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Participatory research and ecological economics for biodiversity conservation in Vanuatu

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• Introduction

In Vanuatu, an island rich nation in the Pacific Ocean, the Department of Forestry of Vanuatu (DOFV) has been working to conserve biodiversity through the establishment of protected areas. We contributed to this by conducting research on local forestry use and willingness to conserve resources on two islands, Malekula and Erromango.

Our findings needed to be relevant to the policy makers in the government of Vanuatu for the conservation of forests. At the same time, we were under pressure to produce good quality academic research¹. As research and development activities went hand in hand, we searched for an appropriate methodological mix. Due to key differences in the situations on the two islands, the methodologies we used differed. This article describes our combination of RRA tools, participatory decision-making processes and ecological economics. It focuses on the research in Erromango where a greater diversity of methodologies was used.

• Putting conservation on the national and local agenda

Our basic challenge was matching the national conservation agenda with local people's needs. The concept of 'people's participation in conservation activities' has been widely

applauded but, generally, poorly implemented. Yet it is not only due to a lack of will that the practical application of participatory principles is rare. Sometimes practical difficulties must be overcome.

To be effective, biodiversity conservation usually demands the establishment of protected areas (PAs). But PAs may not match local people's current development needs. How can we deal with this issue? In the National Conservation Strategy of Vanuatu, developed through a process of community consultation, the government recognised the need to establish PAs for the benefit of current and future generations. It also recognised land owners' rights to maintain control of their own resources.

Yet this national approach is inevitably driven at the macro level. Thus, in both Erromango and Malekula we had to integrate a national interest in ecological conservation with local people's priorities (some but not all of whom showed a strong wish to conserve resources through establishing PAs).

Making research relevant

Much rigorous social science has little policy relevance. Due to the great uncertainty of many environmental problems, attempts to carry out detailed quantitative research often show ill-placed rigour. Instead, ecological economists have suggested undertaking environmental research, acknowledging that facts are uncertain, values are in dispute, the stakes are high, and decisions urgent.

To be meaningful for policy and development, such 'post-normal' research must replace peer review with a debate involving the wider

¹ This was due to the conditions of the funding by the Australian Centre for International Agricultural Research and the University of New South Wales where I completed my Ph.D.

community and include stakeholders in the research process. Furthermore, while there may be some absolute biophysical constraints, it is essential to see that each person interprets the world in their own way. Any methodology must be able to deal with this 'constructivist' approach, recognising that there are multiple socially constructed physical realities.

To meet the challenge of these research principles and to fulfil the different expectations of the government and academia, we chose to integrate conventional research methods with RRA methods in a participatory decision making processes. It is important to stress that in the case of Erromango, the analysis is described as RRA, rather than PRA. We were operating as the 'researchers' and the local people provided us with information. We carried out the analysis, rather than the people themselves, as is implied in PRA process. However, PRA was used in Malekula.

• Integrating methodologies

In Erromango, we started by meeting with landowners and discussing their interest in establishing a PA. Although, they were interested, it was also clear that they expected some form of compensation from the Government. Payment of a lease on the land had been promised by Forestry Officers working there previously. The lease would guarantee the conservation of the land but preclude logging. It recognises the benefits to Vanuatu that accrue through biodiversity protection and enables local people to benefit from the income on the lease and their continued use of non-timber forest products.

Thus our research focused on assessing whether the landowners would conserve the forest without external incentives, or whether they would sell off logging rights instead. Given that they had already been offered a land lease agreement, it seemed unlikely that they would reveal to us any intention they might have to allow commercial logging. Thus, we felt a PRA process would be inappropriate. This would only work if it was in the interest of the local people to fully participate in the process. In this case, because landowners had previously been offered a lease agreement, they may have perceived it to be against their interest to take part in a

participatory process and reveal their conservation and development needs at that stage of the research process.

Instead, we decided upon a methodological mix that included the use of cost-benefit analysis, questionnaire surveys, standing timber volume surveys, RRA tools, and participatory decision-making processes.

Our aim was to assess the economic incentives and disincentives to protect the forest faced by the landowners. This was done by considering the benefits that they would derive from selling the rights to timber versus their traditional subsistence uses of the forest. We assumed that a significant subsistence use of the forest would be an incentive to conserve the forest and a relatively high value of returns from logging activities would be a disincentive for conservation.

The first two weeks of fieldwork involved:

- individual discussions with the landowners of the proposed PA and group meetings with the village community near the PA (Happy Land village) to understand their views concerning logging, subsistence forest use, and the establishment of a PA; and,
- quantitative assessment of timber volumes located in the proposed PA through transect measurement. This was used in a cost-benefit analysis described below.

Using RRA and questionnaires

During a later two-week visit, RRA tools were used to assess the subsistence uses of the forest. These included: village and group meetings, individual open-ended interviews, analysis of aerial photographs and transect walks through fields, the forest near the village, and the forest included in the proposed PA.

This assessment considered the use of the forest for firewood, building materials, medicinal plants and food. It was found that the villagers make very limited subsistence use of the forest located in the proposed PA. Most subsistence products were collected in the forest near the village and in the cultivated fields.

In a further two-week period, a questionnaire survey was carried out in villages other than Happy Land. This survey aimed to assess the views and interests of the wider Erromangan community in relation to logging, conservation and non-timber forest uses. The survey revealed that Erromangan people are interested in conserving their forests for current uses and for the benefit of their children. But it also showed that people are keen to sell timber rights on part of their forests to gain cash income. The survey results confirmed the findings from the RRA in Happy Land village showing that Erromangans make very limited subsistence use of the forest areas that are further away from their villages.

Using economics to calculate future income

We wanted to know how much logging income the forests represented for the communities. We undertook a survey of the forest and estimated the potential future economic benefits of logging, expressed in terms of today's values². Before starting the timber survey, we explained to the landowners that we intended to calculate the value of the timber found in the PA.

The RRA research and the economic calculations revealed two important issues:

- landowners were making relatively little subsistence use of more distant forests with relatively greater ecological and commercial importance, relying instead on forests closer to the villages; and,
- by not allowing logging to take place, landowners would forego a significant source of income. Therefore we assumed that it would not, in general, be in the interest of landowners to prevent commercial logging in ecologically important forests.

² Converting a future stream of economic benefits into today's values is achieved through the use of an assumed discount rate which reflect people's preference for benefits today relative to benefits in the future (time preference) and/or annual interest costs associated with investment (capital productivity).

Using participatory decision-making to negotiate conservation

Once the need for compensation was established, we developed the compensation package through a process of participatory decision-making. We held several meetings, with the male landowners, the village chief, and youth and women's representatives.

The first meeting started by comparing the present value of timber found in the PA and present value of a seventy five year land-lease agreement. We explained that while the value of the timber and the land-lease were approximately equal (at a 4% discount rate and the proposed rent of the land), most of the benefits for timber exploitation are realised in the first two or three years, but the benefits of the land-lease agreement are more evenly distributed through time. The landowners decided that the land-lease agreement satisfied their expectations for financial returns.

This process resulted in the establishment of the PA based on a land-lease agreement between the government and the landowners. The financial value of the lease corresponds to the value of the foregone benefits from commercial logging. The lease agreement clearly states that the land owners can make subsistence use of forest resources and still exercise their traditional control over the land. The use of RRA tools and participatory decision-making was particularly useful in facilitating a better understanding of local resource management arrangements and in having them recognised in the formal land lease agreement.

Dealing with community 'disharmony'

Besides the clear complementary value of these methodologies, we also found that RRA was particularly useful in exposing community conflicts which helped to make our research more comprehensive. For example, in Erromango, the use of RRA highlighted the division of the community into two groups. The division emerged in the drafting of a village map. The landowners and their 'allies' were grouped on one side of the village, with the other people on the other side.

In Malekula, PRA revealed a land dispute. One villager sought our assistance in establishing a small PA. Together, we carried out transect walks and boundary mapping to survey his area and make a resource use plan. But our activity was interrupted by other villagers, claiming that the villager we were working with was not the rightful landowner. Further PRA work with the group of people claiming rights to the area revealed that there was no shared purpose of resource management. Defining the use of the area, for conservation or any other purpose, was not a viable option until the issue of land ownership was settled.

Had we prepared a standard economic assessment of the proposed protected areas, focusing on the economic value of the resources, the complexities arising from the local land tenure system would have been missed. This would have seriously limited the viability of any proposed conservation initiatives.

Micro-macro relations

Although the conservation agenda is, in part, driven at a macro level, local communities can still play a significant role in defining the agenda. RRA and PRA are important for this process.

In Malekula island, some landowners approached the local government seeking support for the establishment of a PA. The local government had also identified some areas with potential value as protected areas. The Department of Forestry undertook an RRA process with all the interested landowners, focusing on people's economic and ecosystem conservation needs. Group and individual meetings, walks through the forest and cultivated areas, and mapping were used to address appropriate types of PA, logging, subsistence use of natural resources and the sustainability of resource harvesting.

The PRA process had three outputs:

- identifying detailed areas to be defined as PAs (all including multiple resource use);
- defining resource use rules; and,
- identifying the length of time that the PAs would be enforced.

Furthermore, the process provided information for the drafting of provincial legislation. The legislation aimed to strengthen customary control of resources and facilitate the establishment of PAs based on full participation. Local decision-making processes are recognised in the conservation legislation, thus avoiding the establishment of resource management structures alien to the local context.

Finally, we suggested to the Government that participatory approaches should be adopted to help identify rural people's conservation needs. This could lead to the establishment of a first set of PAs that match local needs. A second stage would be required to establish an ecologically representative and comprehensive national PA system. Other ecosystems could be included by adopting the approach outlined for the case of Erromango, in situations where the conservation in PAs of ecologically important ecosystems may not be in the interest (from a financial point of view) of the landowners. In those cases, RRA tools, combined with economic tools and participatory decision-making processes may be used to devise an appropriate compensation package and the required institutional arrangements.

• Conclusions

Academia and governments alike expect the delivery of rigorous research. Government staff also focus on the timely delivery of highly relevant findings. Multidisciplinary, participatory research can help generate rich findings that are not just 'numbers'. Nevertheless, quantitative information should not be undervalued, as it can help local people and governments in the decision-making process.

Conservation activities need to be planned at the national level. But this research suggests that this does not mean that it becomes impossible for participatory processes to create a national system of protected areas that reflect, as closely as possible, current people's needs. On the contrary, participatory approaches may be particularly useful in linking the micro and macro levels. It can help generate legislation that is consistent with, and

supports, local institutions. Using a combination of RRA tools, economic valuation techniques, and participatory planning and decision-making processes can produce qualitative and quantitative information that greatly facilitates effective solutions. Finding an appropriate methodological combination, however, will be determined by historical precedents of research and development carried out in the area of interest, existing local conflicts and conflicts of interest, such as between local people and government.

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NOTES

For more information on this study, see Tacconi, L.. and J. Bennett (1995). Biodiversity Conservation: The Process of Economic Assessment and Establishment of a Protected Area in Vanuatu. *Development and Change* 26 (1) 89 - 110.