

## TECHNICAL COOPERATION PROGRAMME ABSTRACT

TC Number:	PN-T1029
Project:	Submerged Timber Extraction Pilot Project
Date of request:	April 27, 2007
Name of the Fund:	Knowledge Partnership Korea Fund for Technology and Innovation (“KFT”)
Beneficiary Country:	Panama
Executing Institution:	Ardan International Group S.A. (Panama)
Total amount to be financed:	US\$1,703,883
Amount to be financed by the Fund:	US\$ 500,000

### I. Project Description

- 1.1 As a consequence of the construction of the Panama Canal, one of the world’s largest man-made lakes was created, Lake Gatun, which covers an area of 42,500 hectares. The damming of the Chagres River, which gave rise to Lake Gatun, flooded vast expanses of tropical rainforest. In a similar manner, the 32,000-hectare Lake Bayano was created in the early 1970s by the damming of the Chepo River for the construction of the 150 megawatt Bayano Hydroelectric Project by the Government of Panama. Almost a century later in the case of Lake Gatun and decades later in the case of Lake Bayano, old mahogany trees can still be seen rising from the water.
- 1.2 During the last several years, the Government of Panama has regarded the harvesting of submerged timber in Panama’s man-made lakes with great potential. In addition, Panama’s environmental authority, *Autoridad Nacional del Ambiente* (“ANAM”), as well as the *Autoridad del Canal de Panamá* (“ACP”) are supportive of submerged timber harvesting in the country.
- 1.3 While the extraction and processing of submerged tress in not a new endeavour, particularly in the Pacific Northwest of the United States and in Canada, existing technology and methods of extraction and processing must be adapted to the unique characteristics of tropical climates. For example, in addition to a much wider variety of tree species present in tropical locations and a more compact population of such trees, the diameter, density, branch and truck configuration, cellular makeup and water retention factor of tropical hardwoods is quite different than the typical characteristics of the trees to which current submerged timber extraction and processing technology is applied, thus necessitating innovative improvements and adaptation of existing technology and techniques specifically to the tropical context.
- 1.4 Ardan International Group S.A. (“Ardan”) is a special purpose company established in Panama to develop a timber extraction and milling business for submerged tropical hardwoods harvested from the flooded valleys of Lake Gatun, and the processing, marketing and export of sawn hardwoods and other value-added hardwood products to the international marketplace. Ardan has five concessions for submerged timber extraction from Lake Gatun granted by the ACP totaling 12,411 hectares. Ardan has also entered into a 50/50 joint-venture partnership with the *Kuna de Madungandi* (“Kuna”) to

expand the timber business to Lake Bayano, which falls within the Kuna comarca and as such is under Kuna control<sup>1</sup>.

- 1.5 This Technical Cooperation (“TC”) will support the implementation of a pilot project in Lake Gatun in preparation of the full-scale roll-out of the submerged timber extraction and processing plan in Lake Gatun and Lake Bayano. The initiative in Kuna territory in Lake Bayano is not part of the TC but will developed upon a successful completion of the pilot project. The pilot project will address several unique aspects of tropical submerged timber extraction planning, extraction, as well as milling and drying for which traditional technology has not been adapted previously.

## **II. Environmental and Social Strategy**

- 2.1 The proposed TC is designed mainly for limited on-site testing of specialized technologies and the development of guidelines by means of a pilot project. The TC will involve little physical works in an area of less than 500 hectares inside one of Ardan’s approximate 3,000 hectares concessions in Lake Gatun. The TC is designed to test methodologies and techniques for surveying and identifying submerged timber. Initial studies have estimated that on average 4 trees per hectare can be extracted for commercial uses. Reportedly, there are areas where the density of trees with commercial value increases up to 20 trees/hectare. The total number of trees to be removed will depend on the specifics of each area.
- 2.2 The technology will be tested by conducting a selective removal of trees. The trees have on average a height of 30 meters and a diameter of 45 centimeters. The trees are cut at the lowest feasible height, but no less that 1 meter from the base of the tree. Reportedly the trees are coated with algae and other materials that are released during the cutting but sediment shortly thereafter. No mayor turbidity or suspension of sediments is created during the cutting of the trees. Ultimately the proposed state of the art technology will allow for the cutting of the trees remotely from a barge. The timber will be subsequently extracted with a crane and transported to an on land sawmill. The waste to be generated in the sawmill will feed kilns that will be used to dry the wood with an additional application to generate electricity, which is to be investigated.
- 2.3 At the pilot project stage the magnitude of physical operations are very limited as they are geared to the testing of technology and the generation of data required for the full-scale submerged timber extraction project. The small scale of the operations will result in limited environmental and social impacts and risks. Therefore, the Project Team proposes the TC be classified as Category C, per the IDB Environment and Safeguard Compliance Policy.

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<sup>1</sup> The first joint development agreement was entered into between Ardan and the Kuna on June 1, 2006 and was superceded by the joint-venture agreement dated as of March 20, 2007. According to Law No. 24 of January 12, 1996 and the *Carta Organica de la Comarca* sanctioned by the Executive Decree No. 228 of December 1998, the lands of the comarca are the collective property of the Kuna and all natural resources, including Lake Bayano, are for the exclusive development of the Kuna. The Congreso General of the *Kuna de Madungandi* agreed on May 13, 2006 during a meeting in Ipety Kuna to move forward with Ardan in developing the submerged timber project in Lake Bayano.

- 2.4 An Environmental Impact Assessment (EIA) report was completed in October 2005 for the full-scale submerged timber extraction potential area and associated processing plant in Lake Gatun (12,411 ha). The EIA has been approved by ANAM. The EIA prepared for the whole area to be concession (i.e. 12,411 ha in Lake Gatún) reports the presence of fishes that have commercial use. No mayor disturbances on the environmental are expected, as the trees are cut and not hoisted. Reportedly the tress are coated with algae and other materials that are released during the cutting but sediment shortly thereafter. In general, the area where the pilot project will be conducted is characterized by the presence of large ranches along the lake shoreline. Neither Ardan concessions nor the area where the pilot project will be implemented are located in the Kuna indigenous territory nor in any Natural Protected Area.
- 2.5 Ardan has leased an area of 4.4 ha within an existing 400 ha ranch for the cutting of the extracted timber and has also leased an space of 12,000m<sup>2</sup> at the Colon Free Trade Zone for the installation of a saw mill and a kiln (with infrastructure such as fuel, energy, etc readily available). The ranch is 20 km away from the town of El Escobal, with no residents near the ranch. An existing gravel road connects the ranch to a two lane road leading to El Escobal and then to a highway that leads to Colón and thus no new access roads will be built. The ranch has an existing 20 year old dock. The only work to enhance the dock is a ramp to take the logs out of the water to avoid damaging the shoreline. The logs are hauled out of the water by means of a winch. In general, the logs will stay on land for 1 or 2 weeks until they are dry enough to cut them. For the pilot project, cutting operations at the ranch are done with portable sawmills, whereas more elaborate cuts will be done at the company's installations at the Colon Free Trade Zone. The working area in the ranch has electricity, water and telephone
- 2.6 The limited potential environmental impacts of the TC associated with the small amount of submerged timber to be extracted include affectation of the benthic system and the plants, vertebrates and microorganisms that have grown accustomed to the timber and the spillage fuels that could lead to the contamination of water. The inappropriate use of mechanical equipment such as cranes and saws have the potential to result in accidents to the labor force. Ardan will employ state-of-the-art techniques in cutting (versus hoisting the tree) and handling the timber to reduce adverse environmental impacts. Ardan will implement a series of procedures to reduce the risk of fuel spills. The limited works associated with the TC will implement the applicable mitigation measures included in the EIA for the full-scale submerged timber extraction project.
- 2.7 The Bank will review the environmental and social related procedures and guidelines that are to be implemented in the TC's pilot project to confirm that even the limited environmental, social and health and safety impacts and risks will be properly managed and mitigated. The operational procedures and guidelines that will be revised and modified as a task of this TC will include appropriate considerations to reduce the occurrence of potential risks such as spills and accidents. These aspects will be described in more detailed in the Plan of Operations.