Assessing ecosystem services for Lauru Protected Area Network (LPAN), Choiseul, Solomon Islands

Authors: Susi Menazza (smenazza@tnc.org) and Tasneem Balasinorwala (UNEP-TEEB)

Short title: Ecosystem Services for protected area network planning, Solomon Islands

Key Message: Analysing ecosystem services and environmental pressures is helping to optimise the location of a protected area network in Choiseul, Solomon Islands.

Reviewer: Chris Filardi

Suggested citation: Susi Menazza and Tasneem Balasinorwala (2011) TEEB case: Assessing ecosystem services for a protected area network, Solomon Islands. Available at: www.TEEBweb.org.

What was the problem?

The Solomon Islands has the second highest terrestrial biodiversity in the Pacific with the exception of Papua New Guinea, with an estimated 5,599 described species including: 2,597 plants, 245 birds, 75 mammals, 87 reptiles, 19 amphibians, 777 fish and 1,799 invertebrate species[1]. Together with all or part of the Philippines, Indonesia, Malaysia, Timor Leste and Papua New Guinea, the Solomon Islands is also part of the Coral Triangle, the global centre of marine diversity that comprises 76% of the world's corals and 37% of the world's coral reef fish species in an area that covers less than 2% of the planet's oceans.

Choiseul -- also locally known as 'Lauru' – is one of the Solomon Islands' nine provinces. It consists of Choiseul Island (3,106 km²), the two small islands of Wagina (82 km²) and Rob Roy (67 km²), and over 300 small islets, each less than 1 km². With peaks of up to 2,400m covered by tropical rainforest and surrounded by fringing coral reefs and lagoon systems, Choiseul has some of the highest coral and fish diversity of any of the provinces surveyed in the 2004 Solomon Islands Rapid Ecological Assessment[2] and contains some of the largest remaining stands of lowland rainforest in the Pacific. Its forests support a greater biodiversity than any other province in the Solomon archipelago.[3]

Choiseul's local population of 31,259 (2005/6) is currently heavily dependent on natural resources for its survival, with an estimated 86-90% of the people conducting subsistence activities such as fishing and gardening. Due in part to its remoteness, earning opportunities are limited. Income is mostly generated through small scale copra production and harvesting of non-perishable marine products that can be processed and stored locally – such as trochus, shark fin and sea cucumbers – and through logging roylaties and small-scale logging with walkabout sawmills. The only major commercial activity at the moment is forestry. Choiseul Island is in fact the last major island in the country with significant remaining stands of lowland forest suitable for logging. With more than ten logging

[1] Summary of species on the 2008 IUCN Red List of Threatened Species. http://www.iucnredlist.org

[2] Green et al. (2006)

[3] Mayr E. and Diamond J. (2001).

companies in operation and fifteen licensed saw mills, the province is currently the third largest log producer in the Solomon Islands. However, forestry causes runoff and sedimentation that severely affect water courses, and additional environmental and social impacts are likely to be caused by nickel mining operations in Southern Choiseul that are currently being developed. Finally, like most islands, Choiseul is also vulnerable to climate change impacts, although less than most other Pacific islands due to the limited lagoon systems, its topography and the character of the coastline. Impacts include a projected rise in sea level and potential increase in the frequency of storms and natural disasters.

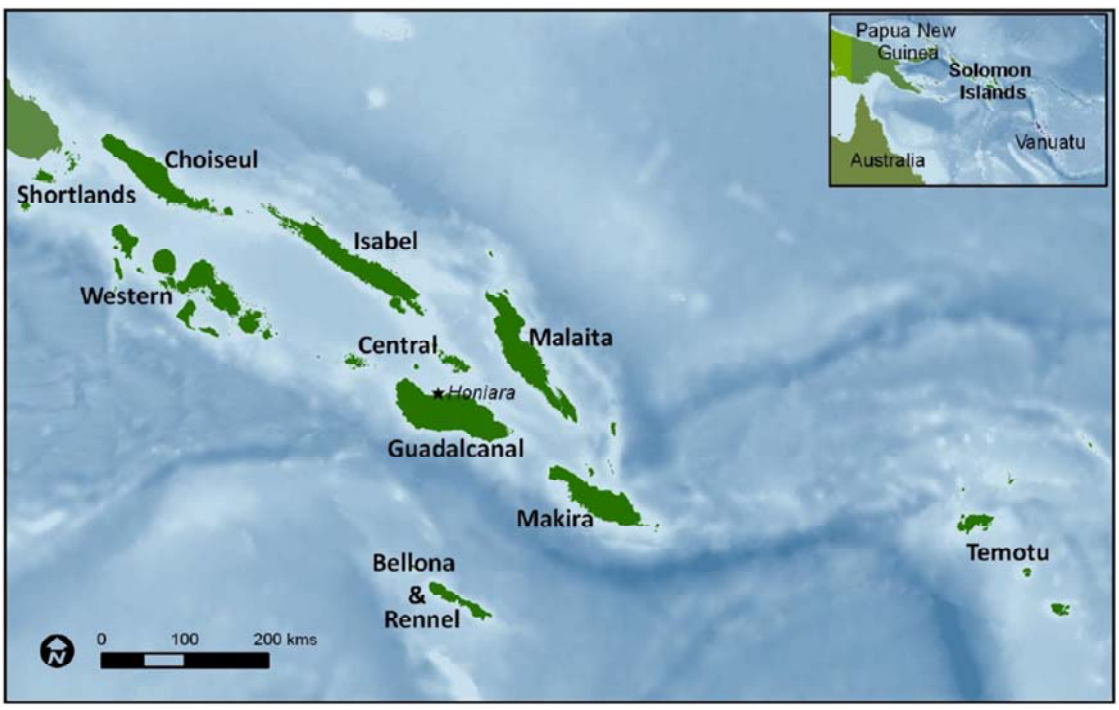

Figure 1: Provinces of the Solomon Islands (Source: Lipset-Moore et al. 2010)

Together, all those pressures increase the vulnerability of the population to the degradation of ecosystem services, which are critical for the long-term resilience and prosperity of Choiseul's communities. Currently less than 1% of Choiseul's land and sea is under some form of protection.

What was done to solve it? How were ecosystem services considered?

In Choiseul virtually all land and shallow waters are under traditional ownership or customary tenure (95.5 %). Many communities maintain strong control over their traditional land and sea areas and numerous traditions and customs relating to the access and management of natural resources remain. For this reason, international environmental NGOs are now working in association with the Lauru Land Conference of Tribal Communities (LLCTC), to enhance the conservation of biodiversity and ecosystem services.

The Nature Conservancy (TNC) was the first international environmental NGO to work in Choiseul Province. Since 1992, TNC had been working in Solomon Islands on the establishment of the Arnavon Islands Marine Conservation Area, a 15,800 hectares of protected islands and sea located between Choiseul and Isabel Province that supports one of the largest remaining rookeries of hawksbill turtles in the world. When TNC expanded its work beyond the Arnavons in 2000, it did so by forming a partnership with the Lauru Land Conference of Tribal Communities (LLCTC). LLCTC is a grassroots ecumenical non-

government organization to which all Choiseul's traditional chiefs belong, and that provides a voice for community leaders in provincial and national political settings[4].

The increasingly close relationship between TNC and LLCTC focused on conservation, natural resource management and sustainable development in Choiseul Province. In 2005, this partnership resulted in the establishment of the LLCTC Environmental Office and the employment of a full time LLCTC/TNC Environmental Community Conservation Officer. The Conservation Officer is still the primary point of contact for the environment for the local people and has been instrumental in assisting nine local communities in establishing Locally Managed Marine Areas (LMMAs) on their traditional reefs with the support of various organizations.The small village of Chivoko, for instance, set aside both marine and terrestrial zones as protected areas with tangible results[5]. On the marine side, reef protection helped increase food security and improve catch rates in surrounding areas, while on the land Chivoko was able to shift its focus from commercial logging to small-scale sustainable ecotimber.

Soon stories about resource recovery within LMMA boundaries led to more requests for assistance. The success of Chivoko and other community-based conservation areas provided incentives for the LLCTC group and the individual local chiefs to expand protected areas throughout Choiseul province to improve food security and livelihoods. However, LLCTC and its partners needed a better knowledge of the biodiversity, threats and opportunities in order to be more strategic in their conservation efforts and do it as cost-effectively as possible.

What was needed to solve the problem in terms of data, resources and capacity?

In order to map the distribution of biodiversity relative to the distribution of protected areas, areas where species and ecosystems are left unprotected or under-protected, and areas of high conservation and cultural value, TNC conducted a stakeholder eco-regional assessment using local knowledge gleaned through participatory techniques, as well as scientific and technological tools.[6]

As part of the assessment, in May 2009, LLCTC, TNC and the Choiseul Provincial Government held a *Participatory Mapping Workshop* attended by stakeholders from each ward of the province, Choiseul Provincial Government staff and representatives from the Ministry of Fisheries and Marine Resources and the Ministry of Environment, Conservation and Meteorology, and members of non-governmental organizations. The key information needed for the mapping was explained in detail and large base maps (scale 1:70,000) illustrating existing vegetation, reefs, rivers and roads were provided.

Over two days, the stakeholders listed key features important to them or their village/community and highlighted these areas in maps representing both land and sea. Ecosystem services were also mapped through the selection of categories and through qualitative information provided by the participants during the consultation workshops. In the end, 78 categories were identified and 25 were selected – representing important biological and cultural resources that would benefit from protection. Threats such as proposed logging, mining, sea level rise and fisheries, as well as opportunities (e.g. existing protected areas), were also identified using participatory mapping.

[4] LLCTC'mission is to unite chiefs, churches and citizens towards a common goal of an enduring, represented and respected Lauru land, people and their culture.

[5] The community-conserved area was profiled by IUCN at the 2009 World Conservation Congress in Barcelona http://cmsdata.iucn.org/downloads/chivoko_solomon_islands_report_icca_grassroots_discussions.pdf

[6] Game et al, 2011

Figures 2, 3: Participatory mapping workshop (© 2009 The Nature Conservancy)

After the identification of the 25 main categories, the computerized Marxan program[7] -- which provides a series of model outputs to help inform decisions on spatial planning for conservation – was used to determine options for the most cost-effective way to manage and protect important areas based on the available data and the participants' preferred criteria. Those scenarios offered several choices that prioritized areas with important ecosystem services such as mangrove areas, coral reefs, water sources and key garden forest areas identified by the people of Choiseul/Lauru.

Later on, other practical tools such as *Participatory 3-D modelling (P3DM)*[8] – a fully collaborative exercise combining community mapping with open discussions on land-use and land-use planning scenarios – allowed communities to explore land-use options and ecosystem service protection at the local level.

During the P3DM exercise in Choiseul, all participants – local men, women and youth, local community groups, community representatives, local NGOs and local government – contributed to build a model of the province (1:25,000 scale) with wood and paper, and placed it the centre of the meeting hall.

Figure 4: P3DM Modeling exercise (© 2009 The Nature Conservancy)

Once the model was ready, participants with a variety of technical and local backgrounds, discussed and added information to the model, including point data (features such as houses, schools, lighthouses, waterfalls, caves etc), line data (roads, streams, rivers, tracks, paths, boundaries, fences, cables, runways etc) and area data (such as mangroves, forest concession areas, reef flats, beaches, airports etc). Local knowledge on boundaries and features from participants contributed to an overall local picture of the area. Official and technical data was also cross-referenced with local understanding, and represented on the

[7] Freely available on http://www.uq.edu.au/marxan/

[8] http://www.iapad.org/applications/plup/solomon.htm

model. This was an excellent way to link, compare and communicate science with local knowledge.

Towards the end, a facilitated discussion addressed key issues including ecosystem services and existing and proposed protected areas; current and proposed development activities (mining, forest concessions, urban and commercial expansion); and information related to predicted climate change impacts. As existing community efforts at natural resource management, conservation and protection of reefs, coasts, islands and forests were placed on the model, a few aspects became apparent to all participants. Those include but are not limited to the areas that should be better protected, the need for more connectivity or networking between sites, the potential impacts of existing and future logging and mining concessions, and the coastal zones that will be more affected by sea level rise. The community has now full ownership of the model, a shared understanding of threats and opportunities, and has agreed on next steps.

A video of community-level P3DM for adaptation planning produced in the Solomon Islands in February 2011 can be viewed here.

What resulted from taking an ecosystem service perspective? Did the approach influence public management or result in policy uptake?

In October 2009, the outcomes of the assessment were presented along with discussions on environmental degradation, food and water security and climate change, to the 100 plus chiefs of all the customary clans of Lauru, led by the LLCTC. Realizing that the analysis matched changes witnessed by the communities such as environmental degradation, fisheries depletion and sea level rise, but also their aspirations and understanding, the Chiefs, in partnership with the provincial authorities, made a landmark commitment to:

- Formally establish the "Lauru Reefs to Ridges Protected Area Network" (PAN)
- Establish at least one marine protected area and one terrestrial protected area in each of the existing 12 wards (customary territories) within the next two years

Meanwhile, the Choiseul Province has established a 2009-2014 Development Plan that is directly in line with the Chiefs' commitment. The Choiseul Provincial government has also provided full support for the Lauru PAN. It has established a Choiseul MPA fund, and has now drafted an ordinance that gives community-based protected areas legal recognition. The Province also provided financial support for a community-based monitoring program that will be operated by the LLCTC Environment office.

The national government is reporting the work by LLCTC and the Choiseul Provincial government as part of the countries' achievements under the requirements of the CBD and UNFCCC. This is an example of traditional leadership being endorsed and supported by the local and national governments with the technical assistance of the conservation community, and which draws heavily on the local knowledge and requirements. TNC provided the in-kind assistance based on requests by LLCTC for basic equipment and expert time and technical advice.

What else was necessary for it be influential?

LLCTC led the process, given their legitimate mandate as the representative organisation of the collected chiefs of Lauru. The existence of the LLCTC was pivotal, with their resolve and capacity, combined with charismatic and informed leadership. Today through the LLCTC, the Lauru people are better able to support the development of their own resources on their terms and according to traditional rules, which is one of the reasons the organization has been widely accepted by the local people. LLCTC helps bring training, lend equipment, and

make connections with responsible buyers of small-scale timber shipments that match the communities' capacity and criteria for sustainability. The Nature Conservancy, on the other hand, provided the appropriate level of technical assistance to conduct the plan. The relationship between TNC and the LLCTC, spanning more than ten years, had matured sufficiently to allow strong partnership based on trust and common interests.

Online sources:

Lauru Land Official Website
http://www.lauruland.org/

Chivoko Participatory-3-Dimensional model
http://www.iapad.org/applications/plup/solomon.htm

References:

Game E., Lipsett-Moore G., Hamilton R., Peterson N., Atu W., Kereseka J., Watts M. and Possingham H. (2011). *Informed opportunism in practice; conservation planning in the Solomon Islands.* Conservation Letters 4(1): 38-46.

Green A., Lokani P., Atu W., Ramohia P., Thomas P. and Almany J. (eds). (2006). *Solomon Islands Marine Assessment: Technical report of survey conducted May 13 to June 17, 2004.* TNC Pacific Island Countries Report No 1/06.

Lipsett-Moore G., Hamilton R. , Nate Peterson, Game E., Atu W., Kereseka J., Pita J., Ramohia P. and Siota C. (2010). *Ridges to Reefs Conservation Plan for Choiseul Province, Solomon Islands*. TNC Pacific Islands Countries Report No. 2/10. 51 pp

Mayr E. and Diamond J. (2001). *The Bird of Northern Melanesia: Speciation, Ecology, and Biogeography*. Oxford.