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Valuing Ecosystem Services:
Sustainable Financing Options for the Bataan National Park

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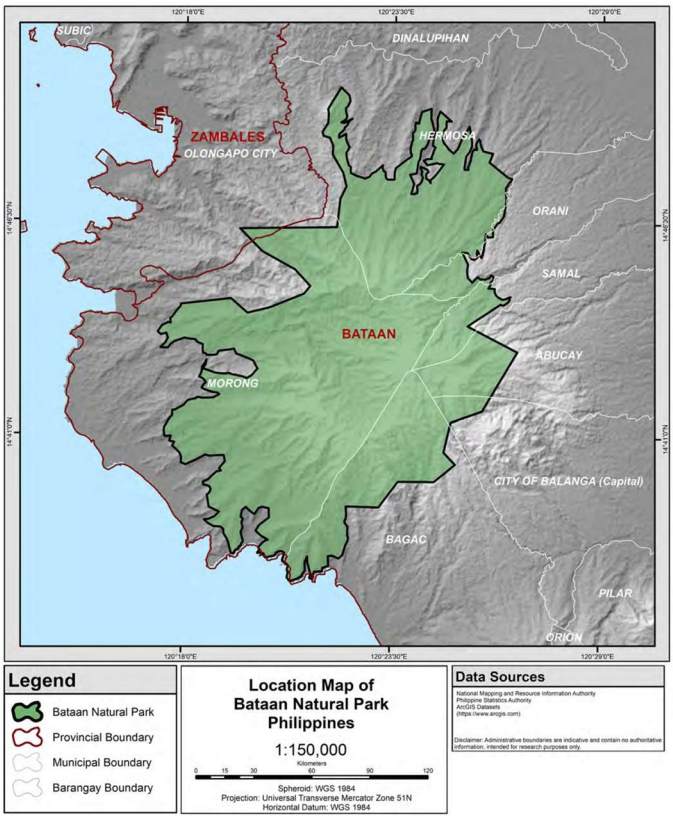
Abstract

The Bataan Peninsula of Central Luzon, the Philippines, is host to the 20,004-hectare Bataan National Park (BNP). While the Bataan National Park, a protected area, is hailed for its old growth forests and rich flora and fauna, environmental degradation is observed due to illegal settlement and resource overuse (i.e. development of agricultural plantations, slash-and-burn, illegal cutting of trees). An intensive conservation effort is needed to restore the BNP to its pristine state. To do this, various sustainable financing options, including enterprise development capitalizing on commercially viable bioresources, gradual increase in park entrance fees, and payment for ecosystem services, are proposed.

The Bataan National Park, a protected area, provides a wealth of ecosystem services – provisioning, regulating, cultural and supporting – benefiting many stakeholders from nearby and adjacent communities. Utilization of its various ecosystem services can be abused as observed in the UPLB-INREM research project titled "Valuing Bioresources and Recreational Services for Access and Benefit Sharing and Payment for Ecosystem Services: The Case of Bataan National Park."

Figure 1. Location map of the Bataan National Park



The study looked at how people's appreciation of the ecosystem services can be tapped to put together funds to conserve the BNP and restore it to its pristine state. An equitable sharing arrangement for the benefits from forest ecosystems was developed to ensure multi-stakeholder participation in the sustainable management of the resources. The proposed sustainable financing options are detailed in this policy brief.

Bioresources Utilization

The following non-timber forest products (NTFP) are gathered by protected area occupants to produce various products:

- Rattan (*Calamus sp.)* and 'hinggiw' (*Ichnocarpus frutenscens*) to make baskets and furniture
- Wild medicinal plants such as 'sambong' (*Blumea balsamifera*), 'kalinag' (*Cinnamomum mercadoi*), 'dita' (*Alstonia scholaris*), and 'gugo' (*Entada phaseoloides*)
- Wild honey

Protected Area Management Office can facilitate capacitating local farmers and protected area occupants in upscaling their NTFP products, as wells as venturing in enterprises, while ensuring sustainable resource utilizations. This is a promising source of income for protected area occupants as well as the BNP management should a revenue sharing agreement be established.

Ecotourism Development

BNP is host to many natural sceneries that can be developed into ecotourism destinations. Currently, the known and visited sites are the Ambon-ambon and

Lumutan Falls (Figs. 2 and 3), and Tala River (Fig. 4). Entrance fee to the Ambon-ambon and Lumutan Falls is PhP 30 (USD 0.60) [1] for locals and PhP 50 (USD 1) for non-locals, and the entrance fee for Tala River is PhP 10 (USD 0.20) for both locals and non-locals.

Ambon-ambon and Lumutan Falls area managed by the Binukawan Bicol Marketing Cooperative (BBMC), while the Tala River tourism management is overseen by the barangay local government.

Figure 2. Lumutan Falls (BBMC, 2015)

Figure 3. Forest cover at the Ambon-ambon and Lumutan Falls (BBMC, 2021)

Figure 4. Tala River in Orani, Bataan (UPLB-INREM Project Team, 2020)

Using travel cost method, the value of the recreational services of the falls and the river was computed. In 2018, a total of 5,457 tourists visited the Ambon-ambon and Lumutan falls, and 11,765 visited Tala River. In the current condition, the annual recreational benefits of the falls and river amounted to PhP 3,658,099 (USD 73,161.98), and PhP 15,448,033 (USD 308,960.66), respectively. Meanwhile, the cost of maintaining each of the site is only PhP 100,000 (USD 2,000) annually.

Based on the survey conducted by the UPLB-INREM, visitors of both sites are willing to pay additional entrance fees if there were improvements in the site's accessibility, safety and sanitation, including the provision of waste management facilities and restrooms.

Increasing the entrance fees in the tourism areas can improve the province's revenue generation and finance maintenance and further improvements in the tourism sites. Ecotourism can also be a means to create awareness about the BNP, and the need to conserve and restore it.

Payment for Ecosystem Services

Choice experiment was conducted to assess the values attributed by households within and in the surrounding areas of the BNP. The ecosystem services considered include flood regulations, forest cover, provision of sustainable livelihood opportunities, and biodiversity. The choice experiment involved presenting a hypothetical scenario wherein the BNP conservation program can lead to different combinations of levels of the ecosystem services, which will be financed through monthly electric bill surcharges per household.

The choice experiment revealed the on-site and off-site households' preference to conserve the Bataan National Park and their willingness to pay an additional PhP 33.30 (USD 0.67) in their monthly electric bill to obtain

[1] 1 USD = PhP 50 (2020 exchange rates)

high levels of ecosystem services. With this amount, an estimated PhP 66-million (USD 1,320,000) can be earned from residents' electric bills. However, both on-site and off-site households are not willing to pay and preferred the status quo if the conservation program will lead only to medium levels of ecosystem services.

On-site and off-site households associate the highest values for forest conservation and flood mitigation. Government agencies should implement conservation programs to ensure high levels of biodiversity, flood mitigation, sustainable livelihood provision and increased forest cover.

Ways Forward

It is not too late to conserve and restore the Bataan National Park and sustainable financing options can be put in place to jumpstart this. The following efforts are also proposed to initiate a financially sustainable conservation program for BNP:

- Enterprise Development and Business Planning: Organize protected area occupants to establish sustainable businesses out of legally-allowed bioresources. Government agencies can partner with or facilitate partnerships with the private sector to develop value-added products and capacitate protected area occupants in terms of business development and management. Moreover, the development of a detailed management and harvesting plan, transparency in resource extraction and proper monitoring is proposed to prevent overexploitation and damage to the environment.
- Institutionalize Payment for Ecosystem Services: BNP has abundant resources with values that can be tapped for sustainable financing through a payment for ecosystem services (PES) mechanism. While this is already being done in some areas in the Philippines, there is still a need to institutionalize PES at the national and local levels.
- Capacitate Protected Area Participants: Protected area occupants should be capacitated in terms of forest protection functions and sustainable livelihood opportunities. This can mutually benefit protected area management and the occupants. This will empower the communities as responsible partners in forest conservation.
- Establish a conservation program with a livelihood component.

Acknowledgments

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References

[DENR] Department of Environment and Natural Resources. 2017. Retrieving data from the 2017 Bataan National Park survey and registration of protected area occupants (SRPAO) using the socio-economic assessment and monitoring systems (SEAMS). Narrative Report. Bataan (Philippines): DENR.

____ 2020. Department of Environment and Natural Resources PAMO. Retrieving data from the Bataan National Park Business Plan. Protected Areas Business Plan. Bataan (Philippines): DENR.

[REECS] Resources, Environment and Economics Center for Studies, Inc. 2014. Retrieving data from the Business Plan of Bataan National Park. Business Plan. Metro Manila (Philippines): REECS.