more efficient use of energy can lead to very substantial savings of energy and money (in the medium-to-long term), so far '...only lip service has been paid to energy efficiency in the Pacific region'[153]. Energy efficiency has generally not been a priority of PIC Governments for new energy investments and its potential is poorly appreciated or understood within the region.[154] There has only been sporadic interest, for example when oil prices rise faster than utility tariffs. Moreover, even though energy efficiency in Pacific island countries has been the subject of many studies and analyses, it has not resulted in concrete implementation. [155] One reason could be that energy efficiency is even more of a challenge to implement in Pacific island countries than energy supply-side interventions as energy efficiency involves more than 'simple engineering': it also involves institutions, motivation of utilities and energy users, and a range of project-specific implementation details that cannot be fully specified upfront but which have to be tailored to individual circumstances during implementation.[156] However two major sub-regional/regional energy efficiency initiatives have just been launched: i) the Government of Australia funded and Secretariat of the Pacific Community (SPC) executed Pacific Appliance Labelling and Standards (PALS) programme; and the ii) Phase II of the ADB and GEF funded Promoting Energy Efficiency in the Pacific (PEEP).

146 ADB, TA 6485-REG: Promoting Energy Efficiency in the Pacific, final report, prepared by Econoler International, May 2011, p. 2.
147 Mondaymorning, Less Energy – More Growth, Prosperity through Efficiency, 2012 , p. 3.
148 ADB, TA 6485-REG: Promoting Energy Efficiency in the Pacific, final report, prepared by Econoler International, May 2011, p. 5.
149 Johnston, Peter, Note for ADB Pacific Department on Energy Sector Investments in PDMCs: Case Study of Energy Efficiency, Renewable Energy & Other Investments in Palau, p. 1.
150 UNIDO, Assessment of RE and Energy Efficiency Potential in Industries in Selected Pacific Island States, Work Package 1 Report, prepared by IT Power, September 2011, p. 19.
151 Ibid., p. 28.
152 Ibid., p. 35.
153 Johnston, Peter, Coordination & Implementation Mechanisms for Regional Energy and Pacific ACP EDF-10 Energy Initiatives – A Discussion Paper and Concept Proposal, prepared for SOPAC,2008, p. 10.
154 Johnston, Peter, Note for ADB Pacific Department on Energy Sector Investments in PDMCs: Case Study of Energy Efficiency, Renewable Energy & Other Investments in Palau, 2008, p. 7.
155 ADB, TA 6485-REG: Promoting Energy Efficiency in the Pacific, final report, prepared by Econoler International, May 2011, p. ix.
156 Ibid., p. viii.

In general, improving the efficient use of liquid fuels and electricity should be a priority, particularly in areas with a high intensity of energy use (for example, transport, commercial and public buildings, the tourism sector, and water supply)..[157] Finding practical replacement or supplementary fuels for transport for the Pacific island countries is a huge challenge; therefore, gains from serious investments in efficiency improvements are likely to be more effective in the next few years. Examples of specific energy efficiency measures applicable in Pacific island countries include shutting off lighting and air conditioning in unoccupied hotel rooms, introducing efficient street lighting based on the latest light-emitting diode (LED) technology or replacing inefficient incandescent lamps with compact fluorescent lamps (CFLs).[158]

An area with a potential for large scale national impact in Pacific island countries is Minimum Energy Performance Standards (MEPS) and energy labelling. Energy labelling is a system that allows buyers to compare the energy efficiency of the products they are considering purchasing.[159] MEPS and energy labelling are the most widespread policy measures taken by Governments around the world to increase the energy efficiency of appliances and other electrical equipment.[160] A new SPC assessment of 14 Pacific island countries estimated that for residential, commercial and government sectors combined, MEPS and energy labelling energy efficiency measures could reduce electricity use in 2025 to about 2672 gigawatt hours (GWh) instead of 3031 GWh - a saving of about 12 per cent, or 359 GWh per year.[161] The monetary benefits of these energy savings are estimated at between $582-895 million over the period 2010 to 2025[162]. That translates into a projected monetary savings per electrified household of between $274 per year in Nauru to $61 per year in Solomon Islands, with an average for all Pacific island countries of $95 per year per electrified household. [163]

In some developed countries, large-scale energy efficiency improvements have been made. For example, in Denmark energy consumption has been successfully decoupled from economic growth – energy consumption has not grown for 30 years despite economic growth of about 70 per cent. [164]

Renewable Energy

For thousands of years, Pacific islanders depended on local energy sources for all their needs: wind energy drove ocean transport, biomass energy was used for cooking, and solar energy for drying fish and produce for long term storage. [165] While these traditional renewable energy uses remain important in many Pacific island countries - particularly biomass for cooking - rapid transport, communications and virtually every other aspect of today's island societies and economies rely in some way on imported fossil fuel, particularly diesel fuel and gasoline. The market based potential for renewable energy today varies substantially across the region (see text box 2.1).

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157 Johnston, Peter, Coordination & Implementation Mechanisms for Regional Energy and Pacific ACP EDF-10 Energy Initiatives – A Discussion Paper and Concept Proposal, prepared for SOPAC, 2008, p. 10.
158 ADB, TA 6485-REG: Promoting Energy Efficiency in the Pacific, final report, prepared by Econoler International, May 2011, p. 3.
159 SPC, The Costs and Benefits of Introducing Standards and Labels for Electrical Appliances in Pacific Island Countries, p. 2.
160 Ibid., p. 2.
161 Ibid., p. 2.
162 Ibid.,p. 3.
163 Ibid.,p. 4.
164 Mondaymorning, Less Energy – More Growth, Prosperity through Efficiency, 2012, p. 7.
165 IRENA, Orientation Note - IRENA Workshop: Accelerated Renewable Energy Development on Islands with Emphasis on the Pacific Islands, Draft, October 2011,p. 2.

Box 2.1 : Pacific regional energy assessment of renewable energy potential

In 2003-2004 a comprehensive regional energy assessment with a focus on renewable energy was undertaken a part of the Secretariat of the Pacific Regional Environment Programme (SPREP), UNDP and Global Environment Facility (GEF) supported Pacific Islands Renewable Energy Project (PIREP). The assessment concluded that Fiji, Papua New Guinea, Tonga and Vanuatu could displace more than the projected business-as-usual demand for petroleum fuel required for electricity generation, for transport, or for both, if they aggressively pursued development of renewable energy. Nearly half of the 15 Pacific countries assessed could achieve about a third or more of the projected business-as-usual demand for petroleum fuel required from improvements in energy efficiency and some, like Nauru, could benefit far more from energy efficiency measures than from available renewable energy resources.

Country Estimates of GHG Emissions and Potential Savings after a Decade

	Potential Annual GHG Savings Adjusted to Projected Energy	Relative Savings from Renewable Energy and Energy Efficiency			
		Renewable Energy		Energy Efficiency	
		Renewable Energy (Gg)	% of Total	Energy Efficiency (Gg)	% of Total
Cook Islands	13.1	11	84%	2.1	16%
Fiji	504	467	93%	37	7%
Federal States of Micronesia	23.9	16.8	70%	7.1	30%
Kiribati	26.5	24.5	92%	2	8%
Marshall Islands	22.3	8	36%	14.3	64%
Nauru	16.6	2.8	17%	13.8	83%
Niue	1.08	0.64	59%	0.44	41%
Palau	49	12	24%	37	76%
Papua New Guinea	1013	1010	>99%	3	<1%
Samoa	96.1	83.9	87%	12.2	13%
Solomon Islands	121	108.8	90%	12.2	10%
Tokelau	0.22	0.15	68%	0.07	32%
Tonga	31.6	28.3	90%	3.3	10%
Tuvalu	2.2	0.8	36%	1.4	64%
Vanuatu	93.6	108	99%	1	1%

Box 2.1 Pacific regional energy assessment of renewable energy potential (continued)

Group 1: Fiji, Papua New Guinea (Papua New Guinea), the Solomon Islands and Vanuatu. Characterised by large and diverse renewable energy resources and large un-electrified populations in rural areas where there is little participation in the money economy. With the exception of Fiji, there is little prior exposure to renewable energy technologies other than traditional biomass use for cooking.

Utility Market	Industrial Market	Commercial Market	Household Market
The mountainous terrain and the large land areas of the Melanesian countries offer opportunities for hydro development for utility generation and Papua New Guinea and Fiji include large hydro components in their generation mix. Substantially more hydro development is possible. The low rural labour cost of the Melanesian countries is expected to allow the development of biofuels for power generation. The primary business opportunity for this market is the development of renewable energy based power generation for the sale of power to the utilities. Biomass, hydro, geothermal and wind power all are possible for development by businesses as Independent Power Producers (IPPs).	Biomass is available in large quantities as residues from forest product processing and waste from agricultural processing (notably sugar cane milling and rice milling). Substantial generating capacity using these biomass residues has evolved in those industries both to provide local heat and power for the processing facility, and supplementary income through the sale of surplus power to the national utilities. The mining industry requires large amounts of electrical power in typically remote sites. In Papua New Guinea, substantial hydro and geothermal developments have been made by the mining industry and more are planned. The primary business opportunity is the promotion, sale and after-market support of the equipment used by industry to develop their renewables based power generation.	The primary use of renewable energy in the commercial sector is the widespread use of solar water heating in hotels, offices and resorts. The market is large and well developed in Fiji, less so in Papua New Guinea and Vanuatu and hardly tapped in the Solomon Islands. The main business opportunity consists of importing or local manufacturing of suitable solar water heaters and their sale, installation and after-market support.	The primary undeveloped market for renewable energy technologies in Melanesia is for off-grid electrification systems sufficient to provide lighting and basic entertainment power for rural households. The very low per-capita energy use of rural dwellers in Melanesia can be expected to rise rapidly as rural areas are electrified and the rural economy strengthened. Whether that new energy supply will be renewables based or fossil fuel based will largely be determined by the type of initial electrification technology used.

Box 2.1 Pacific regional energy assessment of renewable energy potential (continued)

Group 2: The Federate States of Micronesia, Kiribati, and the Republic of the Marshall Islands.

Characterised by small populations, large numbers of often difficult to access islands and relatively small land areas for most islands and therefore limited renewable energy resources. A high percentage of the population is un-electrified, rural, and most still have subsistence based economies though there generally is participation in the money economy.

Utility Market	Industrial Market	Commercial Market	Household Market
With the exception of a small, seasonal hydro resource on Pohnpei, all electrical generation in the Group II countries is through diesel power. There is no known wind resource that can economically supplement utility generation. Recently the economics of using solar PV for grid supplementation became favourable. In addition the Group II countries have large, typically underutilized coconut resources. Thus the use of biofuels and grid-connected PV as a diesel replacement for power generation represents the main realizable use of renewable energy for utilities.	There is almost no industrial development in the Group II countries and energy used for industrial activity is a very small percentage of national energy use. Overall, the largest industry is the manufacture of coconut oil from copra that is the major 'industrial' activity of RMI and Kiribati. Those facilities are already using renewable energy for the production of process heat.	Imported solar water heaters are used in hotels and resorts and a few households, but the tourist industry is small. The major commercial use of energy is for shipping. The Group II countries include large numbers of widely dispersed islands and a large volume of diesel fuel is used to support inter-island shipping. The potential market for a technically satisfactory biofuel based diesel substitute or for a blend of diesel fuel and biofuel is large if the supply can be developed at a price that is acceptable.	Few households have piped hot water of any kind and the present market for solar water heaters is small, though long term growth is likely as economic development allows family incomes to increase causing an increased demand for luxury services in households. The large un-electrified rural population does represent a significant demand for solar PV. Kiribati has had a programme for PV based rural electrification for nearly 30-years.

Box 2.1 Pacific regional energy assessment of renewable energy potential (continued)

Group 3: Cook Islands, Nauru, Niue, Palau, Samoa, Tokelau, Tonga and Tuvalu.
These countries have a high rate of electrification, approaching 100 per cent for Nauru, Tokelau and Niue with over 85 per cent for the rest. These countries can benefit relatively little from additional off-grid electrification programmes. Most of the population of these countries is engaged in the money economy and though subsistence agriculture and fishing is still present it is declining in importance.

Utility Market	Industrial Market	Commercial Market	Household Market
With the exception of Samoa where there is some hydro resource, all the Group III utilities rely on diesel generation. Resource assessments indicate that Niue and the Cook Islands can supplement their generation with wind power and there may be sufficient wind resource in Tonga as well. However wind power cannot provide base load power nor can it be introduced into the grid at levels much higher than about 20 per cent of existing demand without technical requirements that would be difficult to manage in the Pacific island countries. Coconut oil as a diesel fuel substitute has a large potential in the Group III countries, but these countries tend to have higher rural labour costs than the rest of the Pacific and it will be more difficult for coconut oil to compete with diesel fuel than in Group I or Group II countries. As for Group II countries recently the economics of using solar PV for grid supplementation became favourable.	Samoa has a significant industrial energy use as does Tonga. Most of the industrial energy use is electricity provided from the national utility and there is little opportunity for direct replacement of fossil fuels by renewable energy in Group III industry except where process heat is required and diesel fuel is burned for its provision. In those few cases, biofuel or possibly biomass could replace the diesel fuel used for process heat.	The Group III countries, with the exception of Nauru, Tokelau and Niue, have a well-developed tourism industry and numerous hotels, resorts and tourist facilities. Solar water heating is widely used in these commercial buildings and the market is well served already.	Solar water heating is widely used on homes in the Cook Islands and often installed on homes in the other Group III countries but market penetration is generally low at the household level. Given the relatively high family incomes found in the Group III countries, a much higher level of penetration of the household market appears possible.

POLICY TOOLS

The renewable energy market to a large extent is a policy driven market[166] and there are numerous policy instruments that can assist countries with promoting sustainable energy. A paper by the World Bank classifies the main policy tools as follows: (a) setting targets; (b) price based instruments, (c) quantity based instruments and procurement mechanisms; (d) investment cost reduction/financial incentives; (e) fiscal incentives; and (f) other including voluntary measures and other market facilitation measures.[167] OECD uses similar broad classifications for the transformation of the energy sector: [168]

- Provide price signals for externalities
- Eliminate fossil fuel subsidies
- Set frameworks to make markets work
- Radically improve energy efficiency
- Foster innovation and green technology policy.

However, it should be stressed that while fostering greener growth will require international cooperation, it is largely a national matter and policy options will therefore differ across countries, based on their local environmental and economic conditions, institutional settings and stages of development.[169] The choice of policy instruments, policy design and complexity of the policy package (or regulatory regime) should be tailored to national conditions: markets, supply or demand volume, and nature and level of risks, as well as institutional and administrative capacity. Furthermore, other factors to consider include policy sequencing and policy interaction and comparability. Finally it should be noted that the challenges to design and implement such a policy package with a consistent framework are considerable: many energy systems are 'locked-in' to high carbon production and consumption patterns that can be difficult to break for reasons that go beyond simple economics.

Targets

Several Pacific countries and territories have already set very ambitious targets on renewable energy including:

- Tokelau: independence from imported fuels by progressively increasing the use of renewable energy with the ultimate goal of 100 per cent renewable energy; [170]
- Cook Islands: 50 per cent of electricity from renewable energy sources by 2015 and 100 per cent by 2020;
- Nauru: 50 per cent of energy demand provided by "alternative sources of energy, including through renewable sources" by 2015; [171]
- Tonga: 50 per cent of electricity generation through renewable resources by 2012;[172] and,
- Tuvalu: 100 per cent renewable energy for power generation by 2020. [173]

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166 World Bank, Design and Performance of Policy Instruments to Promote the Development of Renewable Energy: Emerging Experience in Selected Developing Countries, Energy and Mining Sector Board Discussion Paper No. 22, April 2011, p. 3.
167 Ibid., p. 1.
168 OECD and IEA, OECD Green Growth Studies – Energy, Preliminary Version, 2011, p. 23.
169 Ibid., p. 6.
170 Government of Tokelau, National Energy Policy and Strategic Action Plan for Tokelau, 2004, p. 11.
171 Government of Nauru, National Sustainable Development Strategy 2005-2025, 2009, p. 83.
172 Government of Tonga, A Ten Year Road Map to Reduce Tonga's Vulnerability to Oil Price Shocks and to Achieve an Increase in Quality Access to Modern Energy Services in an Environmentally Sustainable Manner, June 2010, p. xi.
173 Government of Tuvalu, Tuvalu Experiences and Level of Interest in Appliance Standards and Labeling, Planning Workshop for Pacific Appliance Labelling and Standards (PALS) Program, SPC Headquarters, Noumea, New Caledonia, 5-6 December 2011, p. 1.

Tokelau is set to be the first to achieve a very ambitious renewable energy target (or at least a major part of it). Before the end of 2012 it is set to convert 100 per cent of electricity generation to solar. Such major achievement is based on the 2004 National Energy Policy and Strategic Action Plan (NEPSAP), which continues to be the basis for major energy developments in Tokelau.[174]

Another recent example of national high level commitment to renewable energy is the Cook Islands. The current Government in its 2010-2014 Party Manifesto states that it will work towards "energy independence", including setting "realistic targets to achieve renewable energy outcomes".[175] Subsequently the targets were set to be 50 per cent of electricity from renewable energy sources by 2015 and 100 per cent by 2020. In January 2012 during a donor roundtable meeting the Prime Minister of the Cook Islands mentioned: "I have made it clear our country's intention to be 50 per cent renewable energy by 2015 and 100 per cent by 2020. This is a key to our future. The continued dependence on imported oil is a crippling dependence from which we are determined to be free. Ambitious – yes. Achievable – yes, but only with your collective support."[176]

In this context a key lesson is the need for major policy initiatives to be underpinned by a continued high level of country ownership and leadership during preparation, endorsement and - very importantly - implementation. For instance one of the key reasons for Fiji's achievements with rural electrification has been that the goal to ultimately achieve 100 per cent electricity access has been supported by successive administrations including recurrent allocations from the national budget.[177]

Fiscal Incentives

From 1 January 2009 the Government of Fiji put in place several measures to further increase national renewable use and energy efficiency.[178] Zero fiscal and import-excise duties applies for a wide range of renewable energy equipment, including resource-monitoring equipment (for wind, hydro, and solar), wind and hydro turbines, and accessories including solar panels and batteries for power supply or electrification purposes; solar lights; or solar prepayment meters and other related accessories. For bio-fuel production duty-free concession are given to plants, machinery and equipment for the initial establishment of a factory and any chemicals required for bio-fuel production. To further encourage investments in bio-fuel production, income tax exemption is given for a period of 10years for companies that are involved in processing agricultural commodities (sugar, coconut, etc.) into bio-fuels.[179] With regard to energy efficiency, zero fiscal and import-excise duties applies for energy efficient 'lamps' with ratings less than 25 watts and fluorescent tubes and bulbs less than 25 watts.

The Republic of the Marshall Islands amended the Import Duties Act in 2011 by passing a Bill to insert a new section for exemption for the importation of renewable energy and

174 IRENA, Orientation Note - IRENA Workshop: Accelerated Renewable Energy Development on Islands with Emphasis on the Pacific Islands, Draft, October 2011, p. 8.
175 Cook Islands Party, Manifesto 2010-2014, 2010 , p. 21.
176 Cook Islands Herald, PM Welcomes Donor Partners, Issue 601, February 2012: http://www.ciherald.co.ck/articles/h601f.htm .
177 UNDP, A Review of Good Practices and Lessons Learned from Asia and the Pacific - The Pacific Response: Electrifying Isolated Islands, Case Study 7, 2012 , p. 14.
178 Government of Fiji, Economic and fiscal update: Supplement to the 2009 Budget Address, November 2008, p. 112, 120 & 121.
179 To qualify for income tax exemption, the company should invest a minimum of FJ$1miilion and employ at least 20 local employees or more for any 6 months within the income year. In addition this measure is limited to the period 1 January 2009 to 31 December 2014.

energy efficiency equipment.[180] This provides for exemption to the importation of any solar equipment (PV panels, array frames, regulators, inverters, or complete PV kits) and energy efficiency air conditioning units that have an Energy Star label or provision of services using power efficiently. [181]

Price Based Instruments

Net metering is a system in which solar photovoltaic or other renewable energy generators are connected to a public-utility power grid and surplus power is transferred onto the grid, allowing customers to offset power consumption based on the net of building use minus own generation. The first PIC to introduce net-metering was the Cook Islands.[182] The main island power utility Te Aponga Uira (TAU) introduced a Net-Metering Policy in November 2009 for Rarotonga. Initially renewable energy generation systems up to 10 kW was automatically allowed, but this has since been reduced to 2 kW.[183] In January 2012 Palau was the first PIC to pass a Net Metering Act and now renewable energy generation systems up to 5 kW is automatically allowed. In addition, discussions on net-metering are currently under way in Yap state in the Federated States of Micronesia, while Fiji is planning to prepare a net-metering policy in 2012.

Investment cost Reduction and Financial Incentives

In the context of the Pacific island countries, the National Development Bank of Palau has pioneered energy loan packages. Some features of these package include energy efficiency measures for new home owners, and the installation of solar photovoltaic generators for private homes and commercial buildings to offset some or all the existing use of electricity.[184, 185] To provide incentives for early adoption of these packages, long-term finance is offered with subsidies that vary according to the type of loan taken. By June 2011, about 90 per cent of the new homes financed by the NDBP included a wide range of energy efficiency measures that qualified for incentives under the program. The solar PV loan program began installations in February 2011 and as of May 2011 four homes had been approved for grid-connected solar and one commercial building was in the process of accessing loans for grid-connected solar and one home was approved for off-grid solar. [186]

In Fiji, the proportion of rural households with access to some form of electricity increased from 31 per cent to 81 per cent between 1986 and 2007.[187] This was primarily due to increased urbanization ('bringing people to electricity') and a dedicated rural electrification programme ('bringing electricity to the people'). With regard to the latter, a combination of enabling factors made this achievement possible including very significant capital subsidies provided

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180 Government of the Republic of the Marshall Islands, Duty Exemption for Renewable Energy (RE) and Energy Efficiency (EE) Equipment in the Marshall Islands, Pacific Regional Energy Meeting (PEEM), 4 April 2011, SPC, Noumea, New Caledonia , p. 1.

181 Ibid., p. 2.

182 It should be noted that the American Samoa Power Authority (APSA) has had a net metering policy from May 2008.

183 Apparently this is due to the ceiling (set by the power utility) of maximum 600 kW of embedded generation for the island power grid is expected to be reached soon.

184 IUCN, Replication of National Development Bank of Palau's Energy Loan Program to ADFIP Member Institutions - Concept for Regional Support Project, Draft, June 2011, p.1.

185 These initiatives by the NDBP have been supported via IUCN's "Managing the Ecosystem and Livelihood Implications of Energy Policies in the Pacific Island States" project and the UNDP/GEF supported "Sustainable Economic Development through Renewable Energy Applications" (SEDREA) project.

186 IUCN, Replication of National Development Bank of Palau's Energy Loan Program to ADFIP Member Institutions - Concept for Regional Support Project, Draft, June 2011, pp.1-2

187 UNDP, A Review of Good Practices and Lessons Learned from Asia and the Pacific - The Pacific Response: Electrifying Isolated Islands, Case Study 7, 2012 , p. 14

by the Government of Fiji.[188] Under the 1993 Rural Electrification Policy, any village can request the Government of Fiji for assistance with electrification. The choice of power system to be installed is made with the Department of Energy guidance, taking into account village location, the needs of the community, and the costs to the consumers. On the islands of Vanua Levu and Rotuma, PV solar home systems are an option. As with the other electrification options, the consumer pay 10% per cent of the capital costs and the Government pays the remaining part. By November 2011, a total of 1,400 PV solar home systems had been installed. [189]

In November 2010, the Reserve Bank of Fiji extended the eligibility list on its Import Substitution and Export Finance Facility to include renewable energy for import substitution funding.[190] The Facility is set up to assist exporters, large scale commercial agricultural farming, and renewable energy businesses to obtain credit at concessional rates of interest. The Facility is provided through the commercial banks, Fiji Development Bank and licensed credit institutions which provides back-to-back finance with a limit of FJ$40 million. The amount of advance under the Facility is at the discretion of the lending institutions based on respective credit assessments. Loans will be limited to a maximum of FJ$1million per business and will be allocated on a first-in basis amounts greater than FJ$1million may also be granted in special circumstance). [191]

The Government of Vanuatu Energy Unit's renewable energy activities have been financed primarily through the Sarakata Special Reserve Fund, using savings relative to diesel generation from a hydro-electric system installed in early 1995 at Sarakata, Espiritu Santo. [192] In 2010 the Sarakata hydro-plant supplied 80 per cent of all electricity in the Luganville concession area.[193] The effective fuel savings achieved by the Sarakata hydroelectric power station less operating expenses are applied to two funds:[194] i) the Sarakata Renewal Fund that receives the first 10,000,000 vatu[195] per annum of savings to be used for renewal of the hydro plant; and ii) the SSRF that receives all savings after the first 10,000,000 vatu among others to be used in Santo island to finance rural electrification and for subsidizing tariffs. For instance, the Reserve Fund co-financed the installation of a biofuel based power system in the village of Port Olry, located in the Northern part of Espiritu Santo.

Samoa has established a Clean Energy Fund (CEF) to support national activities on renewable energy and energy efficiency and also assist in financing transaction costs for Clean Development Mechanism (CDM) projects.[196] The CEF was established as one of the components in the on-going ADB supported Power Sector Expansion Project.

The main island of the Cook Islands, Rarotonga, has the largest per-household use of solar water heaters in the region. By the late 1980s, it was estimated that one in six houses on Rarotonga had a domestic solar water heaters (SWH), and in 2004 it was estimated that over half of the existing housing, and just about all the new housing and commercial buildings being built, include SWHs.[197] To encourage initial adoption import duty and tax were removed from imported units, but is now market driven. [198]

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188 Ibid.
189 Fiji, Economic and fiscal update: Supplement to the 2012 Budget Address, 2011, p. 92.
190 Ibid., p. 33.
191 Investment Fiji Webpage, Welcome to Investment Fiji, http://www.investmentfiji.org.fj.
192 SPREP, Pacific Regional Energy Assessment 2004 - Vanuatu National Report, Vol. 16, 2005, p.9.
193 UNELCO, Annual Technical Report Electricity – Year 2010, 2011, p.4.
194 Utilities Regulatory Authority of Vanuatu, Audit Report: Sarakata Hydroelectric Scheme – Luganville Santo, May 2010, p. 4 & pp. 7-8.
195 As at 23 February 2012, 10,000,000 vatu was equal to $113,250.28..
196 United Nations et al, Resources for Transforming Economies, including through Climate Financing, paper prepared as part of the Rio+20 Pacific Preparatory Meeting Joint Ministerial Meeting held 21-22 July 2011 in Apia, Samoa , p. 8.
197 SPREP, Pacific Regional Energy Assessment 2004 - Vanuatu National Report, Vol. 2, 2005, pp. 42-43.
198 Ibid., p. 42.

Other Tools

In Fiji in March 2011, MEPS and energy labelling was approved by Cabinet for refrigerators, freezers and refrigerator-freezers[199] including the incorporation of Trade Standards (Household Electric Refrigerating Appliances Order 2007) into the Customs Act.[200] Also in Fiji, in April 2011 the Cabinet approved the introduction of Biodiesel and Ethanol Standards including the Trade Standards (Fuel Standards) National Diesel Standards (Amendment) Order 2011.[211] The diesel standards have been modified to include 5 per cent volume biodiesel in it and the petrol standards already has a provision for the 10 per cent ethanol by volume.[222]

The Sustainable Energy Industries Association of the Pacific Islands (SEIAPI) was established in November 2010. For key sustainable energy options in the Pacific including solar PV, hybrid power systems, energy efficiency and energy auditing, bio-fuels and micro/mini-hydro SEIAPI plan to prepare technical guidelines to its members including on design and installation aspects. Nearly completed are design and installation guidelines for grid-connected PV systems as well as off-grid PV systems.[203] Some Pacific island countries have indicated that they will use the PV standards on a project-by-project basis or alternatively consider adopting them as mandatory national technical standards.

In February 2012 the Reserve Bank of Fiji announced that under the provision of Section 44 of the Reserve Bank Act with effect from 29 February 2012 commercial banks in Fiji are required to hold 2 per cent of their deposits and similar liabilities in loans to the renewable energy sector.[204] The Governor noted that facilitating lending for renewable energy will not only increase economic activity, but also promote import substitution, encourage export growth and investment and contribute to macroeconomic stability.[205]

CONCLUSION

The energy sector poses a particular challenge in the context of green economy due to its size, complexity, path dependency and existing infrastructure.

There is considerable untapped technical and economic potential for energy efficiency and renewable energy in Pacific island countries. However at the national level, energy efficiency is the quickest and cheapest way to reduce demand for fossil fuels and needs to be given higher priority. While reducing petroleum imports is possible, the Pacific region will remain heavily dependent on oil for the foreseeable future, so it is vital to improve supply arrangements.

A sustainable energy future will require new thinking and new systems - essentially a transformation in the way energy is produced, delivered and consumed. However major projects and transformational change take time. Therefore there is a need for strengthening the preparation, endorsement and implementation of long-term plans for transforming the energy sector.

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199 Fiji, Minimum Energy & Performance Standards & Labeling Program - Fiji Experience
200 Fiji Department of Energy Webpage, http://www.fdoe.gov.fj.
201 Fiji Government Online Portal, http://www.fiji.gov.fj.
202 Ministry of Works Transport & Public Utilities Webpage, http://www.mwtpu.gov.fj.
203 SEAIPI, SEAPI Focus, Issue 2, November 2011, p. 3.
204 Reserve Bank of Fiji, Reserve Bank Introduces Agriculture and Renewable Energy Loans Ratio, Press Release No.: 06/2012, 10 February 2012, p. 1.
205 Ibid., p. 2.

2.2. PRIVATE SECTOR AND PUBLIC-PRIVATE PARTNERSHIPS

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The pursuit of sustainable development and developing green economies is a global focus in the lead up to the Rio+20 Conference in June 2012. A strong message coming through from the negotiations and discussions is the need for broad stakeholder participation and involvement in sustainable development. Private businesses and industries are major stakeholders in transitioning to a green economy and must take a leadership role in improving the sustainability of their own businesses. Businesses are key in advancing green economies in the context of sustainable development, poverty eradication and environmental protection rather than just seeking short-term gains which are too often to the detriment of future generations. Naturally, the private sector needs to operate within fiscal, regulatory and legal frameworks defined by Governments, and these frameworks should be set up to encourage sustainable development, environmental stewardship and equitable sharing of benefits across society.

World Wide Fund for Nature (WWF), a nature conservation organisation, has become a strong advocate for partnerships with private sector companies to protect important marine habitats and fish stocks, support mangrove restoration and invest in climate change adaptation projects. WWF's Western Melanesia and South Pacific programmes are in partnership with private sector entities to help reduce the "footprint" or impact of society and industry on our planet, through strengthening important biodiversity outcomes. These public private partnerships, that also include Governments and civil society, offer a mechanism that can help build sustainable economies through the responsible use of marine resources, effective management and protection of critical marine ecosystems and implementation of best practices at sea and in adjacent coastal zones.

THE IMPERATIVE FOR PRIVATE SECTOR ENGAGEMENT

WWF's Living Planet Report, released in 2010 paints a sobering reminder that humans continue to put growing and unsustainable pressure on the planet's ability to provide what we need to survive and for it to absorb the waste we produce as a result of consumption of our natural resources. The report states that there has been a doubling of the demands on the natural world since the 1960s.
Under a 'Business-As-Usual' scenario, the outlook for the future of Planet Earth is grave: even with modest United Nations projections for population growth, consumption and climate change, by 2030 humanity will need the capacity of two Earths to absorb carbon dioxide waste and to keep up with natural resource consumption, and just over 2.8 planets each year by 2050".[206]

No single sector of society can achieve sustainable development or greener economies on its own. In its *Green Economy* publication, UNEP recognizes that moving towards a green

[206] WWF Living Planet Report, Biodiversity, biocapacity and development, 2010.

economy requires broad stakeholder participation from world leaders, civil society and private sector to engage in this transition collaboratively. "It will require a sustained effort on the part of policy makers and their constituents to rethink and redefine traditional measures of wealth, prosperity and well-being. However, the most significant risk of all may be remaining with the status quo."[207]

WWF has started a series of initiatives aimed at changing the minds and actions of key stakeholders for critical issues such as climate change, commodity production and sourcing, and overfishing. This new approach includes transformative action through collaborative, creative solutions with diverse partners in order to meet the needs of both people and nature. In the Pacific Islands region, this meant taking a "Business for, and Business from Nature" approach and developing partnerships with the private sector, government, communities and civil society groups to tackle issues around fisheries, forestry, tourism, sugar and oil palm.

There are examples of businesses and industries that are committed to applying best operational practices and promoting sustainable use of natural resources. The private sector is crucial in supporting conservation efforts and being part of solutions that improve business practices and reduce the footprint and impact on the environment and natural resources. Changes in corporate practices are essential if there is to be real progress in tackling conservation challenges like climate change, clean energy solutions, and encouraging the sustainable use of natural resources. In today's increasingly competitive world, there are growing demands from consumers, employees, shareholders and stakeholders for companies to demonstrate sound environmental practices and corporate responsibility. The role of the private sector, together with Governments, NGOs, and civil society is critical to not only manage natural capital (ecosystems and biodiversity[208]) in a sustainable way but also to invest in protection and restoration activities where necessary. Partnership approaches can have multiple benefits – including helping industry to understand that it makes good economic sense to invest in protecting the environment, ensuring that their business practices have a minimal impact or footprint on the environment and by working in a collaborative way towards improving the natural environment's resiliency. Another important outcome from such partnerships is the contribution they make to responsible management of natural resource use, maintaining healthy ecosystems, and improving the livelihood and positive impacts for communities.

One of the main challenges when working with the private sector is that it is difficult to demonstrate that it is in their best interests to be responsible in their use of natural resources and to invest in the protection and/or restoration of critical habitats. WWF's Coral Triangle Programme, which stretches from the Malaysian peninsula to Fiji, demonstrates that explaining to businesses the economic value of conservation can drive behavioural shifts. The elements of transforming businesses to make those shifts can be through a number of approaches including changing business practices and transforming markets which can help drive the demand for more sustainably produced food or products such as seafood, timber, palm oil or tourism.

207 UNEP, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy Makers, www.unep.org/greeneconomy, 2011

208 UNEP, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy Makers, www.unep.org/greeneconomy, 2011

TRANSFORMING MARKETS

Trade and economic growth have improved the quality of life for millions of people around the world, but it has come at a high cost to the environment. As market demand for food, fibre, and fuel increases in the coming decades, so will the impact on our planet's natural resources. The effect on biodiversity is, however, not just linked to global demand, but also to where and how companies and their supply chains obtain and process these vital commodities. Today, overfishing, deforestation, species loss, pollution, water scarcity, and climate change are critical environmental challenges linked to the production and consumption of basic commodities that are both renewable (e.g., timber, crops, livestock, and fish) and non-renewable (e.g., minerals, oil, and gas).

Changing the status-quo requires working with major companies and their supply chains to change the way key global commodities are produced, processed, consumed and financed worldwide. Together with large retailers, manufacturers, traders, and investors, commodities can be produced more efficiently and responsibly. In creating demand for such products, significant environmental results can be achieved and markets can become more sustainable.

Some approaches that are have been proven to promote positive changes in markets include:

- Developing new market standards, promoting better management practices and increasing the supply of certified products through multi-stakeholder engagements that involve businesses, trade and industry as well as producers and other NGOs;
- Establishing company partnerships to improve the sustainability of supply chains and promote sector-wide action in this field; and
- Promoting sustainable commodity investment with the financial sector.

In the Pacific, WWF is working at the national and regional levels with the producers of several commodities to encourage better management practices, independent certification and has been instrumental in establishing multi-stakeholder platforms to provide mechanisms for dialogue between industry, government and civil society (for example, the Coral Triangle Business Forum[209] and the Coral Triangle Fishers Forum[210]). These national and regional offices and programmes are tapping into the global markets to help match consumers and buyers in Europe, the UK and Australia who want more sustainably produced seafood or a greener tourism experience with suppliers, sources and sites in the Coral Triangle region.

Government

The role of national Governments is critical in any sustainability partnership to ensure effective policies and national frameworks are in place to support or facilitate sustainable natural resource management and utilisation. Governments can help improve the sharing of benefits (financial and non-financial) arising from responsible and sustainable use of natural resource exploitation between communities and small scale businesses and large national, regional or global corporate companies. Governments' legal frameworks can encourage more sustainable business practices and provide incentives for innovation in, and uptake of, appropriate technology along with means to reduce unsustainable practices. Government

[209] WWF webpage, http://wwf.panda.org/what_we_do/where_we_work/coraltriangle/events/regionalbusinessforum2011/.
[210] WWF Webpage, http://wwf.panda.org/what_we_do/where_we_work/coraltriangle/events/coraltrianglefishersforum/.

policies and frameworks can support creation and effective management of protected areas for biodiversity conservation, maintenance of ecosystem services, sustainable livelihoods, and increased resiliency of coastal communities to the potential impacts of climate change. National government can improve the integration of climate-smart approaches into their national development plans to improve future food security and help communities and businesses adapt to the effects of climate change. Collaboration between Governments to harmonise and strengthen such policy and management frameworks can also be enhanced through regional organisations such as, the Melanesian Spearhead Group and the Western and Central Pacific Fisheries Commission and through initiatives such as the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security.

Business and Industry

The private sector can transform the way it does business by introducing best practices which reduces its footprint and negative impacts, including those from fishing, tourism, and unsustainable land-based practices, for example in the sugar and palm oil industries. By valuing the environment and its ecosystem services, the private sector helps itself to ensure those services continue into the future. Changing business practices is not enough in itself; businesses should also invest into the management, protection, and the restoration of habitats and ecosystems, where necessary. This is a win-win outcome to ensure that the resource base and the ecosystem services and biodiversity are preserved. In the Pacific, the private sector and especially resource-based industries can invest in the communities that are the traditional or customary resource owners of resources and these communities can provide the private sector with the benefit of their traditional resource management knowledge and experience. This makes good business sense and is also good for the environment and people.

Civil Society

Civil society includes stakeholders such as NGOs and community-based organisations, churches, academic and research organisations, and resource owners. By working together in partnerships with the private sector and Governments, civil society plays a valuable role in advocating for policies and actions that genuinely promote the sustainable and equitable development of natural resources. Civil society can promote and participate in good governance and where necessary, restoration of natural capital through multi-stakeholder approaches. It can provide technical support and scientific data, undertake research, and add a broader dimension to the dialogue and decision-making process on the use and development of natural resources.

SPECIFIC PRIVATE SECTOR PARTNERSHIPS IN THE PACIFIC

Sustainable tuna fisheries

Over exploitation of target species and bycatch, (the incidental catch of non-target species), in marine capture fisheries is the most direct and widespread cause of loss of global marine biodiversity. Bycatch in purse seine and pelagic longline tuna fisheries, the two primary gear types for catching tuna, is a primary mortality source for some populations of seabirds, marine turtles, marine mammals, and sharks. Thousands of marine turtles, sharks and seabirds are killed each year by tuna longline operations.

Circle hooks, or "C" hooks have been found to reduce the hooking rate of marine turtles by as much as 80 per cent compared to traditional longline hooks, known as "J" hooks. Circle hooks are also less prone to swallowing and thus improve post-hook survival of marine turtles. Studies have found circle hooks do not reduce the catch-rates of target species. Despite these benefits, it is estimated that less than 5 per cent of longline operations in the Western and Central Pacific Ocean utilize circle hooks (this ranges from country to country, it is estimated that 85 per cent of the longline fleet in Fiji uses "C" hooks).

Current barriers to C hook conversion include: i) a general perception that "J" hooks are easier to use and bait; ii) the integral development of "J" hooks with the history of longline fishing from the outset; iii) the front-end cost of a shift to "C" hooks; and iv) few industry regulations to facilitate the change.

Box 2.2 Circle hooks in Papua New Guinea longline fishing

WWF has developed a public private partnership with Fair Well Ltd, a tuna longline fishing company in Port Moresby and the Papua New Guinea National Fisheries Authority (NFA), to help address barriers as expressed by some parts of the tuna longline fishing sector through running trials on the use of "C" hooks. The partnership also consults with stakeholders, such as island fishing communities, the Forum Fisheries Agency and the Parties of the Nauru Agreement. The project is funded by Australian retail company Coles Ltd. The "C" hook project commenced in October 2011 and will continue to mid-2012. The project has piloted C hooks on Fair Well vessels, provided turtle rescue kits to crews and provided training to crew members. The NFA has worked to strengthen its capacity to manage regional fisheries for long term sustainability through partnership with other countries and organizations. The NFA, with eight other Pacific Island countries, joined the Parties to the Nauru Agreement (PNA) which is a regional forum for sustainable fisheries management in the Western Central Pacific Ocean. This demonstrates the desire of the Papua New Guinea government to build its capacity to achieve the partnership's mutual goals of sustainable fisheries and preserving marine biodiversity. The partnership will also collaborate to exchange data, including digital information of marine/coastal biodiversity, improve coastal community fisheries, restore fisheries habitats and monitor conservation management measures.

A key incentive for changing to circle hooks is that it can improve access to markets that are specifically seeking tuna caught using responsible fishing methods. More and more consumers are demanding sustainably produced seafood thus the fishing sector must adapt to be able to supply sustainable seafood products and to verify that their products meet certain standards. Independent third-party certification and eco-labelling programmes, such as the Marine Stewardship Council (MSC), are powerful tools for promoting sustainable fisheries and providing fishing companies with clear guidelines for certification.

Box 2.3 Accessing global markets that are seeking sustainably produced seafood: Solander Pacific case study

WWF has established a partnership with Solander (Pacific) Ltd., a New Zealand, Pacific-based longline tuna fishing company with an extensive history of fishing from Fiji. The partnership aims to verify and demonstrate the use of best operational practices in order to access more discerning markets and improve Fiji tuna longline fisheries. Solander (Pacific) Ltd. has been a leader in the Pacific in its use of "C" hooks on its vessels to catch Southern Albacore tuna for markets in Europe, the United States, and Japan. Solander's crews have also been trained in the use of turtle dehookers and other necessary equipment to ensure the highest chance of survival for any marine turtle inadvertently caught during longline fishing. The project aims to promote the use of best practices for mitigating bycatch in the tuna longline fisheries of the Fiji Islands as a means to improve the status of marine turtle populations in the region, improve the sustainability of tuna stocks and tuna fisheries and improve access to markets seeking more responsibly caught tuna from the Western Pacific region. Through relationship building, information gathering, and documenting best practice, this model is contributing to addressing the deeper challenges facing tuna longline fisheries in the Western Pacific and Fiji. It will demonstrate that adopting best practices is advantageous for fishing companies, their staff, the Fiji Department of Fisheries and fisheries management for marine life conservation. Solander Pacific also aims to demonstrate best practices in bycatch mitigation and the benefit of increasing market share through aiming to achieve Marine Stewardship Council (MSC) certification. This project is a springboard for further work that aims to address two key development needs: i) ensuring sustainable fisheries in Fiji; and ii) maximizing return from fish caught and economic benefit to Fiji. Given the importance of fish to the Fijian economy, this project is about ensuring the medium to long term viability of a priority primary industry and enabling the tuna export sector to address key issues, capitalise on these trends and for Fiji to derive as much economic gain as possible from managing their tuna fisheries well.

Potential for Low Carbon Tourism

Tourism remains the fastest growing economic sector and in many small developing countries it represents the main source of foreign currency earnings as well as being the highest employer of local people. It also exerts a significant ecological footprint upon the very environment it markets and utilizes, which calls for new ways of doing business that are good for local people, good for nature and good for business.

In the Pacific, tourism represents a sizable proportion of many economies and thus the notion of sustainable tourism is not an ideal that should be confined to "eco-resorts" but rather an issue of national infrastructure and the long term sustainability of the natural resource base that this tourism relies upon. An assessment of ecological footprints, undertaken by the Global Footprint Network, a multi-stakeholder non-profit organization working towards a sustainable future, suggests a strong causal link between Fiji's highly developed hotel and resort sector and the nation's doubled ecological footprint (3.4ha) relative to the Pacific average (1.7ha).[211]

Three crunch issues currently face the tourism sector in the Pacific: the rising cost of (imported)

[211] Global Footprint Network Webpage, http://www.footprintnetwork.org/en/index.php/GFN/.

energy, a lack of investment capital and the current inability to consistently supply tourism with locally sourced food and other products. A conservation based intervention is needed to help address these issues (i.e. one that lowers the cost of electricity and makes available appropriate investments). Local communities face increasing hardship as a result of climate change impacts, which threaten livelihood opportunities and local incomes. This highlights the need for restoring and strengthening natural resilience and climate change adaptation capabilities in mangroves and coral ecosystems. Working with hotels and resorts offers the potential for increased awareness by the tourism sector on the importance of its engagement in ensuring healthy ecosystems and potential revenue streams to fund conservation efforts on the ground. A more sustainable tourism sector can lead to greater livelihood security for local people and communities that work directly in the tourism industry or provide goods and services such as tour guides, artists and suppliers of local produce including seafood and agricultural products.

Box 2.4 Sustainable tourism in Fiji

In Fiji, more than 50 per cent of a hotel or resort's operating costs are for electricity and diesel. Given the prominence of tourism to Fiji's economy, significant benefits could be achieved in sustainable growth from advancing Fiji as a low carbon tourism destination. Fiji can also act as a model for other Pacific and small island nations.

An industry approach towards a bundled carbon project represents an opportunity for sustainable tourism which is being explored by WFF in partnership with the Fiji tourism sector. The approach aims to provide significant financial savings and energy reductions for resorts and hotel operators. In addition, it can provide an economically marginal but socially and environmentally important carbon financing proposition and serve as a stepping stone to more environmentally and socially responsible tourism practices in Fiji and the broader Pacific islands region.

A small-scale feasibility study commissioned by WWF in 2011 assessed the potential of establishing energy efficiency and carbon offset programme within Fijian hotels and resorts. The study, completed in October 2011, was based on data supplied by 24 hotels and resorts and found that the estimated electricity bill savings for a hotel of 150 guest rooms would be FJD 185,000 per annum ($100,000), 21 per cent of the average electricity bill. Annual savings for the total programme was estimated to be FJD 4.5 million per annum. The level of potential savings in carbon was estimated to be between 2,500 – 5,000 tons of CO2 per year. This shows that the energy efficiency measures will significantly reduce energy consumption and provide significant cost savings to the hotels, the study suggests that the carbon trading component of the project is marginal. However, profitability can be increased by expanding the scope for other commercial buildings and industry sectors to be part of the carbon project and identifying external support for programme establishment and management costs. WWF is engaging with multiple stakeholders in the Fiji tourism sector, relevant government departments (Energy and Tourism), statutory authorities (Fiji Electricity Authority), and finance institutions to identify a feasible mechanism for implementing a full-scale project. As mentioned, the pilot identified many benefits, including a reduction in the carbon

Box 2.4 Sustainable tourism in Fiji (continued)

footprint of the tourism industry and in the amount of non-renewable energy Fiji has to generate. It can also help to reduce national reliance and expenditure on imported diesel fuels, build sustainability of the tourism sector, and create a marketing opportunity based on more responsible tourism in Fiji.

If successful, the project will be expanded to other Pacific island countries and other parts of the Coral Triangle.

Sustainable Sugar

Sugarcane cultivation and production is having a detrimental impact on rivers and coral reefs. In Fiji, the Qawa River in Labasa and the Great Sea Reef, which is the third longest barrier reef system in the southern hemisphere, have experienced negative impacts. Water pollution from chemicals and nutrients used in cane growing; sedimentation through soil erosion; and waste from sugar production, not only threaten the biodiversity of river systems and coastal areas but the cultures and livelihoods of communities that rely upon them. Research into climate change impacts suggests that more challenges will arise for the sugar industry from increases in the frequency of extreme rainfall and intensity of floods. These challenges may threaten the livelihood of cane farmers, who include the vulnerable and poor.

Box 2.5 Transforming the Fiji sugar industry

WWF is working with key stakeholders to transform Fiji's sugar industry into a more sustainable model that leads to an improved triple bottom line – profit, people, and planet. The project involves working with the producers and supply chain partners towards achieving internationally recognised certification standards such as Fairtrade and Bonsucro. Bonsucro will also potentially be employed to support improvement towards a standard developed by the Better Sugar Cane Initiative which measures sustainability of the production of sugar cane. If achieved, these certifications will link the Fiji sugar industry to a global market for sustainable trade and investment. In effect, the partnership will help reduce risk and uncertainty through creating greater supply chain security and by focussing on global outreach help to coordinate the implementation of better management practices for farming and production.

On-the-ground work for this project includes a concerted effort to help sugarcane producers

Box 2.5 Transforming the Fiji sugar industry (continued)

increase their yield; increase business income throughout the supply chain; reduce soil erosion and water pollution; and ultimately reduce the impacts from sugarcane production on the Great Sea Reef. Key stakeholders in this public private partnership include the Fiji Sugar Industry Tribunal, Fiji Sugar Corporation, Fiji Ministry of Sugar, Sugar Research Institute Fiji (SRIF), Sugar Cane Growers Council, Sugar Cane Growers Fund, South Pacific Fertilisers Ltd, and the PMU Social Mitigation Fair Trade Coordinator. Consultations have taken place with the Labasa Cane Producers Association and individual cane farmers, Labasa Mill, Department of Environment, Department of Health, and Macuata Provincial Office.

WWF and the Sugar Research Institute of Fiji are working together to develop a bio-fertiliser mill mud project concept. WWF is also working with the University of South Pacific to undertake water quality sampling on the Qawa River, the waterway into which the Labasa mill waste flows. Importantly, this is in collaboration with the mill, which is assisting where possible. WWF and the Fiji Sugar Corporation are now also developing a programme to support training towards better management practices for farming.

CONCLUSION

Partnerships involving the private sector hold great potential for ensuring the protection and sustainable use of natural resources. These partnerships require the coordination and cooperation of stakeholders, including government, communities, civil society and the private sector. These partnerships mean that businesses can invest in the conservation and management of critical habitats and ecosystems. They also provide businesses with the opportunity to engage with local communities and resource owners, which improves the sustainability of livelihoods, culture and lifestyles, and can strengthen the consumer base and increase the long-term viability of businesses.

2.3. FINANCING GREEN GROWTH

Based on a paper prepared by Coral Pasisi
Regional and International Issues Advisor, Pacific Islands Forum Secretariat

Transforming economies in the Pacific will require tremendous efforts and ingenuity to mobilize the necessary national, regional and international resources to coordinate the implementation of policy and financial instruments. Any actions need to be decisive to attract the growing volumes of climate finance and their maximum leverage on current and future investments. Climate change funding and some innovative financing mechanisms are currently being implemented by Pacific island countries in order to finance and facilitate a transformation towards green economy.

BACKGROUND

Climate change funding has not been a priority for national budgets and currently there are limited national resources available. However, gaps in funding can be met by seeking finance from diverse sources. Public finance (domestic and international) and market instruments (particularly carbon markets) can play an important role in addressing additional costs and risks of climate change action, making low carbon and climate resilient options more attractive, complementing and leveraging other resources to accelerate climate smart transformation of development paths.

Utilizing resources effectively in order to build resilience to climate change as well as reaping the benefits of more sustainable economies rests squarely within the strength of national policy and institutions supported by long-term political commitment. To institutionalize such approaches through national systems, multi-sectoral approaches must be taken that engage the expertise and advice of ministries of finance, planning, environment, and infrastructure at the very least.

Mitigation and adaptation efforts may present significant sustainable development co-benefits if dynamic approaches are used. Improving energy efficiency and renewable energy have high potential for gains in sustainable development. Pacific island countries have prioritized reducing their dependence on imported fossil fuels as their main source of energy. The supply and use of electricity that is more efficient, safer, cleaner, and not subject to volatile international oil prices is a key component of sustainable economic development and boosting resilience.[212]

[210] New Zealand, Ministry of Foreign Affairs and Trade, New Zealand's Fast Start Finance, 2011 Progress Report, available from http://www.mfat.govt.nz/downloads/global-issues/NZ_FSF_progress_report_2011.pdf.

Box 2.6 Co-benefit of climate change mitigation

Mitigation activity	Co-benefits for development
•Investments in energy efficiency •Investing in renewable energy	• The supply and use of electricity that is more efficiently produced and used reduces exposure to volatile international oil prices.
• Investing in improved water infrastructure	• Improved supply, sanitation and management of scarce water resources has many benefits, such as reduced energy use, decreasing costs from the reduction in losses of treated water and improved health from cleaner water sources and the treatment and appropriate disposal of wastewater.
• Climate proofing infrastructure e.g. strengthened roads, building codes, effective zoning	•Development of sound infrastructure to facilitate development through better transport and communication linkages to rural communities served by the road. • Reduced risk to the impacts of cyclones, floods, and wave surge.

ACCESS TO GLOBAL CLIMATE CHANGE RESOURCES

Improving access to climate change resources, management of resources keeping in mind national priorities and systems and working to improve national capacity has been a focus of significant efforts in the Pacific.[213] The Lowy Institute published a paper in 2011 which considered a number of different modalities at the national, regional and international levels that might help countries increase their access to climate change resources, as well as providing a framework for flexible management of these resources for more efficient implementation.[2] It is clear that there is no 'one size fits all' approach. With the varying funds available and different capacities of countries, a mix of modalities needs to be considered for implementation simultaneously. The Lowy Institute concluded that: *"Given the difficulties Pacific Island countries experience in accessing appropriate and timely levels of funding, a flexible portfolio of bilateral, regional and multilateral mechanisms for climate adaptation funding would be the best response to addressing the problems Governments in the region face. Although multiple financing mechanisms risk adding to administrative and financial costs, a mix of climate funding systems, that draw on the strengths of existing development partnerships, are the most practical means of assisting the region."*[2]

Through the Green Climate Fund (GCF), climate change funding is tied to transformational changes towards lower-carbon-based economies and more sustainable growth policies and programmes. The funding that Pacific countries may receive through the climate change funding could amount to a significant portion of the economy. The engagement of central

[213] SPREP, Mobilizing Climate Change Finance for the Pacific; Lowy Institute 2011- Turning the Tide – Improving Access to Climate Change Financing in the Pacific, Papers produced by the Transitional Committee of the Green Climate Fund, 2010.

line ministries (finance, planning, aid management and other ministries) is imperative for ensuring that resources are effectively managed, aligned with national priorities and implemented systemically at the national level, as opposed to on a project by project basis. The proposed additional funding for climate change is both an opportunity and challenge for Pacific island countries, donors and development partners. While it is a substantial amount of funding according to estimates by the United Nations Framework Convention on Climate Change (UNFCCC), there remains a large resources gap between what is being promised from new funds and the amount required for future adaptation and mitigation.

Box 2.7 : Modalities for accessing and managing climate change funding

There are clearly some modalities that have been tested and proved to provide means for more effective access and management while maintaining consistency with principles of aid effectiveness and donor harmonisation, use of country systems and strengthening existing mechanisms to provide better services to Pacific countries and their particular circumstances. Some of these modalities include:

Direct budgetary support (and sectoral support) presents one of the most effective modalities to address climate change challenges in a sustainable way. This is led by Pacific island countries themselves. The degree to which this issue is successful depends heavily on the reflection of climate change priorities and challenges within national and sector plans and their budgets. It requires robust, transparent and accountable public financial management systems and an M&E framework that provides accountability at the national level and for development partners.

National Trust Fund arrangements have been tried and tested in the region for some time and offer a very good modality for climate change resources to accrue over time and facilitate disbursement rates that are commensurate with the capacity (human, institutional, and absorptive). Building on existing trust arrangements could offer a good option (for example, augmenting the Tuvalu Trust fund to accommodate climate change funds).

A regional or subregional fund can present significant benefits in well-defined sectors/areas such as infrastructure, specific health challenges, and energy. The application of such models to broad areas like climate change may present more difficulties in designing the appropriate governance, equity, financial management and instruments. It is clear that the design of any fund must be based on clearly articulated needs and requirements by participating recipient and donor partners. Given the limited institutional capacity of some smaller Pacific nations, a sub-regional fund also has the potential to provide economies of scale and reduced overall administrative costs of several individual funds.

A regional technical support mechanism (that would identify funding opportunities and provide technical assistance in applications and implementation) is already in its conceptual development stage through the Council of Regional Organisations in the Pacific (CROP) Executives Sub-Committee on Climate Change.

Box 2.7 : Modalities for accessing and managing climate change funding (continued)

Accessing global climate change funds in the Pacific has to date only been possible through large multilaterals which are accredited implementing agencies for such funds, for example ADB, FAO, UNDP, UNEP and the World Bank. It will be important that in addition to strengthening those channels, other options are pursued to open up the options of access. SPREP has applied for implementing agency status under the global Adaption Fund and Global Environment Facility on behalf of CROP. In addition, there are options for countries' direct access to Global funds through accredited national implementing entities.

Source: SPREP, Mobilizing Climate Change Finance for the Pacific; Lowey Institute 2011- Turning the Tide – Improving Access to Climate Change Financing in the Pacific, Papers produced by the Transitional Committee of the Green Climate Fund, 2010.

While climate change funding through global funds are quite different than bilateral overseas development assistance (ODA), there are many gains to be made by transferring the experiences learned from aid effectiveness and donor harmonisation, to climate change funding.

BILATERAL CLIMATE CHANGEFINANCING

In addition to global funds, there is a growing bilateral pool of donors that are pledging support for energy activities in the Pacific. Bilateral sources of funding for renewable energy, as well as technology transfer are significant in the region from both traditional and non-traditional donors. While there is significant potential to benefit from this support, the array of donor interest can be confusing for Pacific countries, many of which lack the technical capacity and in-house expertise to determine which technologies and systems would work best. It also seems that while great gains in the short to medium term can be made through energy efficiency measures, donors seem more interested in funding renewable energy systems.

Trust funds have been used in the Pacific for a variety of environmental initiatives – ranging from rehabilitation from mining and deforestation to investment for future development and capacity-building.

Box 2.8 : Micronesian conservation trust fund

The Micronesian challenge is a subregional environmental initiative to protect 2.6 million square miles of the Western Pacific's marine and land resources. It aims to conserve 30 per cent of near shore marine and 20 per cent of forest resources across Micronesia by 2020. This exceeds the current goals set by international conventions and treaties which call for conservation of 10 per cent of marine and terrestrial resources by 2012. When implemented, the initiative will protect 10 per cent of the world's reef area and 462 coral species, representing 58 per cent of all known corals. In March 2007, donors pledged to support the programme with an initial budget of $200,000 a year to be used to staff a regional office based in Palau. This initial base has developed into the Micronesian Conservation Trust. Donations received in 2009 amounted to $2.1 million from 15 donors including major donations from the US Department of the Interior, the Federal Republic of Germany, UNDP-GEF, Packard Foundation, SGP and The Nature Conservancy. At the end of 2009 MCT had reserves for projects of $2.8 million and an endowment reserve of $1.6 million (MCT 2011)

There are some promising examples of where donor support in this area is attempting to harmonize approaches and approach funding to the energy sector in a more systematic way. The Pacific Regional Infrastructure Facility (PRIF) is a partnership between, Australia, New Zealand, World Bank, ADB and the European Union to provide collaborative support to Pacific countries in infrastructure including energy.

SIDS Dock is an institutional mechanism being established to facilitate the development of a sustainable energy economy within the small island developing States. SIDS Dock development is being jointly coordinated by the Caribbean Community Climate Change Centre (5Cs) and SPREP, with oversight from a Steering Committee. The ultimate goal of SIDS Dock is to increase energy efficiency by 25 per cent (2005 baseline) and to generate a minimum of 50 per cent of electric power from renewable sources and a 20-30 per cent decrease in conventional transportation fuel use by 2033, some small island developing States have announced more ambitious goals. SIDS Dock has already secured significant start-up costs and is currently establishing its institutional structures to begin implementation. About half of Pacific countries have already signed up to SIDS Dock. It four principal functions align well with the green economy:

1. Assist small island developing States in developing a sustainable energy sector, increasing energy efficiency and development of renewable energy resources;
2. Provide a vehicle for mobilizing financial and technical resources to catalyse clean economic growth;
3. Provide small island developing States with a mechanism for connecting with the global carbon market and taking advantage of the resource transfer possibilities that will be afforded, and;
4. Develop a mechanism to help small island developing States generate the financial resources to invest in climate change adaptation.

Innovative Financing Structures

The clean development mechanism (CDM) and regional emissions trading schemes have played a role in engaging finance and investment communities in thinking about climate change. The development of new financial products that seek to securitize renewable energy finance can allow bond markets and institutional investors to provide longer-term debt. The Pacific could aggregate projects to allow for the marketing of larger financial products with a more diversified level of risk. In addition, as a global carbon market develops, Pacific island countries could develop 'Green' bonds to tap into the global market.

CONCLUSIONS

Resourcing for green economy and sustainable development is available through a number of channels and modalities at all levels. Climate change financing provides an opportunity for resourcing green economy initiatives and this requires the engagement of a range of ministries to explore combining these resources with the existing efforts of Governments. A clear articulation of priorities within national policy and systems is required to guide resources effectively and in a sustainable manner. It also requires innovative modalities of access through global funds, and improved donor practice and flexibility through bilateral funding.

03

Section 03

NATIONAL PERSPECTIVES ON GREEN ECONOMY

Pacific leaders at the Rio+20 Pacific Preparatory Meeting in Apia agreed to conduct national analyses which would form the basis of country specific strategies for greening economies in the Pacific. ESCAP commissioned these analyses and this section summarizes the key findings from Vanuatu, Palau, Tonga, and Samoa. The section discusses the challenges and opportunities to green the major economic sectors, and also the mechanisms available to mainstream green growth. While country-specific strategies differ, the section identifies coordination among different sectors as one of the important requisites to facilitate the transformation towards a green economy. The assessments for Vanuatu and Palau were conducted by the Pacific Institute of Public Policy; the assessment for Tonga was conducted by Mr Asipeli Palaki, and the analysis of Samoa by Mr Samuelu Sesega.

The opinions expressed in the national assessments are those of the authors and do not necessarily reflect the positions of ESCAP or its member States.

3.1. VANUATU

Green growth offers practical and feasible solutions to a number of the economic, environmental and social challenges faced by Vanuatu. Many elements of a green economy are relevant for Vanuatu; specifically, the development of marine resources has strong potential for sustainable growth in Vanuatu. Because of Vanuatu's low per capita emissions, less emphasis should be placed on reducing resource intensiveness and pollution unless there are other benefits, such as energy security benefits.

Currently, consumption levels in Vanuatu are low when compared with global levels, primarily due to poverty and lack of disposable income. However, even the low levels of consumption have resulted in adverse environmental impacts such as inadequate waste disposal in urban areas. While the main industry, tourism, has a relatively low environmental footprint, it nevertheless has high resource intensity. Vanuatu's residential sector consumes a large amount of energy due to the high energy intensity of residential dwellings. The construction and operation of buildings are highly resource intensive, requiring vast amounts of land, water and raw materials. There is a great potential to improve the status quo through eco-efficient design, construction and operation of buildings which could improve the quality of infrastructure services and reduce utility costs.

Despite being relatively underdeveloped, the private sector is a key driver of Vanuatu's economy. The sector is constituted of small and medium enterprises, land speculators, individual investors, and family firms, all of which operate without adequate environmental governance processes. In the cases where firms are required to prepare environmental impact assessments (EIAs), the Government lacks capacity to review impact statements and implement adequate monitoring and compliance systems (e.g. fines).

Extensive market-based mechanisms are difficult to implement in Vanuatu due to a lack of government capacity in monitoring and enforcing economy-wide market-based approaches. One option for Vanuatu is to employ a more decentralised, ad-hoc system, such as environmental performance bonds. Using such an approach, a tourist operator, for example, would make a bond payment to the authorities before building his hotel. If environmental damage occurs, the bond is confiscated. This would align the incentives of government and the private sector for appropriate environmental protection and does not require high levels of government capacity to function. Greening of businesses in Vanuatu also requires informing businesses that green practices are a source of commercial opportunities rather than additional costs.

SECTORAL PERSPECTIVES ON GREEN GROWTH

Fisheries

Fisheries are a vital source of food and employment in Vanuatu, with many households deriving income from selling fish. As with other Pacific nations, tuna is currently the most valuable marine resource. In Vanuatu, most revenues come from foreign fishing fleets which pay access fees to fish in Vanuatu's EEZ. Developing the domestic fishing capacity would provide Vanuatu a significant opportunity to reap the benefits of underexploited marine resources. However, fisheries must be stringently regulated to insure sustainability

of the sector. Monitoring and enforcing regulation throughout Vanuatu's widely dispersed archipelago is a major challenge.

Community-based natural resource management (CBNRM) is important in this context and is legally recognised in Vanuatu's Constitution. CBNRM has been an effective form of environmental governance throughout Vanuatu, ensuring sustainability through a combination of traditional knowledge, species-specific prohibitions, seasonal closures, and gear restrictions. The Department of Fisheries actively supports CBNRM as a viable, decentralised system of resource management that draws upon pre-existing, restorative community-based systems of dispute resolution. Communities have also taken up the role of monitoring and enforcing national regulations, saving government resources.

Education is very important for greener management of marine resources. The Department of Forestry promotes mangrove preservation and a number of NGOs are also involved in environmental education: Wan Smol Bag has produced theatre shows focused on turtle sanctuaries, Vanua-Tai monitors fishing communities, and Live and Learn teaches school students about environmental and ocean issues. Awareness of marine resources is also promoted by Reef Check Vanuatu, which was set up by the Department of Fisheries to improve awareness of sustainability and monitoring of fish stocks. Establishing large marine protected areas may bring benefits in form of protecting fisheries resources and other investment in natural assets.

Agriculture and Food Security

Agriculture is an important sector in Vanuatu. In 2007, 82 per cent of all households in Vanuatu engaged in some form of agriculture. Agriculture currently lacks sufficient levels of investment to contribute to green growth and food security is increasingly at risk from a range of pressures, including urbanisation and population growth. As the majority of agriculture in Vanuatu is still subsistence based, the environmental impact of the sector is small. Overall, agriculture can be considered sustainable aside from isolated examples of soil erosion due to monoculture and low levels of deforestation to clear land for cropping. However, agriculture is at risk of becoming unsustainable as population growth is leading to a shorter rotation cycles and an increasing number of large commercial plantations and farms.

While further commercialisation of agriculture is not necessarily bad, expansion should occur sustainably. Minimising the impact of agriculture on the environment will require strengthened government regulations and innovative policy solutions. These could include the use of green market mechanisms such as requiring commercial farms to pay an environmental bond which will be distributed back to the farmer based on environmental performance, or Payment for Ecosystem Services (PES) schemes to compensate farmers for the environmental assets present on their land.

Vanuatu has a key comparative advantage in high value agriculture products, such as organic food. Focusing commercialization on organic food and increasing processing capacity to develop value added products could also boost export revenues and help overcome trade quarantine issues. Integrating this with the supplies chain of the tourism market also has good prospects for improving the country's food security. Long-term transformation of the

agricultural sector will require a sustainable agriculture roadmap which integrates traditional production systems with modern technologies and green economic management.

Energy

Only a small percentage of commercial energy in Vanuatu is generated from renewable sources, making Vanuatu very vulnerable to external oil price shocks. The dominant energy provider, the French Suez company UNELCO enjoys a near-monopoly in the country, resulting in one of the highest electricity prices in the world. UNELCO is using many renewable energy sources, 16 per cent of UNELCO's energy is produced through renewable sources, with an aim to reach 30 per cent in 2020.

UNELCO provides electricity to on-grid urban areas, providing opportunities for policy makers to target increased renewable energy production in off-grid areas. Most of the private businesses involved in the renewable sector are concentrating on solar power, and this industry is doubling in size every year. While solar energy has been identified as having the most potential, other options like biomass provides about 50 per cent of off-grid energy production mostly from timber and coconut products. In addition, according to the Utilities Regulatory Authority (URA) hydropower and wind power currently provide for 5 per cent of 'on-grid' generation and 10 per cent of national energy production. Vanuatu also has rich geothermal resources, and the government is currently exploring this option with an Australian company could provide 8 megawatts of baseload power for Efate by 2018.

The Government is working on a national policy roadmap which is scheduled to be available later in 2012 to provide the blueprint for renewable energy action. This will assess a number of areas considered strategic to Vanuatu's energy development, and will put forward several goals around increasing the supply of renewable energy in Vanuatu. A key goal going into the future is to make Efate island carbon neutral by 2020.

The Government has removed all import duty on solar panels, but there is a range of other renewable energy products that still attract duty. For instance solar refrigerators have a 25 per cent import duty and batteries needed to store solar energy have a 15 per cent import duty. Further reforms could include removing import taxes on all green technology products. Vanuatu also needs to position itself to benefit from international assistance targeted towards renewable energy development. Environmental investment and credit schemes, such as the Clean Development Mechanism (CDM) can be used to raise much needed capital for renewable energy projects that result in emissions reductions.

Tourism

Tourism is Vanuatu's dominant service industry, the largest foreign exchange earner, and one of the key contributors to economic success in recent years. It is imperative that tourism planning is carefully integrated within existing environmental constraints and opportunities. Moreover, developing a national sustainable tourism strategy, which incorporates strategic environmental assessment and sustainable consumption and production practices will help to ensure that the inevitable environmental impacts of tourism are minimized.

There are a number of opportunities where tourism can contribute to both economic growth and environmental protection. Given Vanuatu's natural resource base, eco-tourism can provide

important environmentally sustainable opportunities for tourism development. Minimum standards for tourism operations, in line with the Marrakesh Process recommendations, and organisations such as the Sustainable Tourism Stewardship Council (STSC) have been established to develop certification programs and accredit tourism operators. Implementing a green tax on tourism will also assist with reducing the environmental impacts of tourism, but it should be done in a way to ensure that the tax does not make Vanuatu uncompetitive with other key tourist markets in the region. In recent years, a positive growth area for tourism in Vanuatu has been the increase in cruise ship visits to Vanuatu from Australia and New Zealand. The number of cruise ship arrivals has grown significantly over the last three years and this has resulted in a largely positive contribution to the local economy, without the environmental impacts from land-based tourism.

Tourism can generate significant inflows of foreign direct investment (FDI) through hotel construction and other tourism related developments. Tourism FDI has a high potential for contributing to equitable poverty-alleviating economic growth, if directed towards green growth. More vocational education is needed to ensure that Vanuatu's workforce is suitably trained for working in this sector. The incorporation of sustainability into these training programs will also help to ensure that green tourism is mainstreamed.

MECHANISMS TO MAINSTREAM GREEN GROWTH OPPORTUNITIES

Vanuatu has a National Energy Policy Framework and a Disaster Risk Reduction and Disaster Management National Action Plan but no roadmap for achieving broad-based sustainable development. The mainstreaming of sustainable development could occur via the establishment of a National Council on Sustainable Development (NCSD), a body that has oversight of green growth implementation by acting as a sustainable development social planner and includes all relevant stakeholders as its member.

An analysis conducted by ADB found that funding for environmental protection and management was inadequate and accounted for less than one per cent of the total budget. This constraint could be overcome by increasing the revenue of departments focusing on environmental policymaking. Given this constraint, there is a need to engage with the civil society and the private sector to mainstream green growth through initiatives, such as the memorandum of understanding between the Vanuatu Association of NGOs (VANGO) and the Government of Vanuatu which allows VANGO to receive support from donor countries and the Government.

The private sector is currently not an active player in green growth in Vanuatu, as there are no strong incentives for greening businesses and implementing sustainable consumption or production mechanisms. The government should build a close relationship with the private sector, especially the tourism industry, to build business awareness of emerging environmental problems and collaborate to establish least-cost solutions to these issues. Mainstreaming green growth in Vanuatu will likely require the private sector to pay for the ecosystem services used and the pollution resulting from unsustainable consumption and production, for example through a green tax on hotel rooms. More importantly, it will require framing the issues of sustainability and green growth as opportunities and incentives for the private sector, not as additional burden.

Regionally, Vanuatu is an active member of a variety of subregional and regional organizations, such as the Melanesian Spearhead Group (MSG), PIF and SPREP, which are focusing on achieving green growth. MSG member countries, including Vanuatu, have recently agreed to a number of commitments that will assist with mainstreaming green growth. The MSG Declaration on Environment and Climate contains commitments to sustainably manage terrestrial ecosystems (Melanesia Terrestrial Commitment) and for using coastal ecosystems to adapt to climate change (Melanesia Blue Carbon Initiative).

3.2. TONGA

Green economy has potential to achieve the objectives of sustainable development in Tonga, but this will require considerable effort. As its economy is heavily reliant on imported products, it is difficult for Tonga to have a large impact upon production methods for manufactured articles. Tonga can influence the small amount of domestic manufacturing activities which have begun to be undertaken by initiatives in private and public capacities. Furthermore, Tonga can influence consumption habits by means of price incentives built in through import tariffs in place and standards for certain import items. Tonga does not currently have "green taxes" in place. Talks are under way about the possibility of introducing environmental levies to fund provision of waste management and other environmental services. The Government is currently proposing a green environment levy on tourists coming to Tonga, but this would need to be investigated to ensure detrimental effects would not be introduced to the tourism sector.

While there is great potential to green businesses and sectors such as energy and tourism, there is a lack of immediate economic incentives for initial investment. In the manufacturing and processing sector, strong incentives do not exist to justify a move to environmentally sustainable techniques. For instance water bottling is done in plastic bottles which are imported; they are so cheap that it is difficult to utilise alternatives. Despite vulnerability to environmental changes such as sea level rise and water source contamination, market pressures to maintain certain standards are not a strong force in Tonga. The current practice of making regulations at a government level then requiring the private sector to comply without having undertaken meaningful consultation undermines efforts to improve public/private cooperation. Past experience shows that initiatives and programmes with ownership at the grassroots level have better success than those passed down from government.

SECTORAL PERSPECTIVES ON GREEN GROWTH

Agriculture

Tongan agricultural exports are of limited diversity mainly consisting of squash, root crops, coconuts, watermelon, vanilla and coffee. One of the problems facing Tonga's agricultural exports is the high costs of shipping as production and quantities are too small to benefit from economies of scale. In order for Tonga to maintain competitive advantage, it must be able to either produce niche agricultural products or deliver produce of a higher standard than those produced elsewhere. Tonga could also capitalize on using certain processes,

for instance using integrated pest management, to access niche markets. These factors must be recognized by the Government of Tonga and exporters in order to capitalize on potential benefits offered by moving to organic or other value-added production methods and sustainable techniques. A number of programmes and initiatives which recognize these factors, and the potential opportunities, have been implemented or are in the initial planning phases. It is important that the Government and agricultural producers develop their products before competitors.

However, there are several challenges. There is a lack of an overarching agriculture policy to provide guidance and direction, particularly in relation to sustainable development initiatives. The implementation of sustainable development initiatives does not necessarily correspond with increased revenue for private operators, making private sector movement to sustainable practices highly improbable, unless required by market forces. Poor maintenance of high earning export crops such as watermelon and squash pumpkin coupled with poor export processes restricting accessible markets due to technical trade regulations pertaining to biosecurity hampers this sector's potential for green growth. There are financial constraints on public sector operational budgets and private sector capital improvements investments. Currently, land cannot be bought or sold on a freehold basis; thus access to private sector finance for investment in capital improvements including for the purposes of sustainable development initiatives is often restricted.

Fisheries

The fisheries sector is of critical importance to Tonga economically. The Fisheries Department under Ministry of Agriculture and Food, Forestry and Fisheries has developed initiatives such as special management areas which have proven successful and are currently implemented in eight local communities. Management plans for endangered and threatened species including turtles and beche-de-mer (sea cucumbers) have been developed and implemented. There is also an on-going effort to improve export trade facilities to meet the requirements of major fish importers, particularly those of European Union countries.

Whales are a major tourism attraction to Tonga and their preservation represents a valuable investment in natural capital. In addition, Tonga can learn from the experience of nations such as Palau which have recently declared their EEZ as a shark sanctuary. Tonga could replicate such activities in the South Pacific in an attempt to expand the focus of the tourism market to all times of the year as opposed to the current concentration on the whale season. This could have the additional benefits of improvements to protection of coral reefs which evidence does suggest can occur with higher shark numbers.

Tongan fisheries suffer from similar issues as the agricultural sector in that investment in sustainable practices is not always economically rational. Incentives to invest in this sector are further reduced due to reductions seen in catch quantities for reasons which may relate to overfishing and climate change impacts. The decline in fish stock and fish catch has discouraged the industry from the promising prospects of export expansion. Like agriculture, fisheries also face issues technical trade barriers. Lack of funding for special management areas have been an obstacle to successful implementation and expansion of such a programme.

Energy

Tonga's heavy reliance on imported diesel fuel for energy production makes it highly susceptible to oil price volatility. Reducing this dependence is seen as a priority by government. The Tonga Energy Road Map (TERM) is a 10-year plan that aims to achieve 50 per cent renewable energy generation by 2013. A pilot project is under way for the construction of a solar energy farm with an expected output of 1MW, or about 4 to 5 per cent of Tongatapu's annual energy consumption. The energy department, as well as the TERM Implementation Unit (TERM-IU), are researching and conducting viability studies into other alternative renewable energy sources including wind, wave and biofuels.

The TERM project offers massive potential benefits to the Tongan economy by expanding energy access and reducing energy costs. Such an outcome could be instrumental in attracting new service sectors and growing existing sectors of the economy resulting in economic and social development of Tongan communities. Nevertheless, TERM continues to be plagued by political problems, stemming from poor institutional organization, political struggles, and lack of accountability. There is also a lack of technical expertise in the country and the infrastructure is rapidly aging. This problem is exacerbated by the inability of the consumer to pay higher prices if the infrastructure were upgraded through commercially funded ventures.

Tourism

The tourism sector is a government priority for economic development in Tonga and is managed by two separate organizations: the Tonga Visitors Bureau, a government organization under the Ministry of Tourism; and Tourism Tonga Incorporated, the representative body for the private sector. The Ministry of Tourism ensures that sustainable development is incorporated in all plans and regulations.

There is a great opportunity to green the tourism sector by utilizing Tonga's strengths as a tourism destination in culture and eco-tourism. Transformation of the energy sector to renewable energy could provide Tonga with a highly marketable green image that can be utilised in promotion of the tourism sector. Additionally, the tourism sector has visions to focus on eco-tourism that promotes natural environments, traditional customs and sustainable accommodation options for visitors. Investments in natural capital through national parks, such as Eua National Park and Mount Talau National Park in Vava'u, are investments in natural capital that would be attractive to tourists as well.

Some of the challenges facing this sector are the acrimonious relationship existing between two tourism organizations, infrastructure issues such as poor airport conditions, and a lack of transportation infrastructure that fully caters to the needs of tourists. There is a lack of coordination between public and private administrative bodies, and institutional factors, such as the land tenure system, discourage private investments in the tourism sector.

MECHANISMS TO MAINSTREAM GREEN GROWTH OPPORTUNITIES

Tonga's current environmental and resource management framework is based on its 1875 Constitution. More recently, the Sixth Five Year Development Plan (DP6) between 1991 and 1995 was the first attempt to integrate environmental issues into the national planning framework. DP6 argued that effective support for environmental planning and

management will yield economic savings in comparison with the potential costs of cleaning and regeneration. The DP6 goal was to "achieve sustainable economic growth conducive to a higher per capita income." Since the 1994 Programme of Action for the Sustainable Development of Small Island Developing States (Barbados Programme of Action),[214] Tonga has had five national development plans (up to present), the Strategic Development Plan 6, Strategic Development Plan 7, Strategic Development Plan 8, National Strategic Planning Framework, and the Tonga Strategic Development Framework.

Sustainable development ideals are implemented at the primary level through legislative provisions vested in several Acts in Tonga. The government is committed to ensuring sustainable development by enforcing Environmental Impact Assessments (EIAs), strengthening the national capability for environmental management and also mainstreaming sustainable development into all of its policies and budgetary processes. Legislative functions and responsibilities for sustainable development are vested in different institutions. The Ministry of Environment and Climate Change (MECC), Ministry of Lands, Survey and Natural Resources (MLSNR), Ministry of Agriculture and Food, Forestry and Fisheries (MAFFF) are key agencies in the implementation of sustainable development initiatives. Other government entities, such as the Ministry of Foreign Affairs, the Ministry of Finance and National Planning and the Prime Minister's Office, are key agencies for setting national priorities, coordination and negotiations on the national, regional and international platforms.

National policy is initiated and developed by the Planning Department of the Ministry of Finance and National Planning through its Strategic Development Framework, in consultation with divisional committees, government agencies, NGOs and donors. It is entirely at the discretion of each government agency to consult with civil society. Inter-ministerial or inter-sectoral coordination is in the form of interdepartmental committees, members of which are chosen from different agencies.

Tonga is a member of the Pacific regional agencies; the United Nations system and many of its agencies; the African Carribean Pacific group of countries linked to the European Union through the Cotonou Agreement; the World Trade Organization; and other international and regional organizations. Overall coordination and harmonization continues to be enhanced by regular Tonga Development Partner Forums in addition to regular bilateral programming meetings.

3.3. PALAU

The islands of Palau are considered the most diverse in terrestrial biodiversity in the Micronesian subregion. Habitats include nine primary forest types, with upland and mangrove forests being the most common. Palau is also known for its pristine, diverse and abundant marine resources that anchor the productive tourism and fisheries sectors. More species are found per unit area of marine habitat in Palau than anywhere else in the world.

[214] Report of the Global Conference on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados, 25 April-6 May 1994 (United Nations publication, Sales No. E.94.I.18 and corrigenda), chap. I, resolution 1, annex II.

However, Palau's soils are considered to be of poor quality and have limited agricultural use due to high acidity levels.

Palau has an environmental impact assessment process which requires permits for all projects that involve earthmoving, waste discharge or storage of hazardous waste. Projects that are considered large in scale, commercial, or that take place in wetlands and marine environments are also required to submit an environmental assessment. Environmental Quality Protection Board (EQPB), a decision-making body comprised of community and sector representatives appointed by the President of the Republic and confirmed by congress, review the environmental impact assessment process. All funds collected from fines resulting from EQPB penalties are deposited into a mitigation fund and used to address urgent environmental issues that require immediate attention, such as oil spills, hazardous waste disposal, and rapid eradications of high-risk alien invasive species.

Palau has some experience in using green tax and budget reform to promote green growth. National and state Governments in Palau implement user and green fee programmes to offset the costs of managing protected areas and the Palau Protected Areas Network (PAN). At the state level visitors are charged user fees to access areas that have protected area status. State revenues generated from user fees are then used, through the state budgetary processes, to finance protected area management including employment of conservation officers, scientists and resource managers. At the national level, visitors are charged a green fee upon airport departure. A portion of the national green fee is dedicated to offsetting costs of managing the Palau PAN.

SECTORAL PERSPECTIVES ON GREEN GROWTH

Fisheries

Palau's community and national stakeholders have established a network of over 30 state-based protected areas and two national EEZ sanctuaries (the Palau Shark Sanctuary and the Palau Marine Mammal Sanctuary). In 2003, the national Government adopted the Protected Areas Network Act, RPPL No. 6-39, which established the framework for a sustainably financed and biologically representative system of protected areas. The Palau Ministry of Natural Resources Environment and Tourism has collaborated with key partner agencies and NGOs to develop common principles and approaches for the application of ecosystem approaches to fisheries (EAF) management–an integrated approach that considers ecosystems, habitats and societal objective into fisheries management. Once fully implemented, it will require scaling back of coastal fisheries production, applying precautionary approaches to fisheries, and establishing rights-based methods management instead of open access arrangements.

Some of the challenges facing the implementation are institutional and political struggles for administrative authority and use of green fee revenues, which have served to slow progress in distributing funds effectively to local and national protected areas and resource managers. There is also limited awareness among stakeholders about national fisheries management plans, sometimes creating confusion. Nevertheless, the PAN and green fee demonstrate clear political and community commitment to investing in natural capital and

using fiscal measures to support sustainable development.

Tourism

Palau enjoys a vibrant and growing tourism industry; among small islands, it ranks second to the Bahamas in its number of visitors relative to the population. As a major private sector led industry, tourism has great potential to influence private sector policy and practices. Local and national green fee reliance on this sector also makes it a powerful example of effective use of green fees and taxes. Tourism's reliance on adequate infrastructure and supplies of local good and services creates opportunities for it to lead the way and incentivize sustainable infrastructure development and green production/consumption trends.

The Palau Tourism Action Plan and Sustainable Tourism Policy and Action Plan recommends a variety of strategic goals including minimising mass tourism, increasing Palauan participation to 75 per cent of industry's workforce, establishing an industry training program at Palau Community College and developing guidelines for sustainable tourism development. However, the Plan has never been formally adopted and implemented due to limited political will. There are also conflicting interests and divergence of core values among industry stakeholders and local population, acting as a constraint for the sector.

Agriculture

While only 9 per cent of Palau's land is arable, there are several initiatives in place which present opportunities for green growth in this sector. EQPB is responsible for administering a pesticides certification programme targeted at commercial farmers. The Division of Environmental Health (DEH) within the Ministry of Health inspects farms and issues public health compliance certificates. Both processes present opportunities for promoting farms in Palau that are in consistent compliance with environmental and public health standards and regulations. The Palau Community College (PCC) and the Palau Community Action Agency (PCAA) conducts research and provides formal education and extension services to promote sustainable agriculture. Regional and international technical assistance from FAO, SPC, and the Taiwan Technical Mission (TTM) also play a role in supporting the development of Palau's agricultural sector. FAO support has focused on staffing the Nekken Agriculture Station, enhancing food security and promoting value-added local produce. SPC support has focused on promoting sustainable, organic agriculture through the use of plant extracts to control pests, contour farming, agro-forestry and the use of participatory rural appraisal (PRA) processes to allow farmers to identify priorities.

Energy

Palau relies on imported fuel to power 100 per cent of the nation's transportation and electricity generation. This dependency on imported fuels has had a negative impact on economic growth due to the sharp rises in fuel prices over the last decade.

In 2009 a National Energy Policy (NEP) was adopted that articulated the government's vision for a reliable, resilient and sustainable energy sector that delivers low emissions energy services. The NEP also forms the basis for strategic action planning that aims to bring Palau's vision to reality through integrated energy sector management. As a result, The Palau Energy Sector Strategic Action Plan (ESSAP), developed in 2009, provides a framework for the implementation of Palau's National Energy Policy. The ESSAP sets forth

a comprehensive list of actions for implementation in eleven strategies including promoting private sector participation in supply of energy, ensuring constant improvement of energy efficient equipment, and increasing awareness of energy efficiency and energy conservation.

MECHANISMS TO MAINSTREAM GREEN GROWTH OPPORTUNITIES

A plethora of mechanisms exist in Palau to support mainstreaming of green growth opportunities. The Constitution of the Republic of Palau sets the foundation for Palau's national policy framework for environmental management and social progress, much of which is aligned with the principles of green growth. The Palau Environmental Quality Protection Act (EQPA) is the most comprehensive environmental law in Palau and serves as a primary mechanism through which the national government meets its responsibilities in relation to environmental stewardship. The Palau Protected Areas Network (PAN) is the vehicle for strategically directing national government support, technical assistance and sustainable financing to national, state and local protected areas and natural resource managers. Other national policy mechanisms for mainstreaming green growth include the Palau Energy Policy, the Palau National Water Policy and the Palau National Trade Policy. Recently adopted by the national Governments, policy implementation is in its initial stages for these national policies.

The Palau Conservation Consortium is an informal network of conservation practitioners, policymakers, scientists and resource managers. The Consortium communicates largely through email and meets quarterly and as needed. It serves as a venue for sharing information, lessons and opportunities, while also informally coordinating strategies and activities. The Consortium is currently the most effective mechanism for informal coordination of environment and natural resource management in Palau.

Traditional mechanisms consist of the Council of Traditional Leaders (Rubekul Belau) which is the national level association of Palau's senior traditional leaders. Rubekul Belau meets once every month and as needed. Traditional leaders have often been great allies in efforts to mainstream conservation and sustainable development. Rubekul Belau has been a valuable mechanism for linking green growth to traditional governance and principles as they relate to sustainability as well as traditional resource management tools and practices. The Council of Traditional Matriarchs ('Mechesil Belau') is made up of a network of Palau's senior traditional matriarchs and has historically played a key role in moving environmental policy forward in the same way as Rubekul Belau.

At the regional level, the Pacific Islands Forum (PIF), the Secretariat of the Pacific Community (SPC), the Secretariat of the South Pacific Regional Environment Programme (SPREP), the Forum Fisheries Agency (FFA), and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) support Palau's effort in mainstreaming green growth. The Compact of Free Association (COFA) between the United States and Palau, the United States Coral Reef Task Force and the variety of international treaties to which Palau is party provide international mechanisms for mainstreaming green growth.

3.4. SAMOA

Samoa is a Polynesian island nation with a population slightly below two hundred thousand. Its small area and population, together with the large distances to developed markets[215] define some of the binding constraints to available policy options for the growth of industry and manufacturing (e.g. high transport costs to and from major markets). The economy of Samoa is increasingly dependent on tourism and the growing services sector. Although agriculture and fisheries provide the bulk of employment, the value added from agriculture and fisheries has steadily declined over the past few decades. Remittances provide a large contribution of the national income at 26 per cent GDP. Overseas development assistance represents a smaller but still significant proportion of national income.

SAMOA'S ENABLING FRAMEWORK FOR SUSTAINABLE DEVELOPMENT

The Strategy for Development of Samoa (SDS) 2008-2012 provides the overarching framework that sets out Samoa's development vision, its medium-term national development goals, and strategies for their achievement. The elevation of environmental sustainability as a priority area in SDS 2008-2012 is a significant point of difference from the previous plans. It marks the first time that the 'environment' is explicitly identified and elevated to this level of national planning.

Environment and environment related concerns, such as climate change, are major cross-cutting issues which involve a high number of sectors and externally funded projects. Managing the multi-sectoral nature of the work is one of the main challenges underpinning the repositioning of the environment within the development framework.

In the current SDS8, the environment is one of the three pillars of sustainable development, alongside the economic and social pillar. It marks an important milestone toward the achievement of the National Environmental Management Strategy priority recommendation of effective mainstreaming of the environment into Samoa's national development framework and sector plans.

Box 3.1 Legal and Policy Framework for Samoa's Sustainable Development Framework: Selected Sectors

Sector	Sector Plan/Strategy/Policy	Key Relevant strategies and plans
Agriculture	- Agriculture Sector Plan 2011-2015 - Fruits and Vegetables Subsector Strategy 2008-2015 - Livestock Subsector Plan (in progress) - Coconut subsector plan (in progress)	National Adaptation Plan of Action (2005) National Policy to Combat Climate Change (2007), National Chemical Management Strategy 2007-2017 PUMA (EIA) Regulation 2008 National Biosafety Framework (2003)

[215] The islands of Samoa are located 2,600 miles south-east of Hawaii, 1,800 miles from New Zealand and 2,700 miles from Sydney, Australia

		Samoa National Invasive Species Action Plan 2008 – 2011 National Biodiversity Strategy and Action Plans (NBSAP)
Fisheries	- Tuna Management and Development Plan 2011-2015 (draft) - Fisheries Act 1988 - Fisheries Fishing License Regulation 2002 - Territorial Sea Act 1971 - Exclusive Economic Zone Act 1988 - Fisheries Regulations 1996 - Fisheries Amendment Act 1999 - Fisheries Bill 2011 - Village Fisheries Management - Plan: Samoa's Community-Based Management Strategy.	National Adaptation Plan of Action (2005) National Biodiversity Strategy and Action Plans (NBSAP) Samoa Fisheries Project, Fisheries Division, Government of Samoa.
Forestry	- Forest Resource Management Act 2010 - Forestry Policy 2009 - National Parks and Reserves Act 1974	National Adaptation Plan of Action (2005) National Disaster Management Plan (2007) National Biodiversity Strategy and Action Plans (NBSAP) Samoa National Invasive Species Action Plan 2008 – 2011
Energy	- Electric Power Corporation Act 1980 - Electricity Act 2011 - Petroleum Act 1984 - Samoa National Energy Policy 2007	National Adaptation Plan of Action (2005) National Disaster Management Plan (2007) Coastal Infrastructure Management Strategy and Plans (2007)
Tourism	- Tourism Development Plan 2009-2013 - Tourism Development Bill - Samoa Accommodation Standards – Minimum Standards for Beach Fales - Samoa Accommodation Standards – Minimum Standards for Hotels	Coastal Infrastructure Management Strategy and Plans (2007) National Biodiversity and Strategic Action Plan (NBSAP, 2005) National Adaptation Plan of Action (NAPA)

Transportation	- Samoa National Infrastructure Strategic Plan.	National Adaptation Plan of Action (2005) National Disaster Management Plan (2007) Coastal Infrastructure Management Strategy and Plans (2007)
Water and Sanitation	- Water Resources Management Act 2008 - Revised National Water Resources Management Policy 2009 - Water for Life: Water Sector Plan and Framework for Action, 2008–2013 - National Water Resources Management Strategy 2007-2017 - National Sanitation Policy 2009 - National Sanitation Master Plan (draft) - Integrated Sanitation Master Plan (draft) - National Drinking Water Quality Standards 2008	National Adaptation Plan of Action (2005) National Disaster Management Plan (2007) National Chemical Management Strategy 2007-2017 National Biodiversity Strategy and Action Plans (NBSAP) PUMA (EIA) Regulations 2008 National Building Code (under review) Sustainable Management Plan for the Greater Apia Area (draft)
Environment	- National Environment Management Strategies (1993)	National Biodiversity and Strategic Action Plan (NBSAP, 2005) National Adaptation Plan of Action (NAPA) National Disaster Management Plan (2007) Coastal Infrastructure Management Strategy and Plans (2007) Samoa National Invasive Species Action Plan 2008 – 2011 National Biosafety Framework (2003) Samoa Agriculture Sector Plan 2011-2015

OVERVIEW OF KEY SECTORS

Agriculture

Context

Agriculture is often referred to as the backbone of Samoa's economy and until the early 1980s was the most dominant sector accounting for nearly 90 per cent of total exports and around 60 per cent of the country's total employment. Over the last 30 years, the agriculture sector's contribution to the national economy has steadily declined. Employment levels in the sector have also declined from 60 per cent in the 1980's to about 40 per cent in the mid-2000s (based on the 2006 population census). National development plans over the last two decades have called for the sectors' revival, but a complex combination of institutional, social and economic constraints, as well as natural disasters and diseases, have resulted in continued poor performance of the sector.

Issues and Constraints

Some of the constraints to green growth in Samoa's agriculture sector are:

- Lack of an overarching national sector plan that provides a coherent policy, legal, regulatory and strategic planning framework to guide the sustainable development of agriculture.
- Lack of accurate and reliable agricultural statistical time series on production, land holdings, productivity trends, employment, markets and prices and other series to develop accurate baseline data required for formulating evidence-based policies and strategies, for setting and measuring performance indicators and impacts and for effective monitoring and evaluation.
- Low productivity and returns in village subsistence agriculture and increasing reliance on imported low nutritional value food products puts food security at risk.
- The devastating impacts of natural disasters, pests and diseases on subsistence and commercial commodities (for example, taro leaf blight) have severely impacted production and productivity of crops that have been important contributors to the country's export earnings.
- Changing world markets and volatility in market prices of Samoan agricultural export commodities have affected the returns to farmers (for example, producing, maintaining and harvesting tree crops like coconuts and cocoa have been affected).
- Lack of private sector investment in agriculture, which could reflect the low levels of credit available to this sector because of the land tenure system in Samoa and the difficulties associated with using customary land as collateral.

Opportunities for Green growth

Diversifying crops and cropping systems

Samoa has significantly diversified its agriculture in terms of crops, livestock, and cropping systems. The new varieties of crops are higher yielding and disease resistant. Five new varieties of taro are promoted for export and many recently introduced fruit trees are now widely grown. Different cropping systems, such as permaculture, agroforestry, organic farming, and others combining trees, livestock and crops spatially, are making farms more

ecologically robust and resilient against perturbations including climate related changes.

Greater use of green farming practices
The ASP 2011-2015 is well endowed with prescriptions promoting environmentally friend farming practices including organic farming, and others discouraging the use of unfriendly methods and inputs. This is an important aspect of 'greening'.

Effective communication to stakeholders of benefits of green agriculture
Effectively communicating and raising awareness amongst farmers and consumers of the benefits of 'green' agriculture is an important strategy for bringing long-term changes in public attitudes towards environmentally friendly agricultural produce, and for farmers, changing attitudes towards sustainable and unsustainable farming methods and technologies.

Greater used of new land mapping tools
The use of soil typing and mapping tools and information to assist in crop-site selection is an important capacity to optimize land use and productivity. Predicted changes in climate and information on flood prone areas can be incorporated into land use maps to guide farmers in identifying the best crops to use where.

Land use classification and mapping
An important aspect of integrated planning is addressing areas of conflict in land use allocation between competing uses such as agriculture, water resources catchment conservation, habitat protection for biodiversity conservation, settlements and others.

Ministry of Agriculture and Fisheries (MAF), Ministry of Natural Resources and Environment (MNRE) and others with significant land holdings such as Samoa Land Corporation and Samoa Trust Estate Corporation (STEC) could benefit from a collaborative land-use mapping project to ensure the optimum classification (and potentially allocation) of land for competing end-uses.

Agricultural Incentives
The need for incentives is identified in the ASP 2011-2015 to encourage and catalyse farmers to increase production and agricultural investments. A range of possible incentives is proposed in the ASP that the Government should consider, including tax exemptions or reduced taxes on agricultural income, reduced interest rates on agricultural lending, and direct Government funding of cost of surveying customary land leased for agricultural purposes and others. Incentives in support of organic farming, and cropping systems such as tree farming, agroforestry and permaculture with strong climate change adaption benefits presents another opportunity for incentivising green agriculture.

Forestry

Context
Samoa's native commercial forest resource is effectively depleted. The little logging that remains involves mobile mills which scavenge logs from remnant trees in areas previously

logged or cleared for agricultural purposes. The absence of a significant replacement plantation resource also means the demise of the wood processing industry which between 2000 and 2003 was reduced from four sawmills to two and from a total volume throughput per year of about 15,000m3 to 2,700m3 during the same period.

This undesirable resource situation is the result of a complex mix of factors – some man-made others natural. Government policies at the time contributed to unsustainable logging. At the same time, the shift to a cash-based economy encouraged forest clearing for agriculture, and customary landowners' collusion with local sawmills to log their land illegally. Cyclones in the early 1990 have also played a part by destroying the plantation resource that was intended to sustain log supplies.

Government policies of production maximization for exports and foreign exchange accumulation were one of the sources of this resource's over exploitation. Tacit endorsement of unsustainable harvesting can be deduced from National Development Plans of the time. However, since the mid-1990s, Samoa's forestry sector made a significant shift to sustainable forest management, focusing on forest protection and conservation. Solid evidence of performance and progress are in the number of new protected areas established and under management, as well as progress made in catchment area management, mainly on customary owned land.

Since the switch in focus to forest protection, progress in expanding Samoa's protected area network was immediately evident. Between 1996 and 2003, two additional national parks and 16 terrestrial reserves were established, constituting an increase from 2 per cent of the total land area before 1996 to 5 per cent by the end of 2003. The relative ease with which these were accomplished is testament to the effective integration possible with the placement of forestry, environment and conservation, water resources, land management under one ministry, MNRE.

Issues and constraints

Three key constraints facing this sector are:

- The assessed high risk of cyclones continues to count against any significant re-investment of public funds in plantation forestry.
- Most licensed areas for commercial logging were on customary owned lands; this seriously compromised forest license allocation because logging companies were able to by-pass official channels and negotiated directly with villages for logging rights.
- Difficulties with customary land owners hinder the securing of land for replanting programs as well as forest protection initiatives.

Opportunities for Green Growth

Forest plantation replanting

There is potential to develop forestry for renewable energy generation (biomass gasification) and climate change adaptation. Samoa has potential to develop export quality mahogany,

teak and other native species for timber. However, replanting is challenged by the high risk (mainly from cyclones) associated with investment of public funds in forest plantation and tree farming.

Greater integration of land uses

There is potential for integrating compatible uses such as biodiversity conservation, catchment area protection, agriculture (bee-keeping for instance) and ecotourism. The Fuluasou catchment, for example, is easily accessible and provides an ecological corridor between coastal ecosystems and the Lanutoo national park. It has attractive vegetation and intact habitats that offer opportunities for hiking, swimming and bird watching.

Tourism

Context

Tourism is a major growth sector in Samoa and a leading sector in the future growth process. It is an increasingly important source of local employment and foreign exchange earnings, and is particularly valued given the recent downturns experienced in sectors such as agriculture, fisheries and manufacturing[216]. Tourism is the second largest revenue earner, after remittances, accounting for 30 per cent of GDP.[217]

Approximately 3,000 to 3,500 people are directly employed by the tourism sector [218] aand a further 1,000 to 1,500 people are indirectly employed, together accounting for nearly 9 per cent of Samoa's total paid working population. An outstanding feature of the tourism sector is that between 90 per cent and 95 per cent of all businesses are owned and operated by Samoans. For a small island nation in the Pacific, the tourism sector is considered to be reasonably well structured, (ibid) with a national tourism office, the Samoa Tourism Authority (STA), and a lead private sector body, the Samoa Hotel Association, providing necessary direction and focus for the sector. In terms of sustainable development, Samoan tourism has always had a preference for cultural conservation and environmental preservation. The result of this philosophy is a tourism product and brand that STA markets as the 'Samoa Experience'—a unique blend of traditional Samoan culture, pristine natural environment, and a safe, relaxing and welcoming social environment, in addition to the usual attractions of sand, sun and surf that most tropical island destinations worldwide offer.

Implementing 'sustainable tourism' is largely sector driven, with guidance provided by the STA policies; regional standards provided by the South Pacific Tourism Organization (SPTO); and environmental impact assessment requirements for new constructions conducted by the Ministry of Natural Resources and Environment and Planning and Urban Management Agency. Compliance and sustainable behaviour on the part of the tourism operator is influenced mainly by and in response to market demands and trends.[219]

Although tourism is a private-sector-led industry, the Government plays a facilitating and supporting role, focusing on creating and supporting the enabling environment to attract tourism investment and facilitate development. This environment consists of improved

[216] Ministry of Finance, Strategy for the Development of Samoa 2008-2012. 2008
[217] Samoa Tourism Authority, Tourism Statistics Update, August 2011.
[218] Corbett, R., MDG Acceleration Policy Analysis for Samoa – Tourism Sector Report, UNDP (Apia) unpublished report, 2011
[219] Christina Leala-Gale, STA, pers comm.

infrastructure (international airport, ports, inter-island transportation, roads), investment in human resources development[220] and legislative reforms. As part of legislative reforms, certain tourism-related imports are exempted from import tariffs as part of strategies to encourage private investment. The Government, through STA, actively engages in marketing, product development and human resources development for the sector..

Issues and constraints

Some of the key issues facing the Samoan tourism industry are:

- Many stakeholders are unaware of the potential to strengthen the linkages between tourism and other sectors of the economy. Although linkages between tourism and other sectors do occur, there appears to be a lack of attention to a specific programme of activities that will increase the potential benefits of cross-sector linkages.
- Implementation of the Tourism Development Plan (TDP) 2009-2013 has been limited, constrained by the absence of a formalized implementation process and adequate resourcing. Despite recent efforts to address the industry's human resource needs and to upgrade tourism and hospitality training through the Australian Pacific Technical College, the lack of suitable tourism skills at the vocational and management level in the existing workforce is an impediment facing Samoa's tourism sector.
- Tourism investment in Samoa over the last 10 to 15 years has concentrated more on accommodation, car rentals, cafes and restaurants and less on the development of tour activities, natural and cultural attractions. This is a key area on which Samoa will need to focus over the next decade in order to strengthen its competitiveness vis-à-vis other destinations, such as Vanuatu, Fiji and–for water-based activities–Vava'u (Tonga).
- Samoa has many good examples of tourism accommodation, activities and attractions. Its potential to add value to the sector in terms of higher quality products and services is hampered by a lack of consistency in terms of standards for accommodation, activities and attractions. Local produce sold in the tourism sector – apart from a few examples of coconut oil and noni juice – also suffers from inconsistent supply and variable quality.
- At present, there is no documented investment policy to guide investors and no tourism-specific investment promotion strategy. In addition, there is a need to reconfirm tourism development incentives, to clarify foreign investment policy and to provide better information for intending investors including adequate supply, demand and investment data.
- There is no ongoing and systematic sector-wide monitoring and reporting for the sector plan, other than visitor numbers and hotel occupancy. There are some monitoring indicators,[221] but they have not been used since its initial application. According to STA,[222] this is due to the lack of capacity and funding.
- While rural coastal areas offer the picturesque locations most attractive to tourism development it is also the most vulnerable to natural hazards, particularly storm surges and coastal erosion.

[220] Government of Samoa, Strategy for the Development of Samoa (SDS), Apia, 2008.
[221] TL. Twining-Ward, Indicators Handbook – A Guide to the Development and Use of Samoa's Sustainable Tourism Indicators. Samoa Visitors Bureau and SPREF, 2002.
[222] Christina Leala-Gale/Sesega; pers comm.

Opportunities for Greening

Tax incentives

Interventions in the form of tax exemptions for imported hotel construction inputs have been used in the recent past to encourage investment in the sector. With the existing emphasis on growth and in increasing tourism accommodation facilities, as well as continuing rehabilitation for tsunami-affected operations, the use of this mechanism continues to provide effective support and assistance. The same mechanism can be used to promote the further 'greening' of the tourism industry by targeting specific 'green' technologies such as alternative or renewable energy technologies, waste disposal systems, biodegradable or disposable products and others.

Rewards-based programme for environmental friendly tourism operations

A properly administered rewards based initiative based on compliance with 'green' criteria for different classes of accommodation/hotels has good potential for encouraging environmental friendly and sustainable development practices in the hotel industry. Such schemes provide a form of certification for hotels and accommodation facilities that satisfy a set of 'green' criteria and culminate with a high publicized awarding of a 'Green Hotel of the Year' award.

Beach fale accommodation

The Samoan fale-type accommodation is a pro-poor, pro-growth, pro-environment option for tourism accommodation. It is culturally appropriate and because it is low cost, provides local owners a measure of resilience in the unlikely event of a natural disaster. They are also mostly locally owned, preventing external leakages of benefits from the economy as often reported in the case of foreign owned transnationals.

Energy

Context

According to the 2001 Population census, about 93 per cent of Samoa's population has access to electricity and 93 per cent of all households use electricity for lighting, as compared to only 38 per cent in 1981. Samoa's energy needs are supplied by biomass, petroleum products and hydroelectricity. In the last 20 years, Samoa's energy requirements have increased significantly, with consumption shifting towards commercial energy use based on imported petroleum products.[223]

Figure 3.1 Percentage distribution of energy by sources

Year	Biomass (Percentage)	Petroleum Products	Hydro-electricity Percentage)	Source of information
1989	60	26	5	Hay et al, 2002.
1998	50	39	7	Hay et al, 2002
2000	47	45	8	MoF, 2007

[223] Samoa, Ministry of Finance, Samoa National Energy Policy 2007, 2002.

The shift is driven primarily by rapidly increasing demand for electricity as well as ground and sea transport.[224] There is also a strong correlation with the increase in per capita income[225] that points to changes in consumption patterns and improved living standards as the underlying drivers.

Because all diesel and petroleum products are imported,[226] the volatile nature of the global market is a major source of vulnerability. Compounding this vulnerability are prolonged dry weather spells which affect electricity output from hydropower facilities. Forecasts of the increasing frequency of these dry conditions in the foreseeable future add further uncertainty to the complex supply equation in Samoa's energy sector.

Determined to reduce this vulnerability, Samoa's National Energy Policy 2007 sets the following goal for the sector – "to increase the share and contribution of renewable energy in mass production and energy services and supply by 20 per cent by year 2030". A range of strategies is proposed for achieving it, namely: (a) promoting the sustainable use of indigenous energy resources and renewable energy technologies; (b) promoting partnerships with communities and energy stakeholders, especially development partners, in the development of renewable energy programmes in Samoa; (c) exploring training opportunities to build up capacity in renewable energy technologies; and (d) enhancing public knowledge and understanding of renewable energy and its costs and benefits.

Renewable energy sources targeted for development are hydropower, solar, wind, biodiesel and biomass. Small run-of-river hydropower is the most promising source of large-scale power generation, followed by wind energy and biofuels.[227] However, there are many challenges including lack of data on renewable energy potential, land tenure agreements and the often higher equipment capital costs.[228]

Issues and Constraints

Some of the key issues facing the sector are:

- Climate induced changes such as prolonged droughts reduce available water for hydropower generation. Adaptive measures including catchment area replanting assistance in water capture, absorption and retention. Adequately vegetated riverbanks minimize water evaporation even if limited.
- Access to rivers on customary owned land and obtaining village support is often time consuming and full of uncertainties. Most villages dispute Government claims of state ownership of rivers and water bodies, often resulting in protracted negotiations for compensation.
- Existing institutional arrangement and placement of the Energy Unit within the Ministry of Finance has resulted in inefficient and ineffective coordination and management of the energy sector. Furthermore, it lacks resources, capacity and a legal framework to effectively plan and coordinate energy development in the country.

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224 Samoa, Ministry of Finance, Strategy for the Sustainable Development of Samoa 2008-2012., Apia, 2008.
225 Ibid. Per capita income increased from SAT 3,650 in 1994 to SAT 6,969 by 2006.
226 Total petroleum product imports (2007): 1,125 bbl/day (Renewable Energy and Energy Efficiency Partnership (REEEP), accessed from www.reegle.info).
227 Renewable Energy and Energy Efficiency Partnership (REEEP), Accessed from www.reegle.info, 2012.
228 Ibid.

- Wasteful and inefficient consumption patterns contribute to a higher energy consumption rate than necessary. A major underlying cause is the lack of understanding and knowledge of the costs and benefits associated with renewable energy, of RE technologies that are environmentally friendly, more efficient and safe, and of how to use energy more efficiently to gain energy savings.

Opportunities for Green Growth

Incentives for renewable energy technologies and products

Tariff reforms to provide incentives for imported renewable and alternative energy technologies and inputs for private sector renewable energy projects would directly support and contribute to achieving Government's policy of achieving 20 per cent increase in renewable energy usage by 2030. Consumer choices in favour of a range of renewable products such as PV cells or solar panels for household and commercial use, energy efficient light bulbs, electrical goods and household appliances, can also be significantly encouraged in the same way.

Small-scale biogas projects

The potential of small biogas digesters to supply energy in special contexts is demonstrated in an ESCAP-funded biogas project in the YWAM campus in Samoa. The small biogas digester operating on kitchen waste, biomass from the vegetable garden, and human and animal waste supplies 100 per cent of the cooking gas and about 20 per cent of electricity for lighting for the 20-25 adults living on the campus.

Electric Power Company's (EPC) business model for small hydropower schemes

EPC's 'business model' offers landowning villages co-ownership of hydropower schemes with the Government. Village shareholding in the joint venture is equivalent to the value of the community land involved. The joint venture operates as a business, generating and selling electricity to the national grid (EPC).

Fisheries

Context

Fishing is important to Samoa, both economically and socially. In 2007 over half of all exports consisted of fishery products[229]. About a quarter of all households receive some income from fishing (ibid). Fish are an important feature of the Samoan diet, and on average households consume fish most days of the week. Results of agricultural censuses between 1989 and 2009 show a declining trend in the number of households engaged in fishing activities consistently throughout Samoa, with significant drops recorded during the period 1989-1999, with the declining trend slowing between 1999 and 2009.

Coastal commercial and subsistence fishing operate within the inshore area. Fishing in this area is effectively unregulated and only with the advent of the AusAID-funded Samoa Fisheries Project in 1995 was formal management based on proper management plans began for villages that participated in this initiative. There are scattered examples of traditional interventions in some villages using 'tapu' (taboos) including bans on certain fishing practices, but more often than not, these are not effectively enforced. More recently,

[229] FAO, National Fisheries Sector Overview, Fisheries and Aquaculture Country Profiles, October 2009.

minimum size regulation was passed to promote sustainable harvesting but enforcement has been difficult with monitoring mainly confined to the main fishing market in Apia.
Community based fisheries management in the inshore area focuses on the use of fisheries reserves and village by-laws to regulate access, harvesting and rehabilitation of coastal marine resources. By-laws ban specific unsustainable fishing methods and technologies regulate access to 'closed areas' or no-fishing zones and discourage certain environmentally unfriendly land-based practices to minimize coastal pollution. 'Closed areas' or no-fishing zones within fisheries reserves provide sanctuaries for the reintroduction and spawning of depleted species, allowing fish, corals and seaweeds to recover. In 2011, 92 villages developed fisheries management plans, of which 77 per cent continue to be active[230].

The challenge now for inshore fisheries is to scale up the community based approach to all coastal villages which is constrained by the lack of budgetary resources and the interest level of villages.

Offshore fishing within Samoa's EEZ is done entirely by long lining and is governed by the Samoa Tuna Management Development Plan (STMDP).

Samoa's EEZ is the smallest in the Pacific and its tuna resource is estimated to comprise less than 1 per cent of the total tuna resources of the western and central Pacific[231]. The offshore fishery in Samoa commenced in the late 1970's. Following four years of sustained high fishing effort (more than 7.5 million hooks set per year); catch rates in the Samoan longline fishery declined substantially in 2002/03. Localised depletion, general overfishing, interactions with large longliners, oceanographic factors and natural cycles of abundance have been cited as possible explanations for this decline.

The sustainability of Samoa's offshore fishery is somewhat uncertain because the two recent resource assessments are not in agreement. A regional stock assessment by SPC declared the stock to be relatively healthy[232]. On the other hand, FAO reported a declining trend in albacore stock in the Samoa zone. The Government of Samoa has confidence in SPC assessment[233] and is using it as the basis for fishing license quotas.

Opportunities for Green Growth

Managing inshore 'commons'
The community based fisheries management approach centred on co-management between government agencies and traditional village authorities is widely cited as a Samoan success story[234]. The approach offers an effective solution to the vexing issue of managing coastal 'commons' or inshore fisheries that are communally owned and without exclusive and individual property rights arrangements. This approach could be replicated in other coastal villages of Samoa of which there are about 66 villages remaining.

230 Autalavaou Taua, MAF-Fisheries; pers comm.2011
231 Samoa, Ministry of Agriculture and Fisheries, Samoa Tuna Management and Development Plan 2011 – 2015.
232 SPC reported that the current Biomass of albacore fishery is in excess of the biomass (BMSY) that would support a Maximum Sustainable Yield. Also, the other key indicator, fishing mortality, is lower than the fishing mortality (FMSY) that results in Maximum Sustainable Yield (cited by MAF, 2010, op cit).
233 Ueta Jnr Faasili, pers com. 2011; Ah Leong, pers comm. 2012.
234 FAO cited results of independent studies showing that villages with management plans have the highest catch rate of 2.8 kg per person per hour, compared with coastal villages with no management plans where the catch rate is 1.8 kg per person per hour

Fees

The existing licence fee charged on fishing license is primarily for revenue generation. The pricing method is simple and easy to monitor and enforce. There is room however for examining a resource valuation approach that is more closely indicative of the resource's scarcity value, particularly given the relative uncertainty in the stock assessments and the need to be more cautious and conservative under these circumstances.

GREEN GROWTH DIAGNOSTIC

Investing in natural capital

Most of Samoa's natural capital of land, native forests, water, biodiversity and coastal resources, is intricately tied up in customary ownership. As a result, it is not readily accessible by Government, except with village agreement, an outcome that is typically preceded by protracted and oftentimes costly consultations and negotiations. Private investors are similarly constrained, including foreign investors most of whom work through Government.

Around 81 per cent of all land is customary owned, while surface and underground water; minerals; all land below the high-water mark including lagoons and coral reefs; and high altitude native forests above a defined elevation are by law, state-owned. This state claim to ownership of resources is almost always disputed by villages. Even in cases where state ownership of resources is not disputed, the physical access through customary lands requires negotiated access agreements which are often inconstant and dependent on village politics. The resulting uncertainty discourages investment.

Several legal avenues are available to use customary lands for development[235] but long-term leasing is most common. Most customary lands are not demarcated or mapped; most have shared boundaries that are not well defined; and are vulnerable to disputes once attempts are made to define them.

Finding ways to access the development potential in Samoa's customary owned land has been a vexing challenge for the Government. The need for reforms of the economic use of customary lands is well recognized and has been, and continues to be a high priority for the Government. A major initiative to improve land leasing is the Customary Land Advisory Committee (CLAC) which Cabinet approved in 2009 to (i) advise the Government on customary land reforms (ii) lead the implementation of activities which promote the economic use of customary land, and (iii) coordinate all customary land stakeholders.

State-owned resources for energy generation, which development was previously limited by law to the state-owned utility EPC; however, it is now accessible to the private sector following recent reforms to the EPC Act 1980. Several potential foreign investors in solar and biomass gasification have since been reported[236]. EPC's business model for the shared ownership of hydropower schemes with local landowning villages is similarly made possible by this law change.

[235] Land condemnation with compensation and land exchange are other ways of acquiring customary land for public purposes.
[236] Samoa Observer, "Solar, biomass answer to Samoa's high power costs", p. 1, 7 May 2012

The impact of customary land tenure has had an impact on energy generation in Samoa. In 2007, the village of Sili declined a government request for access to develop the Vaitai stream for hydropower on environmental grounds. In 2011, Faleseela, Tafitoala and Faleata (Palauli) were approached regarding developing a hydropower plant on the rivers on their land. In the case of these villages, EPC proposed its business model as a basis for collaboration wherein hydropower schemes were to be managed as joint ventures with shared benefits between villages and Government. The intent of this approach was to avoid the contentious issue of ownership of the rivers, focusing instead on fostering a sense of shared ownership and responsibility, by making villages co-owners and business partners. One village, Tafitoala, expressed non-interest while Faleseela and Faleata agreed to grant EPC access for technical assessments with further negotiations to follow.

There are also instances of successful village collaborations and village initiatives to develop resources. In the water sector, many villages[237] have assumed control and management of water from local springs and bore holes. The motive appears to be to stay independent of and outside the Government's user-pays system. However, most lack capacity and funding to invest in maintenance and improvements, and often revert to Government programs and aid funded grants schemes for funding support. The lack of funding is reflected in the poor quality of water provided to local consumers as found by recent studies by SROS[238] and NUS[239].

Collaborations between local villages and Fisheries Division in the rehabilitation and management of inshore fisheries resources have been reported earlier in this report. Two districts – Safata and Aleipata – have also been collaborating with Government agencies and international organizations[240] in the conservation of coastal marine areas and species. The BIORAP project[241] has recently undertaken a biological survey of biodiversity in the cloud forests of Savaii[242].

A recent (2011/2012) Government initiative to buy back from the Catholic Church about 1,230 acres of forested land in the Gasegase and Fuluasou catchments for protection purposes is an unprecedented direct investment of public funds in natural capital. It is a direct response to the imminent threat posed to the water supply for the Apia urban area, from upstream land development and settlement.

Overall, investing in natural capital is constrained by customary land tenure. Finding ways to improve access to land and resources thereon for economic development purposes has been and continues to be a high priority of the Government. These efforts form an integral part of the enabling environment for encouraging private sector growth and investment that the Government believes is the engine for Samoa's economy.

237 A total of 12 per cent of Samoa's population are supplied with water from Village Managed Schemes.
238 SROS is conducting water quality tests of IWS under USAID funding (Finau, K., pers com).
239 F. Latu, P.Amosa, T.Imo, and V. Taufao, The Microbiological survey of potential water borne pathogens in fresh water springs of the selected community located in the Upolu Island, Samoa, 2012
240 IUCN and SPREP.
241 Samoa Ministry of Natural Resources and Environment, SPREP, Conservation International, New Zealand Department of Conservation, and New Zealand Defence Force.
242 Sunday Samoan, Issue of 13 May 2012.

Where natural capital is free of the shackles of customary tenure, and where the opportunity cost of Government inaction is significant, the Government has demonstrated a willingness to invest public funds to safeguard national interests.

Greening businesses and markets

There is an absence of a clear investment policy or a tourism-specific investment promotion strategy.[243] There is a need to reconfirm tourism development incentives, to clarify foreign investment policy and to provide better information for intending investors including adequate supply, demand and investment data. A mid-term review of the Samoa TDP is recommended to provide a detailed five-year plan with pro-poor initiatives, marketing, development priorities, climate change responses and workforce development.

At the level of accommodation providers, particularly beach fale operators, the lack of capital is the main constraint to investing in recommended green initiatives. Land disputes recently led to delays in the Survivor Hotel at Falelatai, and the withdrawal of Warwick International from its planned Vavau Beach Resort in 2011. Land-related issues are also reported as a reason for the transfer of the Taumesina lease to the Lamana Group for a hotel development.

In the agriculture sector, opportunities for greening are in organic farming and in the range of climate change adaptation measures being adopted. Of the latter, genetic diversification for higher yields and disease resistance, and the use of mixed cropping systems contributes both to increasing production and ecological resilience. The likely constraint to their effective implementation would be in the continued availability of markets.

Organic farming development is mainly lead by the Women in Business Development Inc (WIBDI). There are strong linkages to tourism with produce such as fruits and vegetables targeting local hotels, but other products, notably virgin coconut oil and coffee are imported despite the presence of locally available products. WIBDI's collaboration with smaller farmers, especially women farmers, is a good example of a pro-poor, pro-growth, pro-environment and pro-women initiative. Where market access was a typical constraint for small-scale producers, WIBDI's role in finding and developing overseas niche markets has been vital to the success thus far achieved.

If successful, EPC's business model for hydropower generation offers an innovative approach for protecting critical ecosystems on customary lands that would otherwise be extremely difficult to protect. It is a pro-poor, pro-rural, pro-environment and pro-growth.

Sustainable infrastructure

Samoa's physical infrastructure of roads, bridges, seawalls and physical facilities including hospitals, schools and village centres underwent a thorough assessment for proofing against natural hazards as part of the Samoa Infrastructure Asset Management (SIAM) Project from 1999 through to 2007. One output of this project was Coastal Infrastructure Management (CIM) Plans for every district and village in Samoa which assessed the risks and vulnerabilities faced by different physical assets in each district and recommended measures for proofing them against natural hazards of floods, erosion, land slips, coastal

[243] R. Corbett, MDG Acceleration Policy Analysis for Samoa - Tourism Sector Report. UNDP Apia unpublished report, 2011.

surges and cyclones. The CIM Plans have since become an important tool for infrastructural planning and prioritization for funding for the Government as well as several donor-funded small grants schemes including the GEF-Small Grants Programme, CERP Small Grants and European Union-AusAID-CSSP.

Among the key measures for enhancing sustainability of physical infrastructure and improving community resilience are (i) relocating infrastructure away from hazard zones when they are replaced; (ii) constructing protective seawalls and reinforced riverbanks to protect roads from coastal surges, flash floods and coastal erosion; (iii) refurbishing freshwater springs as back-up sources of drinking water for many coastal villages and (iv) climate proofing vulnerable community and district buildings including schools and hospitals. Ministry of Natural Resources and Environment data[244] show that 27 km of seawall was constructed from 2008-2010 in 50 coastal villages.

The main constraints to the effective integration of CIM Plans into sector plans are where cross-sector coordination and coordination between programs is lacking. Some regionally coordinated climate change adaptation projects are randomly seeking pilot communities without close coordination with local planning authorities. Consequently, the opportunity to target 'priority' villages where the need is greatest is lost.

Persistent cultural preferences and attitudes continue to hinder sustainable decision-making vis-a-vis infrastructure. The devastating impact of the 2009 tsunami that struck the southern coast of Upolu Island has clearly had an impact on attitudes of the affected communities, with whole villages subsequently relocated. However, many other communities continue to embark on construction projects on reclaimed and low-lying areas, contrary to awareness raising activities regarding coastal vulnerabilities and risks associated with low-lying areas.

Environmental taxes and fiscal policies

The direct use of economic and fiscal instruments for environmental objectives is not common, the exception being the vehicle emission charge introduced by LTA in 2012. Economic instruments associated with promoting environmental objectives are used to generate revenue. There are also resource rents and user fees that can potentially be manipulated to promote efficient and sustainable utilization, but forestry and water resources, rents and fees are set too low to generate any pro-environment effect. The following environment related taxes and policies are or have been used in Samoa:

- Vehicle emission charge – Based on the Road Traffic Payments of Fines Act 2008, LTA in 2012 is enforcing an emission charge of $100.00 for any motor vehicle emitting smoke for more than 10 seconds.
- Vehicle import tax – differential taxation of imported vehicles based on engine size, with smaller engines taxed less and large engines taxed more, was introduced in 2008. It encourages the importation of smaller-engine vehicles that are more fuel efficient with lower emissions which in turn reduces petroleum demand and the carbon footprint. However, the primary objective is income generation (Pitolau, L., pers comm.), and while there may be an emerging trend towards importation of smaller-engine vehicles this impact is not monitored.[245]

[244] Fa'ainoino Laulala, pers comm., Ministry of Natural Resources and Environment.
[245] LTA was not able to provide data for this report.

- Gasoline tax – discourages transportation by vehicles by making gasoline more expensive than alternatives. In Samoa the absence of alternative transportation modes results in an inelastic demand for the taxed product, with no corresponding environmental benefit. However, the primary objective is fiscal not environmental thus monitoring any pro-environment effect of the tax has not been done.
- Resource rents (royalties and stumpage) – payable for all native and plantation logs extracted. Properly calibrated, the resource rent is an important mechanism for promoting efficient logging and minimising wastage of logs in the forest and at the break-down saw. Several FD efforts to increase the royalty rate in the mid-1990s for this purpose were not approved by Government who opted to protect its sawmilling interests in Samoa Forest Products.[246] Collected revenues are also not channelled to reforestation or other forestry related activity but to the Government's consolidated accounts, thus there is no direct benefit to the sector.

Water tariffs – penalizes excessive water usage. Water is free below 500 l/household/day, and is then charged at a fixed rate up to 2200 l/hh/day, and a higher rate thereafter. According to SOPAC only 20 per cent of the connections enter this highest rate.

3.5. CONCLUSIONS

In 2011 and 2012, a total of 12 national assessments of opportunities for the use of green economy policies to support sustainable development were conducted in Pacific island countries. These assessments revealed a considerable number of green economy type initiatives across a number of key sectors such as energy, agriculture, fisheries and marine conservation that already exist in the Pacific. Some countries have also taken steps towards strengthening the enabling environment for a green economy through the use of fiscal policy and innovative mechanisms to finance the transition. However, there is a need for consolidation of such initiatives, and for further integration into existing national planning and budgeting processes. A great deal could also be achieved by strengthening or better using existing legislation and regulatory approaches.

A 'business as usual' approach will deprive countries and communities of opportunities from the global and regional momentum towards greener economic growth and better sustainable development outcomes. Political support and a clear strategy to shift towards a green economy that engages all stakeholders will be required in order to overcome any inertia. There is no one-size-fits all approach to a green economy, but there is a wealth of knowledge that can be shared across the Pacific. Ultimately, each country will need to determine where the opportunities are for green economy policies within their national context.

[246] The Government was the major shareholder of Samoa Forest Products Ltd, by far the largest sawmilling operation in the country at the time.

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