SFM in the Iwokrama Forest

Implementing a sustainable timber-harvesting regime in Guyana's natural tropical rainforest

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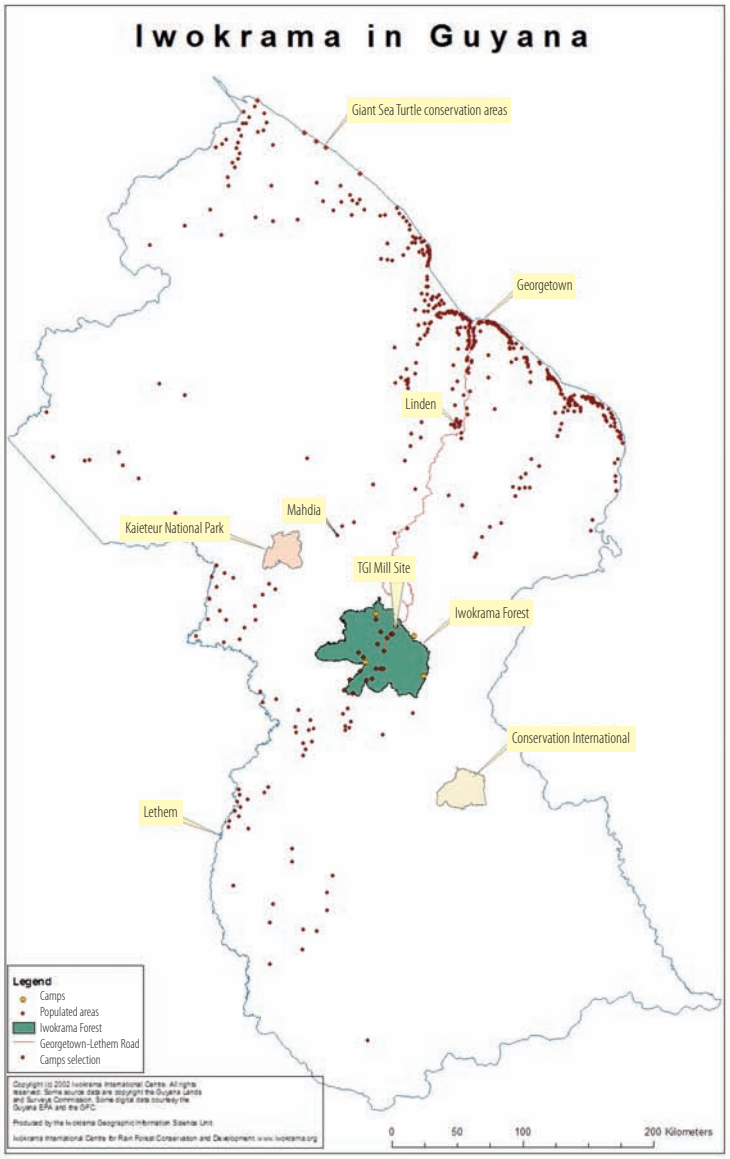


The Iwokrama International Centre for Rain Forest Conservation and Development (IIC) is an autonomous, non-profit institution established by the Government of Guyana and the Commonwealth. It involves the dedication of an intact tropical rainforest—the Iwokrama Forest—to the demonstration of conservation and sustainable use for ecological, social and economic benefits for local, national and international communities.

The Iwokrama Forest is located about 350 km south of Georgetown in Guyana's central highlands (see map above) and rests on the Guiana Shield, a geological formation that encompasses most of Guyana, French Guiana and Suriname and parts of Colombia, the Bolivarian Republic of Venezuela and Brazil. The Iwokrama Forest comprises 371 000 hectares of moist tropical rainforest characterized by sandy soils, slow growth rates and small to medium-sized trees.

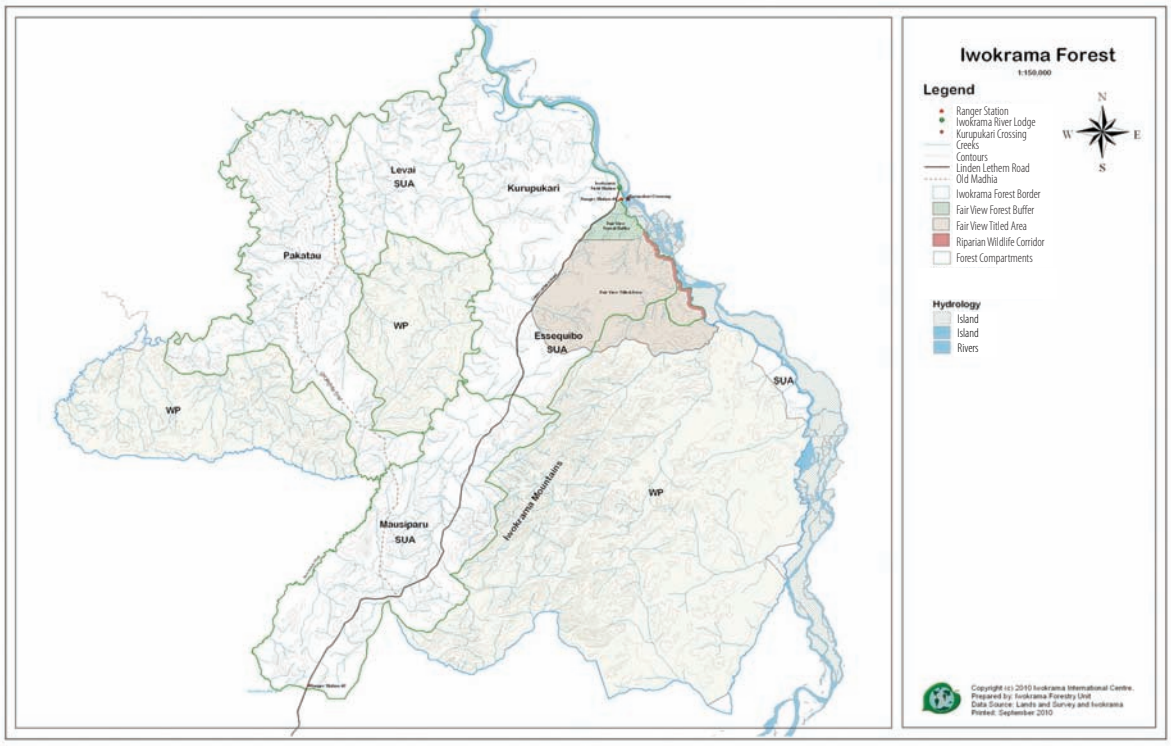
Fundamental to the work of the IIC is the geographical zoning of the Iwokrama Forest into two spatially equal zones: a wilderness preserve (WP) and a sustainable use area (SUA - see map, next page). The SUA is available for multiple resource use, including timber harvesting, and is managed jointly with local communities. The WP serves as a control area for the monitoring of impacts in the SUA and to maintain a pool of Iwokrama's biodiversity. Six percent (about 22 000 hectares) of the Iwokrama Forest is owned by Fair View Village under an Amerindian land title obtained in July 2006. Seventy-eight percent of this land is within the SUA and 22% is within the WP.

ITTO and Iwokrama

ITTO's support for Iwokrama's SFM initiatives dates to 1997 with the approval of an initial ITTO-funded project: *A sustainable management model in the Iwokrama rain forest*[1]. This project laid the groundwork for Iwokrama's sustainable timber harvesting program, which started in 2007. The implementation of the harvesting program was supported by a second ITTO-funded project, approved in 2006: *Implementation of the sustainable forest management programme of the Iwokrama International Centre*[2].

1 PD 10/97 Rev.1 (F)
2 PD 297/04 Rev.3 (F)

Iwokrama Forest, showing wilderness preserves (WP) and sustainable use areas (SUA)



The first ITTO-funded project ran from July 1999 to April 2004, with the specific objective of developing a model of sustainable, commercial-scale management that integrated research and training at all stages. The key outputs of this project were a management-level forest inventory, a feasibility study, a marketing study and a draft forest management plan. In conjunction with other donors, the project also provided support for the zoning report, an environmental impact assessment and the final management plan. It provided the basis for eventual negotiations with a joint-venture partner for the timber business.

The second ITTO-funded project came on stream and was implemented during the start-up of the timber-harvesting operation in 2007 and was recently completed. Its development objective was to address a lack of knowledge on, and a general misunderstanding about, the sustainable nature of forest activities and the profitability of forest use in the Iwokrama Forest.

The second project's specific objectives were to:

- manage the area in order to maximize net revenue from the sustainable production of forest goods and ecosystem services, while developing local employment and training opportunities and providing capacity-building and technology transfer programs for local Amerindian communities; and
- demonstrate, through effective monitoring, how the adopted approach is delivering lasting ecological, economic and social benefits to local, national and international communities.

The five key outputs delivered by the project were:

- training and technology transfer in the development and implementation of silvicultural programs;
- training and technology transfer in operational practices related to forest management;
- training for counterparts in forest management and silviculture;
- the development and implementation of socio-economic monitoring programmes to evaluate the impact of forest management activities on local Amerindian communities; and
- the development of biophysical monitoring programs to evaluate the impacts of forest use on flora, fauna, water and soil resources.

Sustainable timber harvesting

Sustainable timber harvesting commenced in the Iwokrama Forest in 2007 through a subsidiary company, Iwokrama Timber Incorporated (ITI). In keeping with the IIC's commitment to engage local communities and the private sector in its business development activities, the governance model for timber harvesting included the participation of a Guyanese private-sector company, Tigerwood Guyana Incorporated (TGI), which was established with the express purpose of conducting timber harvesting operations in the Iwokrama Forest. Local Amerindian communities have a 24% shareholding in ITI and appoint one of ITI's directors. ITI is the only FSC-certified timber operation in the entire Guiana Shield.

What does Iwokrama do differently?

FSC-certified timber harvesting has been in operation for more than two years; it provides an exemplary model of governance and shareholding involving Amerindian communities and the private sector. Harvesting is fully compliant with reduced impact logging procedures and the Guyana Forestry Commission code of practice for timber harvesting. It also includes a system to ensure the integrity of the stump-to-ship chain of custody.

The IIC has made a significant investment in personnel through training and technology transfer, including training in reduced impact logging (e.g. forest inventories, road-building, felling, skidding and health and safety); log scaling and lumber grading; tree species identification; and the use of computers. Physical features (e.g. rivers, streams, swamps and slopes), management units, felling blocks, trees, roads, bridges, log markets and skid trails in the SUA have all been mapped using state-of-the-art geographic information systems to facilitate harvesting planning. State-of-the-art data management procedures have also been deployed, including for:

- pre-harvest inventory data compilation and tree selection for harvesting;
- monthly harvesting production reports, including on felling, skidding and trucking; and
- post-harvest inventory reports on completed management units.

Monitoring and research programs in Iwokrama include:

- permanent sample plots for studying growth and yield, the effects of climate change and the impacts of forest use;
- a volume and decay study to inform and improve data management for forest inventories;
- fauna impact surveys; and
- road and river monitoring to detect unauthorized activities.

Understanding SFM at Iwokrama

Net operable area

The net operable area (NOA) is the area within the SUA deemed suitable for sustainable timber harvesting after the exclusion of ecotourism reserves, buffers, steep slopes, seasonal swamps and non-commercial forest types. The NOA encompasses four commercial forest types and covers 108 433 hectares, which is 29% of the Iwokrama Forest. Therefore, 71% of the Iwokrama Forest will never be harvested.

Annual allowable cut

Iwokrama has adopted a harvesting rate of 20 m^3 per hectare on a 60-year cutting cycle, as recommended by the Guyana Forestry Commission. Once an area has been harvested, therefore, it will not be harvested again for 60 years. On a 60-year cycle, the NOA will be harvested at the rate of 1800 hectares per year, which is about 0.5% of the total area of the Iwokrama Forest and 1.7% of the NOA. At 20 m^3 per hectare, Iwokrama could sustainably harvest 36 000 m^3 per year, but the Board of Trustees approved a conservative cut of 20 000 m^3 per year for the first 5-year plan (2007–2011).

Silvicultural system

The silvicultural system being deployed in the Iwokrama Forest is a natural regeneration system, under which only a few trees are selected for removal (selective cutting), allowing natural regeneration to fill the gaps created by harvesting and maintaining standing volumes of all tree species. The minimum diameter at breast height (dbh) for harvesting is 40 cm, although the minimum dbh is higher for some species, ranging from 45 cm for greenheart (*Chlorocardium rodiei*) to 70 cm for purpleheart (*Peltogyne* spp.). The uneven-aged nature of the original forest is maintained in the resultant managed forest.

Harvesting impact in the Iwokrama Forest

A management-level forest inventory of the NOA was conducted in 2003 with funding from ITTO. This provided the data on which all management planning is based. Table 1 summarizes the key values as they relate to timber harvesting and shows that harvesting will, on average, have a low impact on those values, accounting for about 16% of gross volume, 1% of the total number of trees and 6% of stand basal area.

Table 1. Volume, number of trees and basal area in the net operable area, Iwokrama Forest

Volume (m^3/ha)	No. trees per ha	Basal area (m^2/ha)
Average before harvesting		
124	486*	28.2
To be harvested		
20	6	1.6
Remaining after harvesting (assuming maximum AAC)		
104	480*	26.6

* = stems > 10 cm dbh.

Production report

In the first three years of timber harvesting (2007–2009), the operation harvested approximately 2000 hectares and produced about 30 000 m^3 of logs of 20 hardwood species – an average of 15 m^3 and 3.5 trees per hectare. In 2010, the operation achieved its quota of 20 000 m^3 for the first time. Export markets for FSC-certified sawnwood, principally in the form of squares, marine timbers, flooring and exterior decking, have been developed in the Netherlands, New Zealand and the United Kingdom. Market development in other regions, including the United States of America, is under way.

Project sustainability

The factors most critical to the sustainability of SFM in the Iwokrama Forest are:

- continued support from Iwokrama's International Board of Trustees and senior staff;
- continued support by the local Amerindian communities, who are now both local stakeholders and shareholders;
- the financial sustainability of the joint-venture timber operation; and
- successful timber product placement in both export and domestic markets.

The IIC will continue working with international partners like ITTO to ensure that Iwokrama Forest is sustained into the future and that the lessons learned from its sustainable management are widely shared.