

# Ambuklao-Binga

## ENVIRONMENTAL & SOCIAL REVIEW SUMMARY

This Environmental and Social Review Summary is prepared and distributed in advance of the IFC Board of Directors' consideration of the proposed transaction. Its purpose is to enhance the transparency of IFC's activities, and this document should not be construed as presuming the outcome of the Board of Director's decision. Board dates are estimates only.

Any documentation which is attached to this Environmental and Social Review Summary has been prepared by the project sponsor and authorization has been given for public release. IFC has reviewed this documentation and considers that it is of adequate quality to be released to the public but does not endorse the content.

<b>Project number</b>	26996
<b>Country</b>	Philippines
<b>Sector</b>	Utilities
<b>Department</b>	Infrastructure
<b>Company name</b>	SN Aboitiz Power Benguet
<b>Environmental category</b>	B
<b>Date ESRS disclosed</b>	April 25, 2008
<b>Status</b>	Pending Signing
<b>Previous Events</b>	Approved: June 12, 2008

### Overview of IFC's scope of review

The Ambuklao and Binga hydroelectric power plants are being privatized as a package through an international tender process, as part of the privatization program under a comprehensive sector reform law, the Electric Power Industry Reform Act (EPIRA). At privatization, expected to occur in June 2008, the plants will be owned by SN Aboitiz Power Benguet, Inc. (SNAPB), a joint-venture between SN Power Invest (SN Power) of Norway and Aboitiz Equity Venture (AEV) of the Philippines. IFC's proposed investment, a loan, will be in parallel with additional financing from Nordic Investment Bank and local banks and will support the privatization.

IFC, on behalf of the Lenders, engaged SKM Consulting of New Zealand to conduct a technical and environmental review of the existing operations at Ambuklao and Binga, assess SNAPB's plans for takeover, and work with SNAPB to develop a social and environmental Action Plan for Ambuklao and Binga to meet IFC's Performance Standards within a reasonable timetable. SKM conducted visits and interviews at the project sites in March 2008, together with investment and technical staff from IFC.

SKM's April 2008 draft report was the primary basis for IFC's staff review of the project. IFC staff also reviewed other documents, including various environmental due diligence reports prepared for SNAPB by the Manila, Philippines office of GHD Pty Ltd, preliminary dam safety audits undertaken for SNAPB by Tonkin & Taylor International Ltd. with Engineering Development Corporation of the Philippines, and the Information Memorandum for the project.

### Project description

The proposed IFC investment will partly finance the privatization and rehabilitation of the 75 MW Ambuklao hydroelectric power plant and the 100 MW Binga hydroelectric power plant, currently owned by National Power Corporation (NPC). The rehabilitation will re-commission the Ambuklao plant, which has been shut down due to silt problems, upgrade the Binga plant, and increase the combined capacity by 50 MW in total (30 MW for Ambuklao and 20 MW for Binga) from 175 MW to 225 MW. They will operate as peaking plants, supplying power to the Luzon grid for about five hours daily. There are no electric transmission system constraints with regard to the expected higher generation levels.

The project company, SNAPB, is expected to take over the hydropower facilities in June 2008, and will put in place new management procedures, address technical issues such as sedimentation and dam safety and implement the rehabilitation of both plants. SNAPB will also enter into a separate agreement with the Government, for those facilities that will remain under public ownership, to cover the operation and maintenance of the dams and appurtenant structures, formulation of operations

manuals, formation of an oversight committee, and maintaining the integrity of the water levels in the reservoirs. Responsibility for the watershed management will remain with the Government.

Ambuklao and Binga are located on the Agno River in Benguet Province, in a relatively narrow, steep sided valley. Ambuklao dam was built in 1956, and is of rockfill construction with an impervious central core, maximum height of 129 m, a crest length of 452 m, and a reservoir area of 7.5 km<sup>2</sup>. The plant was decommissioned in 1999 as a result of accelerated silt accumulation around the water intake point. As part of the rehabilitation, SNAPB will construct another intake point at a higher elevation. The rehabilitation plan will also include installation of new electrical and mechanical equipment and a new tailrace discharge structure at a higher elevation to address silting. The Ambuklao dam will also need some repair works in relation to erosion and damage to the embankment, repairs to gates, and general maintenance. Rehabilitation is to take two years and is targeted for completion in July 2010.

Binga was built downstream of Ambuklao in 1960, and is also of rockfill construction, maximum height of 107 m, a crest length of 400 m, and a 4.26 km<sup>2</sup> reservoir area. Binga will be upgraded with the construction of a new intake and the replacement of each generation unit per year during dry season when all units are not needed. Plant rehabilitation will include construction of a new intake similar to Ambuklao as well as installation of new electrical and mechanical equipment. The Binga dam will need some repair works in relation to damage to the embankment, a deficiency in spillway capacity, and other maintenance and repairs. Completion of the refurbishment plan targeted for the first half of 2013.

As Ambuklao is upstream to Binga the Ambuklao reservoir supplements the reservoir for Binga as well allowing for the operation of the two power plants in cascade. This will be important in the future, as sedimentation progress is expected to lead to a run of river situation at Binga by 2027. SNAPB does not plan on desilting the reservoir and will instead operate the plant in a manner that will regularly remove silt from the areas immediately in front of the intake.

Being a refurbishment of an existing renewable energy project, it is well aligned with IFC's Climate Change Strategy. Electricity from Ambuklao and Binga is sold to the Luzon grid, one of the three major island grids in the Philippines. Luzon grid is predominantly thermal-based, which accounts for 70% of electricity generated, while hydro and geothermal account for the remaining 20% and 10% respectively. The refurbished project will generate an estimated 755 GWh for 2010 onwards, and annually avoid greenhouse gas emissions equivalent to an estimated 550,000 tons of CO<sub>2</sub> from displaced thermal generation.

### Identified applicable performance standards

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While all Performance Standards (PS) are applicable to this investment, IFC's environmental and social due diligence indicates that the investment will have impacts which must be managed in a manner consistent with the following Performance Standards:

- PS1: Social and Environmental Assessment and Management Systems
- PS2: Labor and Working Conditions
- PS3: Pollution Prevention and Abatement
- PS4: Community Health, Safety and Security
- PS6: Biodiversity Conservation and Sustainable Natural Resource Management
- PS7: Indigenous Peoples

As explained below, the following PSs are not applicable or minimally relevant:

- PS5: Land Acquisition and Involuntary Resettlement

Resettlement and land acquisition for the Ambuklao-Binga dam occurred over 50 years ago, and no expansion of the project footprint is planned as a result of privatization. One family has been physically displaced by pre-construction explorations for the new intake structure at Ambuklao. SNAPB has provided compensation and benefits for the displaced family that are consistent with the requirements of PS5.

SNAPB's due diligence disclosed possible outstanding land compensation claims stemming from the original land acquisition by the provincial government. None of the lands involved are in areas necessary to operate the power plants and dams. SNAPB will promote resolution of these issues in conjunction with its supplemental studies for Indigenous Peoples (PS7). Host communities, including previously resettled people and their descendents, will benefit from the SNAPB's contributions to a government-funded community development scheme as well as from SNAPB's corporate social responsibility activities.

- PS8: Cultural Heritage

No issues of cultural heritage have been identified to date. SNAPB will conduct cultural heritage surveys at both sites in conjunction with its supplemental studies for Indigenous Peoples (PS 7). SNAPB will also put in place a chance finds procedure.

## Environmental and social categorization and rationale

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IFC's review of this investment identified the following issues:

- environmental and social management capacity of the project company, SNAPB, and the expected technical support from the sponsors;
- environmental liabilities from past operations, and planned corrective actions;
- reservoir sedimentation;
- environmental upgrade plan;
- dam and reservoir safety;
- watershed management planning; and
- community engagement.

Communities of Indigenous Peoples predominate in, and derive livelihoods from natural resources, in the reservoir and watershed areas. As such, IFC considered their current livelihood patterns, the status of any ongoing programs of engagement and community development between them and SNAPB, and potential adverse effects on these communities from construction activities and changes to reservoir operation and maintenance.

IFC also considered the performance of the project sponsors, SN Power and AEV, on a similar project in northern Luzon (Magat HEPP) financed by IFC in 2007 in addressing environmental, health, safety and social issues in a responsible manner satisfactory to IFC.

Actions planned or in negotiation related to the Ambuklao and Binga projects are expected to provide a means for SNAPB to be compliant with IFC's Performance Standards within a reasonable timetable. None of the identified issues are expected to result in significant impacts, and, as such, this is a Category B project according to IFC's Environment and Social Review Procedure because potential environmental or social impacts attributable to the private project are limited.

## Key environmental and social issues and mitigation

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Information about how these potential impacts and risks from the project will be addressed by SNAPB to comply with IFC's Performance Standards is summarized in the paragraphs that follow.

- PS1: Social and Environmental Assessment and Management Systems

Components of a social and environmental assessment and management system are in place at Ambuklao and Binga; these will need to be formalized in a comprehensive manner following takeover. SNAPB has recent experience in a similar takeover of an NPC plant, at Magat Hydro in northern Luzon, and is well positioned to operate the plants in accordance with environmental laws and with the requirements of Performance Standard 1, although a formalized system will take some time to be put in place. Environmental improvement projects have been identified from an October 2007 environmental audit by GHD Pty Ltd. A broader study by GHD will cover ecological risk assessment in the surrounding areas of the rehab project and a confirmatory study on ground water contamination.

SNAPB plans for an integrated Safety, Health, Environment and Quality System (SHEQS) once takeover activities are complete. SNAPB's framework for the development of the Occupational Safety & Health System, Environmental Management System, and Quality Management comprises various expectations for gap identifications, each associated with key elements for the achievement of SHEQ goals and objectives. Both the corporate and operating site management are responsible for establishing the scope, priorities, and phases of implementation considering the complexities and risks involved. The various phases identified in the plan are identification of system gaps, strategic planning, system design and development, system implementation, performance monitoring, and system review and improvement.

As a condition of IFC's investment, SNAPB and IFC will agree on a Social and Environmental Programs Action Plan that details: SNAPB's social and environmental policy; SNAPB's social and environmental assessment process; social & environmental programs and action plan (including organizational structure and responsibility, environmental programs; social programs; monitoring and reporting; and training and capacity building); and annual review process.

As is often the case for state-owned companies, not all approvals, permits, and licenses have been secured by the NPC to operate Ambuklao and Binga. SNAPB is coordinating with NPC and the Philippines privatization agency, PSALM, to secure and transfer/assign all the required material approval, permits and licenses. SNAPB will also need to obtain an Environmental Compliance Certificate (ECC) from the Philippines Department of Environment and Natural Resources (DENR). DENR requires a new ECC for major rehabilitation and upgrading of the existing operation, increase in the plants' generating capacities, and the restart of the Ambuklao plant. SNAPB's consultant, GHD Pty, has completed the required environmental and social documentation, particularly the Environmental Performance Report and Management Plan (EPRMP), which is a requirement

for securing of the ECC. The EPRMP is to be submitted on the last week of April 2008, and the ECC is estimated to be issued by DENR thirty days after its filing.

- PS2: Labor and Working Conditions

Employment policies and practices at Ambuklao and Binga will be transitioned with the expected takeover by SNAPB, and made consistent with those of the sponsors, SN Power and AEV, which are consistent with the requirements of IFC's PS 2. As a result, SNAPB will expand worker health and safety program, including risk identification and controls, site inductions for staff and visitors, suitable personal protective equipment and signage. SNAPB will also evaluate security practices at the plants for consistency with PS2.

Ambuklao and Binga are under the joint management of an NPC Plant Manager and supporting personnel, who oversee NPC and contractor staff at Ambuklao and the activities at Binga of the third-party operations and maintenance contractor, Itogon Power Generation Corporation (IPGC). Approximately 34 NPC and 58 IPGC personnel, together with subcontracted guarding and cleaning personnel, comprise the operating staff at the two plants.

Rehabilitation activities at Ambuklao and Binga will extend from takeover in mid-2008 through completion of work at Ambuklao in mid-2010 and Binga in mid-2013. SNAPB estimates that the construction workforce will average about 320 personnel during peak months. Contractor administration, shops, and housing will be located at the existing NPC campsites and other project lands controlled by SNAPB. Many of the existing NPC facilities will be refurbished or replaced by SNAPB for use by plant operations staff.

SNAPB will develop and implement a labor force management plan for the transition from existing operations, through refurbishment construction, to operation of the plants by SNAPB. Development of this plan will be consulted with existing employees and other workers and with the affected communities.

- PS3: Pollution Prevention and Abatement

SNAPB will have responsibility for satisfactory performance of the privatized generation facilities as well as for the operation and maintenance of the dams, reservoirs, and waterways against IFC's Performance Standard 3. Studies to date have focused on compliance with Philippine law, and SNAPB will conduct additional studies, such as an ecological risk assessment, and sediment contamination analyses to guide its management practices.

SNAPB's environmental consultant, GHD Pty Ltd, identified key issues and actions required for remediation and improvement of the privatized generation facilities in order to achieve compliance with Philippine law within a reasonable timeframe. Environmental compliance of both plants was assessed through site visits and a review of Self Monitoring Reports (SMRs), permits issued by the Philippines DENR, and water quality reports. A description of these key items follows:

- Water Quality Management:

Sewage and domestic wastewater have to be treated prior to disposal, and the Philippines Clean Water Act of 2004 requires facilities to operate a wastewater treatment facility or plant to remove pollutants in accordance with the DENR effluent standards. SNAPB will implement its consultant's recommendation that an upgraded sewage treatment facility be installed at each hydro plant.

- Hazardous Wastes Management:

Due diligence identified the presence of Polychlorinated Biphenyls (PCBs), and Asbestos Containing Materials (ACM) in the onsite equipment and facilities. Initial investigation indicates that leaking transformer oil has resulted in PCB contamination. While liability for such preexisting conditions remains with the GOP, SNAPB will need to participate in their management, remediation, and disposal in order to ensure longer term environmental compliance at the plants. SNAPB will also need to upgrade the plant's management, storage, and disposal of other hazardous wastes, such as waste oils, used batteries, and fluorescent light tubes which are currently on site.

- Solid Waste Management:

Domestic trash and other solid waste is currently managed and disposed in an ad hoc manner. SNAPB will implement waste segregation at source, recycling, re-use and composting, and the use of permitted sanitary landfills as the final disposal facility. SNAPB will also properly dispose of scrap metals currently on site to reduce the potential of soil and groundwater contamination. Another strategy for solid waste management is to enter into a memorandum of agreement with a local government unit for regular pick-up of segregated waste materials for proper disposal.

SNAPB will implement a comprehensive Solid, Liquid and Hazardous Waste Management Plan at both power plants as part of its management system.

- PS4: Community Health, Safety and Security

At Ambuklao and Binga, as with most large dams, the key risk to community health, safety and security is flooding and/or sudden water level changes affecting the safety of downstream land owners and river users, reservoir users such as cage fishermen, and land users and occupiers at the edge of the reservoir. SNAPB will have responsibility for the power plants and, through its operating agreement with the Government, the dams and reservoirs. It is recognized that these risks and responsibilities are shared, as responsibility for the watershed management will remain with the Government. SNAPB will coordinate with the NPC and affected communities on the development of a comprehensive emergency response plan.

Ambuklao and Binga dams have been subjected to several significant natural events, including the July 1990 Baguio earthquake (Magnitude 7.8). Landslides in the Ambuklao watershed caused a large amount of silt to flow into the reservoir, which ultimately led to the shutdown of the Ambuklao plant. Some damage to both dams resulted from the earthquakes and investigation and remedial works were undertaken. As dam safety inspections had not been undertaken in recent years, SNAPB commissioned a dam safety inspection review as part of its due diligence. Preliminary dam safety audits were undertaken for SNAPB during 2007 by Tonkin & Taylor International Ltd. together with Engineering Development Corporation of the Philippines. These consultants also outlined rehabilitation requirements for the two dams. SNAPB will undertake a comprehensive review of the site specific seismicity and a detailed assessment of both dams response to earthquake activity as part of its refurbishment designs to address any security issues identified.

- PS6: Biodiversity Conservation and Sustainable Natural Resource Management

Potential impacts to biodiversity resulting from private operation of Ambuklao and Binga could result from civil construction during rehabilitation, reservoir silt flushing during both rehabilitation and operation, and day-to day operation of the hydro facilities (future power station discharges will peak higher and be of shorter duration than previously). Although risks to biodiversity from the power stations' rehabilitation and operation are not considered high, information is lacking on significant species, communities or habitats in the project vicinity, as well as on sediment composition and possible contamination from upstream mining activities.

Sedimentation has already caused a substantial change in the river bed environments upstream in the reservoir perimeters and downstream of Ambuklao tailrace, compared to the natural river bed. Sedimentation upstream of Ambuklao dam has affected land occupation and use around the reservoir perimeter; effects from further sediment accumulation can be expected to continue at Ambuklao and be of increasing importance at Binga.

SNAPB will conduct a biodiversity baseline assessment for the project area as input to its design studies for the rehabilitation, development of operation and maintenance criteria, and coordination with affected communities. SNAPB will also agree with DENR on revised ecological flows downstream of the dams, if required. GHD will be engaged to conduct an extensive ecological flow assessment to address biodiversity impact and risks.

- PS7: Indigenous Peoples

The Ambuklao and Binga watersheds are inalienable public land, withdrawn from sale or settlement and reserved for watershed and hydroelectric purposes. To allow SNAPB to use the Ambuklao and Binga lands, the DENR will issue a Special Use Agreement in Protected Areas (SAPA) in favor of SNAPB. SNAPB has already completed the requirement for the application for SAPA and expects SAPA issuance in June 2008.

Benguet province is the homeland of several indigenous groups collectively referred to as the Igorot. One of these groups is the Ibaloi, who predominate the southeast part of the province particularly Barangay Ambuklao (Ambuklao HEPP) and Barangay Tinongdan (Binga HEPP). The Ibalois represent approximately 80% of the total population in Barangay Ambuklao and approximately 90 % in Barangay Tinongdan.

As there are indigenous people within the project-affected areas, typically, the Free and Prior Informed Consent (FPIC) of the Ibalois is a prerequisite of the Philippine government for any project (including issuance of SAPA) undertaken within the Ambuklao-Binga Watershed Forest Reserve. Memoranda of Agreement (MoA) have been developed between SNAP and Indigenous Peoples and signed by the respective Councils of Elders. Even though the National Commission on Indigenous Peoples (NCIP) has issued a letter that these are not required for a NCIP Certification, as both Ambuklao and Binga are already existing facilities, SNAPB elected to proceed with the process and as of April 2008 the FPICs have been secured.

SNAPB has undertaken extensive consultation with local communities in the preparation of the two MoAs, and the consultative process will be an ongoing endeavor. SNAPB will sponsor additional research on the livelihoods of the communities in the reservoir and watershed areas, as input to its ongoing programs of engagement and community development. While there is no material change in the footprint of the two projects, this research will assess potential effects on these communities from construction labor influx, construction activities and changes in the operations of the power plants that may affect water levels in the reservoir and downstream of the dams. As protection of significant and sacred sites such as burial and ceremonial sites was a key concern expressed during consultation, cultural heritage surveys of the plant sites, compounds, intake, sediment tunnels and tail race drilling sites will be undertaken.

## Client's community engagement

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SNAPB has developed a Corporate Social Responsibility (CSR) Guidebook to manage its activities with affected communities. In advance of takeover of Ambuklao and Binga, SNAPB has proactively engaged both communities and stakeholder groups and prepared a draft communications strategy. Ongoing work will identify specially impacted groups and articulate community groups interests to inform a proposed Information Education and Communication (IEC) program.

Two streams of funding are available for community development programs: the Energy Regulation (ER) 1-94 Fund, and SNAPB's Corporate Social Responsibility (CSR) Fund. The ER 1-94 Fund is a Department of Energy requirement under Republic Act 7638 (1992) and has policy objectives are to recognize and provide recompense for the contribution made, lessen conflict of rights, and promote harmony and cooperation. The fund is financed by a levy on power producers. Funding is allocated to subsidized electricity, livelihood development, reforestation, watershed management and environmental enhancement projects. ER 1-94 also requires operators to appoint one Community Relations Officer for each power plant. Eligible communities at Ambuklao are keen for the rehabilitation program to proceed as they have not had access to public development funds since the plant became inoperable. With increased production projections for both Ambuklao and Binga, the funding under ER 1-94 is likely to increase. SNAPB will seek to influence the prudent investment of these public funds to contribute to local sustainable social and economic development.

SNAPB's CSR Fund allocations are not dependent upon power production levels. The initial 2008 allocations total PHP 5M, to be distributed by administrative unit (Barangays, Municipal LGUs, and Provincial LGUs). CSR investments to date include CARAA Sports Meet 2008, Tinongdan Foundation Day sponsorship, 2 day municipal development planning workshop and 6th Mt Ugo Summer Climb- Ecotourism Project. Pipeline CSR projects are a medical and dental mission and Ancestral Domain Sustainable Development Protection Plan (ADSDPP) project. SNAPB intends to align the CSR with the defined ADSDPP as well as with other local and regional development plans.

## Local access of project documentation

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The following person can be contacted regarding environmental and social documentation for the project:

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## Attachments

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There are no attachments for this document