



Sustainability Action Plan

Letter from Management

This Sustainability Action Plan represents a new beginning for Asia Pulp & Paper Co. Ltd. (APP) and its associated primary fiber supplier, Sinar Mas Group forestry companies (SMG), by providing a strategy for the future production of pulp and paper products in a manner that meets international standards of corporate responsibility. The scope, depth and commitment of this Action Plan are attributable in part to the associated base reports prepared by AMEC Forest Industry Consulting (AMEC) as well as to independent studies carried out by the Indonesian Ecolabeling Institute and WWF Indonesia. The Action Plan is however, our own plan, the implementation of which will set a new a standard for companies operating in Indonesia. We believe that the adoption of this Action Plan by APP/SMG will challenge others in Indonesia and the region to follow our lead and commit to sustainable production.

Significant progress made

The Action Plan builds on the significant progress already made by APP/SMG over the past six months toward meeting its commitments on sustainability as outlined in the Letter of Intent (LoI) signed by APP, SMG and WWF Indonesia in August 2003. This LoI includes a commitment placing 58,500 ha of high conservation value peat swamp forest near the Bukit Batu and Giam Siak Kecil Conservation Areas under permanent protection, adding a contiguous area of 8,500 ha of production forest to that protection area, and working with LEI to develop a wood-tracking and legal origin verification process. In addition to acting on these LoI commitments, APP/SMG has reduced the number of its external wood suppliers by more than half, has entered into agreements for the purchase of 16,000 ha of established plantation estate, and reduced its Riau mill's fiber requirement by 7% as a result of mill efficiencies. APP/SMG is also reforesting an area of 100,000 ha of fire-prone grassland near Palembang, South Sumatra, as part of its wasteland reforestation program. All of these recent achievements and commitments are just a beginning. This document outlines a credible plan for implementing additional changes aimed at meeting our commitment to achieving international standards of corporate responsibility.

Listening to stakeholders

In developing this plan we spent a significant amount of time listening to our stakeholders. In broad terms, they were asking for three things from APP/SMG: first, how would the company ensure that no illegal wood could enter its mills; second, how could APP/SMG be sure of meeting its 2007 sustainability commitment; and, third, how would APP/SMG assess and conserve Primary Forest within its concessions. We believe this plan answers each of these questions.

No Illegal Wood We have always had a policy of not accepting wood into our mills that is not accompanied by valid legal documentation. However, we recognize that documentation in itself does not always guarantee legality. We have therefore significantly reduced the volume of wood purchased from external suppliers in order to better control our supply chain. In addition, we have conducted an independent LEI audit of our supply chain which, while not identifying any illegal wood entering our mills, suggested that improvements to our systems were necessary to avoid potential abuse. We have committed to implementing these recommendations by 2Q04 in order to ensure international-standard stump-to-mill tracking.

Sustainability in 2007 The company has previously committed to becoming sustainable in 2007. This means that, after this date, APP/SMG will be fully reliant on renewable, plantation-grown fiber from socially, environmentally and legally responsible sources. In developing this Action Plan, the company has undertaken—and also shared with our customers and other stakeholders—a fundamental review of our expectations, including inventories, growth rates, silvicultural practices, harvesting and mill efficiencies, and the impacts of potential risks such as fire, disease and land claims. The result is a wood supply model that we are confident is credible, defensible and achievable.

Protection of Conservation Forest APP/SMG recognizes that large forest areas contiguous with Protection Forest may have conservation and environmental values. APP/SMG commits to conducting and abiding by High Conservation Value Forest (HCVF) analysis on these areas. This has already been conducted for the Bukit Batu District, which is contiguous with the Giam Siak Kecil and Bukit Batu Conservation Areas, and has resulted in an additional 5,060 ha being placed into moratorium over and above the 67,000 ha already pledged. An HCVF analysis is also planned for the Pulau Muda District, which is contiguous with the Kerumutan Nature Reserve. This analysis will be completed during 2Q04. We have also committed to conducting a pre-assessment of all of our forest areas against Forestry Stewardship Council (FSC) criteria for certification by an FSC accredited company.

Active partner in broader conservation

Furthermore, we believe that, as a major forestry company in Sumatra, we can play a role in the broader conservation of the Sumatra landscape. It is our view that, given the practicalities of the current situation in Indonesia, conservation efforts should be focused on channeling significant resources toward the protection of large contiguous areas of forest. In other words, efforts should be focused on defending those areas that can still be realistically defended. One such area is the 171,860-ha conservation park that has been created by combining Bukit Batu and Giam Siak Kecil Conservation Areas with APP/SMG's 58,500 ha of permanent moratorium in this area. Our Action Plan commits us to becoming a lead partner in the protection of this Primary Forest area. In addition, we will make available a sum of US\$7.0 million for the conservation of protected areas and call on other stakeholders to contribute on a matched basis.

Expert verification panel

Finally, APP/SMG commits to creating a panel of experts to regularly monitor and evaluate our time-bound stepped progress in implementing these actions. Outcomes will be monitored, verified and reported in such a way that stakeholders may then chart our progress and make their own objective assessments.

Balance between economic, environmental and social concerns

APP/SMG employs in excess of 70,000 people in Indonesia and, by some estimates, contributes over 1.5% to the country's GDP. We believe that we have made a significant contribution to the economic development of Indonesia and would like to continue to do so. We also appreciate that APP/SMG operates in a sensitive ecological and social environment and that to be a responsible community member, environmental and social development must be integrated with economic development.

The process of assessing all of our operations in developing this Action Plan was long and difficult. Perhaps the greatest difficulty was in committing to sharing this Plan with the wider public for review, comment and criticism. Nonetheless, APP/SMG's management and shareholders understand that this is the only way by which we can convince our customers and stakeholders of our commitment to becoming a sustainable Industrial Tree Plantation company and producer of pulp and paper.

The people of Indonesia have entrusted areas of land to our company for safekeeping. We are committed to developing that precious resource in a sustainable manner that provides economic and social benefits to the people of Indonesia, while helping to conserve these assets for generations to come.

Sincerely yours,



Michael Black

Deputy Chief Executive Officer, Asia Pulp & Paper, Co. Ltd.

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I. INTRODUCTION

I.A Brief History of the Sustainability Action Plan

The Sustainability Action Plan is an outgrowth of the mill and fiber-supply audits conducted by AMEC¹ in 2002. A joint project was developed with AMEC to help APP/SMG² to elaborate a 12-year Sustainable Wood Supply Plan. AMEC also agreed to provide future independent verification of the viability and credibility of the Plan.

While this process was being completed, market and stakeholder demand for sustainable production increased significantly. As a result, the production of the Sustainable Wood Supply Plan with AMEC was integrated into a Sustainability Action Plan that formed an integral commitment under a Letter of Intent (LoI) signed with WWF Indonesia on August 19, 2003.

The long-term sustainability commitments in the LoI state that:

- “APP and SMG agree to prepare and share with WWF an Action Plan covering all the above issues³, and those contained in the AMEC Sustainable Wood Supply Review.
- Before January 31, 2004, APP and SMG will provide WWF with an Action Plan for the year 2004 onward which will be based on the AMEC 12-Year Sustainable Wood Supply Review, as well as the findings of other studies, such as the above mentioned WWF wastelands study and the independent audit on the legal compliance and wood sourcing.
- The Action Plan includes a detailed, time-bound plan for APP to achieve a Sustainable Wood Supply to protect High Conservation Value Forests under the management of APP and SMG and/or its Joint Venture partners in Riau and Jambi provinces; ensure full legal compliance and wood sourcing system to eliminate any wood deliveries that are illegal or of doubtful legality; and resolve legitimate social conflicts with local communities.
- The process for preparing the Action Plan will include regular consultations with a stakeholder review group, which will review the results of the AMEC Sustainable Wood Supply studies as they become available.
- APP will provide WWF with the final AMEC Report on Sustainable Wood Supply submitted to SMG and APP as soon as it is available.”

This Sustainability Action Plan aims to meet these commitments, amongst others.

¹ AMEC is an independent, international engineering service company providing design, project delivery and service support.

² SMG is the collective management of the Sinar Mas Group forestry companies. APP is a Singapore-registered company encompassing all of the pulp and paper mill operations in Indonesia. It is related to SMG by common ownership. Although the two entities are not legally related, there is a strong market perception that they are one. For this reason, APP/SMG is treated as one entity in this Action Plan, unless specifically indicated as otherwise.

³ See Annexes for the full wording of the LoI

I.B Components and Scope of Plan

The Plan covers all APP/SMG operations in Riau and Jambi provinces on the island of Sumatra, as well as a newly developed scrubland area around Palembang, South Sumatra. It covers only the company's Indonesian operations, focusing on the company's two pulp mills in Riau and Jambi, and their associated concession areas.

The Plan has three main components. Chapters I–III describe the company's principles, its commitments toward sustainability, and an inventory of forest, land, and areas available for Industrial Tree Plantation development.

Chapter IV models the company's plantation and other fiber sources. The model looks at various scenarios and outcomes, including the target date for sustainability. This includes the underlying assumptions necessary to achieve a Sustainable Wood Supply, the fiber gap and requirements to fill the gap.

Chapters V–XII cover the specific strategic plans for implementation to achieve sustainability. They include a wide range of technical plans for Silviculture, Research & Development, Nursery Development, Infrastructure, and Harvesting and Transportation Development. They also include strategic plans that address other issues associated with sustainability, such as Conservation of Primary Forest, Wood Tracking and Legality of Supply, Community Development, and Alternative Fiber Supplies.

I.C Relationship between APP and SMG

APP is a Singapore-registered company encompassing all of the pulp and paper mill operations in Indonesia. It relates to the Sinar Mas Group (SMG) by common ownership.

In the context of this report, SMG refers to the collective management of the SMG forestry companies of PT. Arara Abadi and PT. Wirakarya Sakti, which respectively supply the mills in Riau and Jambi.

SMG is the main supplier of wood fiber to both of these mills. The common ownership and close relationship between APP and SMG enable effective cooperation. Such cooperation also serves to facilitate management changes and efforts to achieve sustainability.

Although the two entities are not legally related, there is a strong market perception that they are one. For this reason APP and SMG are treated as one entity in this Plan unless specifically indicated otherwise.

II. STATEMENT OF PRINCIPLES AND CORPORATE COMMITMENT

II.A Issues and Purpose

Sustainable production is integral to APP/SMG's continued success. There are many paths toward achieving environmental sustainability. These include continuous improvement in raw-material sourcing and utilization, process efficiency, waste minimization, supply chain management, and the use of alternative fiber sources external to APP/SMG.

Meanwhile, social sustainability is underpinned by respect for human rights at the grassroots level across the operations and throughout the supply chain, while developing the communities affected by operations.

These two important areas form part of APP's long-term plan for sustainability, contained within the Sustainability Policy. To achieve sustainability, APP commits to the following steps:

- Full compliance with national legislation and relevant international regulations;
- Establish robust standards for fiber suppliers through a formal APP Fiber Procurement Policy covering environmental standards, conservation principles and social impact monitoring;
- Continue investment in recycling technology and promoting efficient uses of recyclable resources;
- Continue to explore innovative ways of recycling the waste products that arise from paper-making;
- Minimize pollution from operations and benchmark processes against international best practice, as well as continuing to minimize energy use and its resulting environmental impacts;
- Improve the safe handling and storage of raw materials, process intermediates, chemicals, products and waste;
- Introduce the best available technology that ensures maximum efficiency, but also enables progress toward the goal of supporting local communities through employment opportunities and development programs;
- Implement detailed operational unit guidelines to manage emergency and social conflict situations, should these arise; and
- Invest further in employees through training and education.

Among other practical realizations of this policy, commitment to heightened sustainability requires:

- Appointing a Head of Sustainability in each country of manufacturing operations;
- Development of a mechanism for resolving outstanding land-claim disputes—where local communities possess a valid legal or customary claim to ownership—that can be used prior to the conversion of disputed forest areas into Industrial Tree Plantation areas;
- Continuing the management system, which operates under ISO 14001, for environmental matters at operating unit level;

- Reporting externally on progress toward sustainability on a bi-annual cycle;
- Educating, training and motivating employees to maintain their awareness of environmental and social responsibility commitments; and
- Providing employees, the wider community and regulators with accurate and timely information regarding the impact of operations.

II.B Fiber Supply Principles

APP is committed to purchasing wood fiber for pulp-making operations from sustainable managed forestry sources, which conserve areas of outstanding habitat and operate in harmony with local communities. Clear guidelines for suppliers are contained in the Procurement Policy. This Policy outlines requirements from stakeholders to the suppliers. It also outlines compliance management. If a supplier does not meet these requirements, after appropriate consultation, the relationship ends. These principles will also apply to the company and it commits to the same standards. These standards will be fully implemented and reported on by the end of 2004. Each of APP's suppliers is required under the Procurement Policy to:

- Maintain compliance with all relevant regional, national and international regulations for forestry and land use management;
- Prepare formal forestry management plans to document and monitor land use, to ensure that supplies of environmentally sustainable wood fiber are available long term;
- Create a formal policy for the conservation of biodiversity including protecting areas of outstanding natural habitat and monitoring the policy's effectiveness on a regular basis;
- Identify the environmental and social impacts of its operations and provide formal management systems for the control, minimization and mitigation of these impacts;
- Accept external verification of management systems and the use of independent third-party certification of wood fiber sources and also provide APP with written plans for adopting these standards during the 2004–05 period;
- Comply with universal human rights regulations and have disciplinary procedures in place to deal with any suspected violations of these by either staff or contractors;
- Report to APP any major complaint from local communities within one month of its occurrence, while producing a plan for dealing with a complaint of this type;
- Provide APP with a report every six months on the progress it has made in working with local communities and organizations and identifying areas that need to be improved;
- Develop a program of stakeholder communication with local communities and relevant external environmental and social organizations to inform, allow feedback and identify areas for improvement; the supplier will also provide APP with a six-monthly report on progress to identify areas of major concern; and
- Commit formally to provide APP with supporting documentation on these undertakings and to accept independent assessment of its operations and supply chain as required by APP.

II.C Corporate Change and Commitment to Improvement

II.C.1 *Time-Bound Stepped Change*

APP/SMG is committed to a process of time-bound, stepped change to achieve international standards in sustainability of its operations. Implementing the changes takes time. The changes necessary to achieve sustainability will also involve change in existing corporate culture and practices. These changes must then be institutionalized to facilitate accurate monitoring, verification and reporting.

II.C.2 *Monitoring*

Each specific strategic and operational plan calls for implementation of comprehensive quantitative and qualitative monitoring of achievements. To be effective, the monitoring must be the result of good internal systems that are integral to the company's operations.

II.C.3 *Verification*

Internal monitoring results will serve as the basis for external monitoring of the Commitments to Sustainability. They will also enable effective independent verification. The manner of verification will vary, depending upon the particular constituency interested in the results.

II.C.4 *Transparency*

The verified results will be published with full transparency. This will enable the various government, civil society and economic stakeholders to evaluate the progress of the company toward achieving sustainability and determining if the results are consistent with their own standards of sustainability.

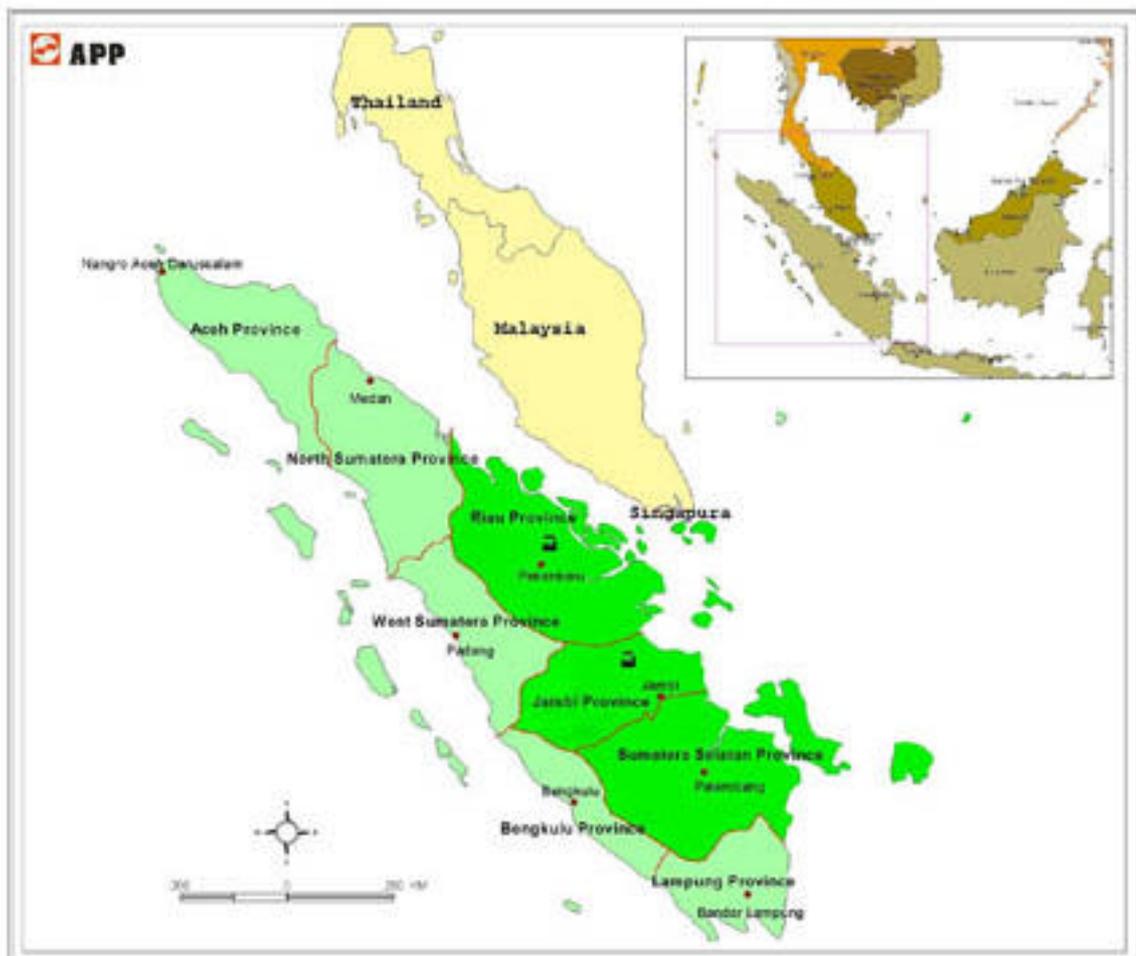
III. FOREST AND LAND INVENTORY

III.A Introduction

This chapter briefly describes the nature and extent of the APP/SMG forest estate. The forest estates covered include PT. Arara Abadi (AA) and its joint venture and community partnerships (JVs) in Riau Province and PT. Wirakarya Sakti (WKS) in the province of Jambi. In addition, a new Industrial Tree Plantation is being developed on ‘Wasteland’ near Palembang in the province of South Sumatra. This Palembang development is included in the JV area statements.

The forest and land inventory forms the basis for modeling the future development and production of Industrial Tree Plantation areas. The inventory data were compiled and verified by AMEC Forest Industry Consulting using APP/SMG company records and independent survey information. The area verification and adjustment process is described in Section III.C.

Figure III-1 Map of Sumatra, Indonesia



III.B Forest Area Description

The forest area description was compiled by analysis of company GIS and stand record systems. These data were verified by AMEC, comparing AMEC remote sensing imagery with company records.

The following table (Table III-1) describes the total land area for AA, WKS and the JVs and community partnerships.

Table III-1 Total Land Base for PT. Arara Abadi, PT. Wirakarya Sakti and the Joint Ventures and Community Partnerships (hectares)

	<i>Net Planted Area (ha)</i>	<i>Plantation Development Area (ha)</i>	<i>Unstocked & Scrubland (ha)</i>	<i>Potential Plantable Area (ha)</i>	<i>Conservation & Other (ha)</i>	<i>Total (ha)</i>
Arara Abadi	121,179	35,098	60,544	216,821	154,309	371,130
Wirakarya Sakti	71,985	23,850	50,708	146,543	60,305	206,848
Joint Ventures & Community Partnerships	34,330	102,785	113,758	250,873	130,806	381,679
Total	227,494	161,733	225,010	614,237	345,420	959,657

The land area available for plantation establishment is described as Potential Plantable Area (PPA). PPA consists of:

- **Net Planted Area**, defined as the area under plantation after deductions for unstocked areas and community land claims;
- **Plantation Development Area (PDA)**, which consists of degraded forest that is potentially available for development;
- **Unstocked and scrubland**, which consist of land that is currently devoid of natural or plantation forests.

The remaining area, described as conservation and other, consists of land that is set aside for conservation purposes, land that is utilised for roads and other infrastructure, land currently subject to community land claims, and land set aside for preservation of particular indigenous species. On a combined basis, 64% of the forest estate is potentially available for plantation establishment and 34% is set aside for conservation or other purposes.

Figure III-2 shows the specific composition of the PPA area in each of the forestry concession areas. The majority of PDA to be established in the future will be on the unstocked and scrubland areas. Figure III-3 shows specific composition of the unplantable area.

Figure III-2 PPA in each Forestry Management Unit

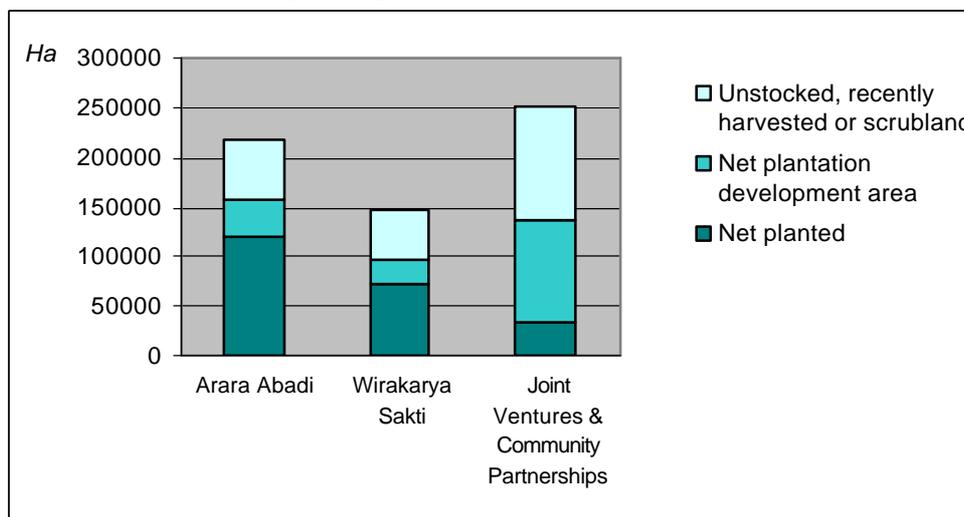
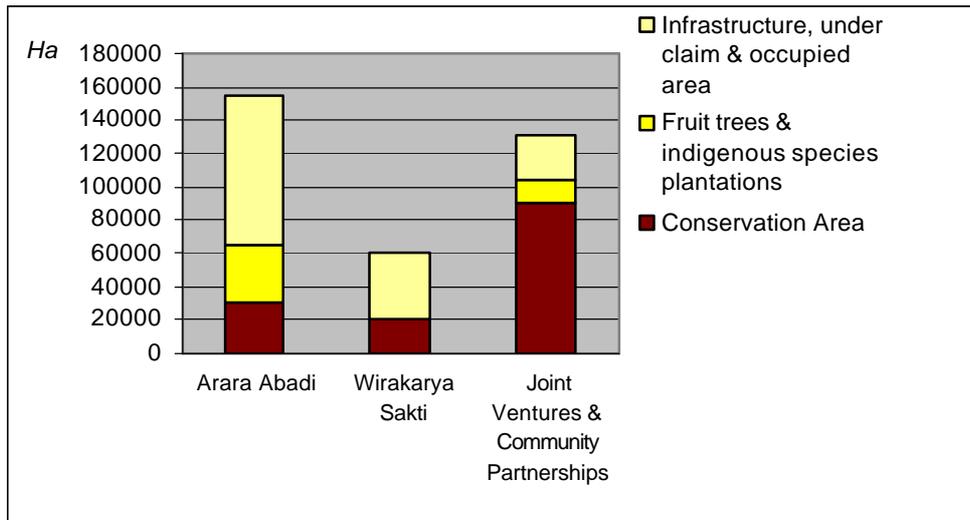


Figure III-3 Conservation Areas, Fruit Tree & Indigenous Species Plantations, and Infrastructure and Areas Under Claim of Occupied by Forestry Management Unit



III.B.1 PT. Arara Abadi (AA)

AA has a total land area of 371,130 ha, which is split into six districts ranging in size from 28,000 ha to 96,000 ha. The AA district boundaries are illustrated in Figure III-4. Approximately 42% of AA is unavailable for plantation establishment, having been reserved for conservation, infrastructure and indigenous species reservation, or is under land claim. This information is summarized in Table III-2.

Figure III-4 Map of Locations of PT. Arara Abadi, Joint Ventures and Community Partnerships

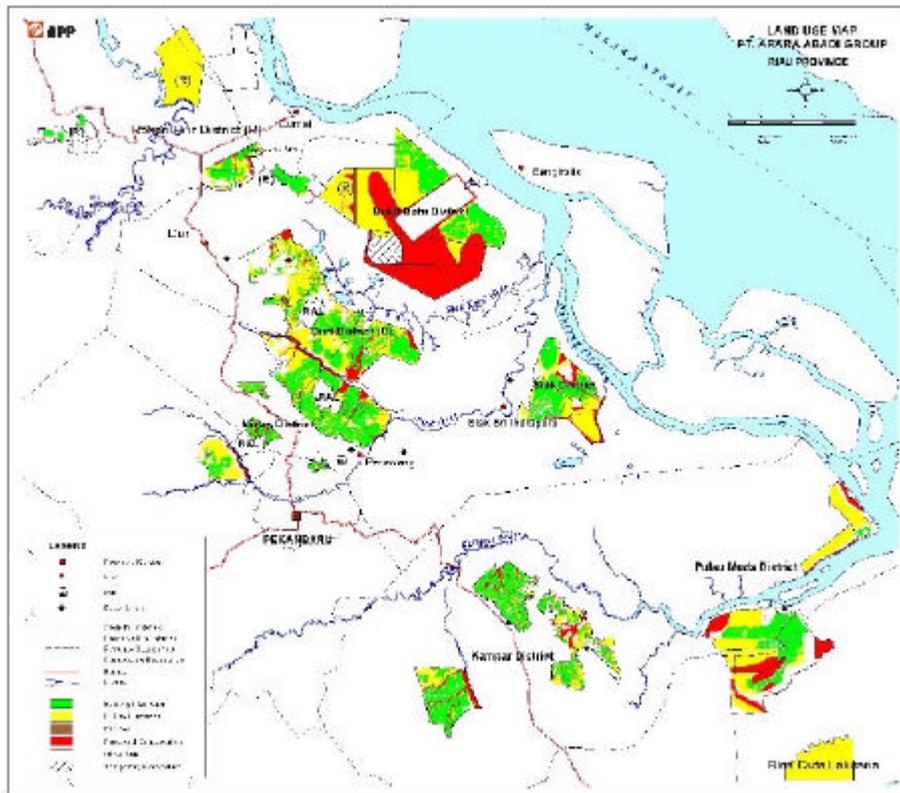
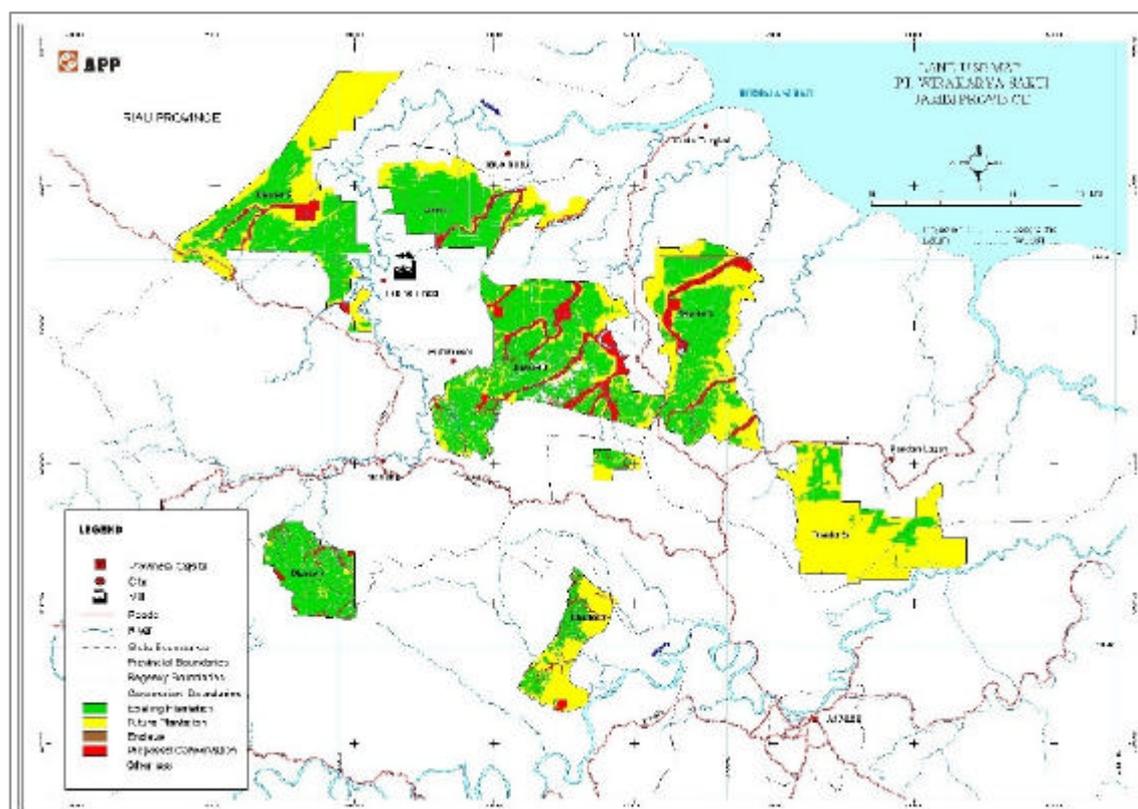


Table III-2 Land use at PT. Arara Abadi

	Area (ha)	Percentage of total area
Net planted area	121,179	32.7%
Net plantation development area	35,098	9.5%
Unstocked, recently harvested & scrubland	60,544	16.3%
Potential Plantable Area	216,821	58.4%
Conservation area	30,375	8.2%
Fruit trees & indigenous species plantations	33,971	9.2%
Infrastructure, under claim & occupied area	89,963	24.2%
Total Unplantable	154,309	41.6%
Total Area	371,130	100%

III.B.2 PT. Wirakarya Sakti

The total licensed area of WKS in the province of Jambi is 206,848 ha. See Figure III-5 for the location of WKS districts.

Figure III-5 Map of Locations of PT. Wirakarya Sakti

The WKS licensed area comprises 146,543 ha of PPA and 60,305 ha of non-plantable area. The largest portion of the PPA is already under plantation, at 71,985 ha (34.8%). The remaining portions comprise 23,850 ha of PDA (11.5%) and 50,708 ha of a mixture of unstocked, recently harvested or scrubland areas (24.5%).

The largest portion of the non-plantable area, at 39,607 ha, comprises a mixture of infrastructure, land under unresolved claims or occupied land. The other portions comprise 20,047 ha of Conservation Area and 651 ha of a mixture of fruit trees and plantations of indigenous species. This is summarized in Table III-3.

Table III-3 Land use at PT. Wirakarya Sakti

	Area (ha)	Percentage of total area
Net planted area	71,985	34.8%
Net plantation development area	23,850	11.5%
Unstocked, recently harvested & scrubland	50,708	24.5%
Potential Plantable Area	146,543	70.8%
Conservation area	20,047	9.7%
Fruit trees & indigenous species plantations	651	0.3%
Infrastructure, under claim & occupied area	39,607	19.1%
Total Unplantable	60,305	29.2%
Total Area	206,848	100%

III.B.3 Joint Ventures and Community Partnerships

The JV companies and community partnerships have a total area of 381,679 ha. Of this total area, about 34.3% is unavailable for planting, while the remaining 65.7% is available for planting. This information is summarized in Table III-4.

Table III-4 Land use in Joint Ventures and Community Partnerships

	Area (ha)	Percentage of total area
Net planted area	34,330	9.0%
Net plantation development area	102,785	26.9%
Unstocked, recently harvested & scrubland	113,758	29.8%
Potential Plantable Area	250,873	65.7%
Conservation area	89,612	23.5%
Fruit trees & indigenous species plantations	14,434	3.8%
Infrastructure, under claim & occupied area	26,760	7.0%
Total Unplantable	130,806	34.3%
Total Area	381,679	100%

III.C Area Estimates

III.C.1 Summary

Adjustments were made to gross forest area available for production to take into account APP/SMG's conservation commitments, the unstocked areas not currently accounted for in the stand record and GIS databases, and land claim areas. These adjustments are described below.

III.C.2 Conservation Commitments

A key consideration in modeling the APP/SMG forest estate is the objectives defined in the Letter of Intent (LoI) between WWF, APP and SMG. Below are the four objectives that affect sustainable wood supply. Each objective has been factored into the simulation models used to forecast wood yield.

Objective 1: Transfer 58,500 ha of High Conservation Value MTH Forest from production zone forest areas into protection zone forest areas. This objective will reduce available MTH forest area and hence limit supply from MTH forests in the near term⁴. It also will limit the area of land

⁴ Conservatively estimated at 8–9 million m³

available for Industrial Tree Plantation. The net MTH forest area input into the forest model excludes Primary Forest areas.

Objective 2: Transfer 8,500 ha of MTH forest into temporary moratorium zone forest areas, subject to location and availability of alternative lands suitable for plantation. APP/SMG will zone this area as Protection Forest. In addition, APP/SMG will set aside a further 5,060 ha in Bukit Batu District as a result of Primary Forest and HCVF analysis in this region. However, APP/SMG remains sensitive to its need for suitable alternative land as replacement. This objective will further reduce the available MTH forest area and will limit MTH wood supply in the near term⁵. It will also further limit land available for Acacia plantation development unless replaced by available wastelands in Riau or Jambi. The net MTH forest area input into the forest model excludes this Conservation Area.

Objective 3: APP/SMG will exclude wood supply from sources where it is unable to verify a legal Chain of Custody. This time-bound objective requires APP/SMG to establish a framework (consistent with its Fiber Procurement Policy) to assess the Chain of Custody for all wood sources. APP/SMG perceives that the process has strong potential to build wider regional capacity for assessment of legal, social and environmental practices, but also recognizes that outside supply sources are likely to require significant incentive to buy into this assessment process. The forest modeling excludes all current outside supply sources to simulate this constraint.

Objective 4: APP/SMG will exclude wood supply from its concession areas that have legitimate unresolved ownership claims by communities, individuals and other parties. To date, the process of community encroachment into APP/SMG concessions has resulted in illegal felling of MTH and Acacia plantations, and land development for other agricultural uses. The effect of this objective is to place a moratorium on land-claim areas until resolution is reached. For the purposes of forest modeling, APP/SMG has taken the approach that a net exchange of claim lands will occur in the foreseeable future.

Gross MTH areas were calculated from data held in APP/SMG's GIS. Following an assessment of MTH areas to determine conservation and protection values, such areas were excluded from the available production zones. Only areas considered to be part of the available production zone areas were included in the modeling of APP/SMG's sustainable wood supply. MTH forest areas were classified into three conservation levels assessed initially from APP/SMG forest maps, anecdotal and documented reports of logging history, and inventory data. These areas were verified by discussions with district field staff, the interpretation of aerial imagery, and some specific aerial surveys made by helicopter.

Modified wood-flow scenarios have also been tested to estimate the effects of reserving additional MTH forest areas. In addition to its LoI commitments to MTH reservation, APP/SMG has identified potential permanent moratorium areas in BBD, and temporary moratorium areas in Pulau Muda. The additional area is about 6,000 ha contiguous with existing and proposed new reserves.

III.C.3 Plantation Unstocked Area Reduction

APP/SMG's estimates for net plantation areas were extracted from its plantation asset registers (i.e., databases). The information in these databases was reconciled with spatial data held in APP/SMG's Geographic Information System (GIS).

Verification of APP/SMG's spatial data (i.e., stand parameters such as area, species, stocking and age class, as represented in APP/SMG's GIS) was done by sample comparisons with aerial imagery of the APP/SMG forest estate. The condition of plantations, as observed from a large sample of aerial imagery, was compared with APP/SMG's spatial data record. Generally, the

⁵ Conservatively estimated at 1.1-1.4 million m³

records tended to overestimate the area of plantation and District/Resort level reduction factors were calculated from the verification sample. Reasons for plantation area reductions included tree deaths following planting, fraud perpetrated by planting contractors, roads and canals, and to account for stand records that were not updated following harvesting.

III.C.4 Plantation Land Claim Area Reduction

APP/SMG classified community land claims over company plantation areas according to the potential claim result, as determined by APP/SMG forestry managers jointly with its consultants. Areas subject to claims were identified and classified into two categories. APP/SMG considered it is likely to retain Claim type 1 areas, and therefore these were included for wood supply modeling purposes. Claim type 2 areas are those that remain unresolved and continue to be occupied by the claimants. APP/SMG may accede to claims over these areas and therefore has excluded them from area estimates used in the modeling.

Based on land-claim area data available to APP/SMG, it was determined that about 50% of current land claims in plantations in the AA concession areas are likely to be lost to claimants. This is an untested low-precision estimate and depends on the rule of law under the provincial administration. It is also subject to implementation and monitoring of improved community and social development programs.

It is estimated that land claims over plantation areas in WKS will result in an expected net loss of 7,000 ha of plantations.

III.C.5 Legal Status and Licensing of Forestry

In acquiring Concession Licenses for establishing Industrial Tree Plantation areas (HTI), it is important to re-iterate that APP/SMG has followed, and continues to follow, the legal requirements based on the Land Use Plans contained within the 1994 Provincial Spatial Plans for Riau and Jambi. There are three steps in the licensing process, as follows:

- Conduct an environmental and social impact assessment (Amdal);
- Apply for Concession License; and
- Apply for Operating and Annual Licenses.

Step 1: Amdal

In line with national law for all development projects (administered by the Ministry of Environment), before the company applies for a Concession License it must first conduct an Indonesia environmental and social impact assessment (Amdal). Consequently, APP/SMG has accompanying Amdal assessments for all its Concession Licenses.

Step 2: Concession Licenses

At the present time, the granting of Concession Licenses is an issue that is clouded with legal uncertainty. Regional Autonomy Law No. 22/1999, Regulation PP 25, was passed in early 1999, stipulated that the *bupati* (at the District or *kabupaten* level) had the authority to approve the issuance of Concession Licenses. The only exception to this is where a concession area overlapped two or more Districts. In this case, the Provisional Governor was required to give approval for the Concession Licenses.

Later in the same year, Regulation PP 6 contained in Forestry Law No. 41/1999 reinforced the authority for *bupati* to issue Concession Licenses. An implementing regulation SK10.1/2000 was issued in 2000, awarding authority to the *bupati* and the Provincial Governor to approve the issuance of Concession Licenses. However, two years later in June 2002, this devolved level of authority was revoked by the Ministry of Forestry under a new Regulation PP 34/2002. Therefore,

under this new Ministry of Forestry regulation, authority for the issuance of Concession Licenses returned to the Ministry after 8 June 2002.

The current legal position is that all Concession Licenses for Forest Land designated areas require Ministry of Forestry authorization, not *bupati* authorization. All applications for Concession Licenses made by APP/SMG must therefore receive Ministry of Forestry approval.

In addition, this means that the company can no longer accept and purchase any wood from external Concession Licenses for Forest Land areas that have only *bupati* authorization. However, by taking this clear-cut position with regards to external Concession Licenses for Forest Land designated areas issued by *bupati*, several important impacts can be anticipated that should be borne in mind. These include the following:

- Plans for the conversion of land areas to oil palm and rubber plantation as gazetted in the Provincial Spatial Plan would be rendered uneconomic, as the cost of land clearance could no longer be offset against revenue from the sale of wood. A refusal by APP/SMG to accept wood from these areas could therefore have an adverse impact at both the Provisional and District levels, and could also cause negative sentiment toward APP/SMG from among the local communities affected.
- A refusal to accept *bupati* approved Concession Licenses for Forest Land areas would have the effect of encouraging a slash-and-burn policy among local communities, wasting wood and increasing the risk of forest fires and environmental haze.
- It should be noted that *bupati* are still authorized to issue Concession Licenses for Non-Forest Land areas, as these are not considered to be under Ministry of Forestry jurisdiction.

Step 3: Operating and Annual Licenses

Once Concession Licenses have been acquired from the relevant authority, the third step in the license acquisition process is that Operating and Annual Licenses (IPK and RKT) must both be obtained. For Production Forest Areas, these licenses are obtained from the *Dinas Kehuatan* at the Provincial level, together with a recommendation from the *Dinas Kehuatan* at the District level. For Non-Forest Areas, as with the Concession Licenses, the Operating and Annual Licenses are obtained directly from the *bupati*.

III.D Forest Growth and Yield Estimates

III.D.1 Summary

The forest growth and yield data were compiled by analysis of company forest inventory and Permanent Sample Plots (PSP). These data were verified by AMEC. The methods used were:

- Growth and yield models for plantations were developed using growth data from the extensive network of over 500 PSP;
- The plantation stands were classified into croptypes, which are plantation areas characterised by similar stocking and growth potential;
- Plantation croptype yield tables were developed using inventory data collected from 5,767 stands with over 15,000 inventory plots. Starting values from forest inventory were projected using growth models specific to each *Acacia* species and the croptype yield tables were derived as the average of all individual stand growth projections;
- The plantation yield tables cover the full range of current stand growth potential for *A. mangium* and *A. crassicarpa*. In this report, it is assumed that the future plantations

will be managed more intensively resulting in higher yields. This implies achieving consistently high stocking levels across the forest estate; and

- MTH forest yields for each district are estimated from forest inventory where available, or from discussion with harvesting managers.

III.D.2 Plantation Yields

Yield tables were developed specifically for the APP/SMG plantations and were used to predict the productive performance of current and future APP/SMG plantations. These tables were developed objectively using measurements from APP/SMG permanent sample plots and routine plantation inventory.

The base yield tables were developed using basal area, mortality and growth functions that define the periodic growth rates and expected yields for the two plantation Acacia species. Using these functions, tables were built to estimate the expected gross yield by age, site class and stocking levels in the plantation. These estimates are for the standing volume of wood at the time of harvest. In the absence of a reliable taper function, they estimate stem volume to the tree tip.

There are yield tables for the Acacia plantations representing the expected yield for different combinations of the following site characteristics:

- Two different management zones (i.e., AA and WKS)
- Two species types (i.e., *A. mangium* and *A. crassicaarpa*)
- Three site classes (i.e., low, medium, high)
- Three stocking classes (i.e., low, medium and high)

The base yield tables, which represent total standing volume, were then modified to account for expected wood losses in harvesting, processing and transport of pulpwood. The net yield tables represent volume at mill gate. APP/SMG has set a target net reduction of 15.3%, and realistically expects these gains to be realized by the end of 2004. This approach is modeled by incrementing the wood loss factor from 20% in first-half 2004, down to 17.5% in second half 2004, and finally to 15.3% by mid-2005.

Indicative net growth rates (m^3 ob/ha/year) for Acacia plantations modeled by APP/SMG are tabled below (Table III-5).

Table III-5 Indicative growth rates for APP/SMG Acacia plantations (m^3 ob/ha/year⁶)

Supply Zone & Species	Current Plantations	Future Plantations
	(2004–10) m^3 ob/ha/year	(2011–22) m^3 ob/ha/year
WKS - <i>Acacia crassicaarpa</i>	18.4	23.5
WKS - <i>Acacia mangium</i>	20.5	31.6
AA - <i>Acacia crassicaarpa</i>	19.6	23.2
AA - <i>Acacia mangium</i>	23.2	33.4

Source: Area weighted average MAI of annual harvest volumes as estimated by FOLPI woodflow modeling

⁶ m^3 ob/ha/year = cubic meters over bark per hectare per year

IV. MODELING OF SCENARIOS

IV.A Introduction

The purpose of this chapter is to describe the future levels and timings of production from the APP/SMG forest estate. The principle objective is to plan a way to accelerate the migration of the company away from the utilization of degraded natural forest toward a sustainable wood supply based on the utilization of Industrial Tree Plantation areas.

Base data for modeling essentially includes area and volume estimates for Plantation Development Areas, for Acacia plantations and for new plantation development areas, as described in the previous Chapter. APP/SMG analyzed its wood supply scenarios using Forest Orientated Linear Programming Interpreter (FOLPI) proprietary software and an associated linear programming mathematical package. Linear programming is a method used to find optimal outcomes given a certain set of objectives and constraints.

The primary outputs of the modeling include:

- The annual pulpwood production from PT. Arara Abadi, PT. Wirakarya Sakti and other APP/SMG joint venture companies for supply to PT. Indah Kiat Pulp & Paper (IKPP) and PT. Lontar Papyrus Pulp & Paper Industries (LPPPI) mills.
- Annual pulpwood supply surplus/deficit in comparison to mill demand levels.
- The annual MTH and plantation harvest (i.e., land area and pulpwood volume) in each wood supply zone.
- The annual new plantation establishment rate (i.e., plantation expansion rate on waste lands and plantation development areas) and replanting rate (i.e., next rotation plantings).

IV.B Base Data, Constraints and Assumptions

IV.B.1 Production Capacity, Conversion Factors and Wood Demand

APP/SMG wood supply modeling is based around matching full productive capacity of the forest estate against the demand for wood at the two APP mills. Mill demand is based on current installed capacity. It is assumed that APP/SMG intends to maintain the production capacity at current levels, and will not reduce or increase capacity in the forecast period. APP/SMG will however seek to make changes to woodyard and mill operations that enable more efficient wood utilization over the forecast period.

IV.B.2 Processing Efficiency

Processing efficiency is measured by the quantity of pulpwood in green metric tonnes (gmt) required to produce one air dry tonne (adt) of pulp. In its review of APP/SMG wood supply, AMEC proposed using previous wood consumption estimates for the pulpwood conversion factor, that is 4.5 gmt of Acacia pulpwood to 1 adt of pulp. APP/SMG has set a wood conversion target for both IKPP and LPPPI at 4.1 gmt to 1 adt, which is assumed by APP/SMG for modeling its future wood supply.

The wood demand level calculated in Table IV-I is based on 100% Acacia wood supply and assumes that full efficiency gains have been implemented.

Table IV-1 Calculation of wood demand (m³/year) for IKPP and LPPPI

	IKPP	LPPPI
Pulp production capacity (adt/year)	1.85 million adt/year	0.72 million adt/year
Conversion factor –	x 4.1	x 4.1
Pulp (adt) to wood (gmt)		
Wood demand (gmt/year)	7.585 million gmt/year	2.952 million gmt/year
Conversion factor – wood weight (gmt) to wood volume (m ³ ob)	x 1.142	x 1.142
Wood demand (m³ ob/year)	8.662 million m³ ob/year	3.371 million m³ ob/year

Source: APP/SMG and McKinsey & Company (PT McKinsey Indonesia)

adt = air dry tonne; the weight of pulp when dried to about 10% moisture content

gmt = green metric tonne; the weight of wood when freshly cut and moisture content is about 50%

m³ ob = cubic meters over bark; the volume of wood including bark

In 2004–05, APP/SMG has modeled a wood demand level that changes with stepped efficiency gains and a changing species mixture as MTH pulpwood is phased out and replaced by Acacia. The implementation of mill processing improvements at the two mills began in mid-2003, with a 9% efficiency gain already realized by January 2004. To simulate the improvement process and its effect on the wood supply deficit, APP/SMG has modeled incremental efficiency gains. The implementation process at the two mills will occur over different time frames. Recent measurements indicate a conversion factor of 4.17 gmt at IKPP, which is expected to improve to 4.1 gmt by end-2004 when process changes are completed.

LPPPI currently has a wood conversion rate of about 4.4 gmt. Process and plant improvements will take somewhat more time due to plans to install a new chip digester. With increased digester capacity, LPPPI will be able to utilize a larger proportion of fines and oversize chips, and hence is expected to achieve 4.1 gmt by mid-2005.

IV.B.3 Action Plan to Achieve Efficiency Gains

At the IKPP mill, a wood conversion factor of 4.17 gmt has been achieved by making improvements in three areas:

1. **Log storage and handling operations.** Currently there is a wood loss of about 15% (by weight) compared with the total wood supply during these processes.
2. **Debarking operations.** Currently there is a wood loss of about 8% (by weight) compared with the total wood supply during these processes.
3. **Chipping operations and screening operations.** Currently there is a wood loss of about 6% (by weight) compared with the total wood supply during these processes.

IV.B.3.a Log storage operations

All pulpwood received by the APP/SMG pulp mills is purchased on a weight basis measured in green metric tonnes. During storage there are several causes of loss, some of which are unavoidable. These losses total about 15%:

- Wood and bark moisture loss (6%)
- Bark loss (5%)
- Mechanical losses (breakage) during loading and un-loading (4%)

Action Plan:

The target is to reduce storage and weight loss from 15% to 12%

- Bark losses are generally unavoidable and are estimated at 5%.

- Moisture losses can be reduced to 5% through the implementation of a FIFO⁷ system in the log storage yard. While water content must eventually be removed in processing, a higher moisture content is desirable to produce chips of uniform dimension.
- Breakage losses will be reduced to 1% through minimizing double handling activities, by storing only larger logs in the range 20–30 cm diameter that have a longer storage life, and by using rotary grapple loading equipment that is not as “aggressive” as the conventional fixed grapple option.
- Salvaging a quantity of the breakage material resulting from mechanical handling can reduce losses by a further 1%.

IV.B.3.b De-barking operations

Small log sections are commonly lost as waste during the de-barking/bark separation process, more so in drum de-barking equipment than rotary de-barking equipment.

Action Plan:

To reduce wood losses from 8% to 5%

- Implement a manual method of wood recovery involving the manual removal of small logs prior to the use of bark processing equipment.

IV.B.3.c Chipping operations

Optimum chip quality is influenced by several manageable factors, in particular:

- Log length.
- Condition/sharpness of the chipping knives.
- Condition of the chipper-wear components.

In particular, substandard chipper condition generates a higher percentage of small chip fragments (pins and fines), which are separated from acceptable and oversize chips during screening. Shorter log lengths generally result in a higher percentage of over-size chips and slivers, which are re-chipped resulting in further by-production of pins and fines. In the past, pins and fines were used as boiler fuel together with other bark and wood waste. However, it is possible to convert the larger pin fraction into pulp, provided that a separate digester is available. IKPP has available digester capacity already, and has started recovering the pin chips. LPPPI currently does not have additional digester capacity.

Action Plan:

To reduce losses at screening from 6% to 3%

- IKPP: Divert all pin chips to a fines digester.
- LPPPI: Purchase and install one additional batch digester with capacity to process pin chips into pulp. When LPPPI installs additional digester capacity in 2005 to process pin chips, it is expected that LPPPI conversion rates will be equivalent to IKPP.

⁷ FIFO = First In - First Out

IV.B.4 *Felling Age Constraints*

It is assumed that the minimum age of clearfell for Acacia plantations is 6 years. This is more conservative than the original AMEC report which used a minimum clearfell age of 5 years. This effectively restrains the model from early cutting of plantation in the event that a deficit exists in any year, whereas in reality it appears that there is some potential to ‘overcut’ in 2009 in expectation of a surplus supply in the following years.

IV.B.5 *Planting Constraints*

The APP/SMG model assumes that there will be over 166,000 ha of planting of land that is currently bare and unstocked. These areas are included in the model as new planting areas that will be established between 2004 and 2007 as shown in Table IV-2.

Table IV-2 Wasteland and unstocked land establishment rates

Year Planted	New Establishment Area (ha)			Total
	AA	WKS	Palembang	
2004	5,000	12,000	20,000	37,000
2005	5,000	12,000	30,000	47,000
2006	10,000	12,000	30,000	52,000
2007	10,000	0	20,000	30,000
Total	30,000	36,000	100,000	166,000

It has been assumed for the purpose of modeling that in the future all peatland will be planted with *A. crassicaarpa* and all dryland will be planted with *A. mangium*. In reality, however, there is strong potential in some Eucalyptus genotypes currently being trialed and so the plantation species mix and productivity potential will almost certainly differ from those modeled.

During and after the harvesting of Plantation Development Areas, new roads, canals and other infrastructure establishment is required for operational and management access. Therefore, it is assumed that 10% of the available new plantation land will be forgone for infrastructure needs. The plantation area statements used in modeling are adjusted accordingly.

IV.B.6 *Incremental Improvements to Plantation Development Practices*

Lead-time is required to phase in improved plantation development practices. It is assumed that improvements in operations will be delayed by one year on mineral soil areas, while a two-year delay is expected for peatland areas. The extra year’s delay for peatland areas reflects the longer lead-time required to develop infrastructure.

In practice, the model assumes that planting on peat soils in years 2004 and 2005 will regenerate into the same yield table as the current croptypes. From 2006, peatland plantations will regenerate into the high stocking/medium site index croptype representing the growth potential of an average site with improved management. Similarly, planting on mineral soil areas in 2004 will regenerate into the same yield table as the current croptype. From 2005, plantations established on mineral soils will regenerate into the high stocking/medium site index crop.

IV.B.7 *Plantation Fires*

Annual loss of plantation due to uncontrolled fire is assumed to be equivalent to a 1% yield loss. It is assumed that fire will affect all plantation areas equally. It is also assumed that plantations destroyed by fire will be replanted in the same year.

IV.B.8 Disease

Plantation death due to disease accounts for about 2% of the plantation area each year in the current rotation. It is assumed that this will continue but, because the yield estimates already account for this loss through the permanent sample plot and routine inventory data, no additional reduction for disease has been modeled for the current rotation. It is AMEC's opinion that disease losses may increase in the second rotation, so a further yield loss factor of 2% is modeled. Disease losses were applied to the *Acacia mangium* croptype only.

IV.C Woodflow Projections

IV.C.1 Arara Abadi—Base Case

IV.C.1.a Base Case Assumptions and Constraints

Woodflow projections are based around a base-case scenario. The base-case presented here has been modified from the original woodflow scenario presented to WWF in January 2004. At the suggestion of WWF, various assumptions have been modified to simulate stepped improvements in the period 2004–05. The changes include stepped improvements to harvesting and mill processing. Yield estimates for future plantations have also been moderated.

The base case projections are compared with projections for alternative management scenarios. Alternative scenarios show sensitivities of woodflow forecasts to changes in key assumptions, constraints and inputs. In particular, the alternative scenarios explore changes in levels of utilization of current *Acacia* plantations, more immediate emphasis on planting wasteland areas, and the withdrawal of potentially productive Plantation Development Areas for reservation.

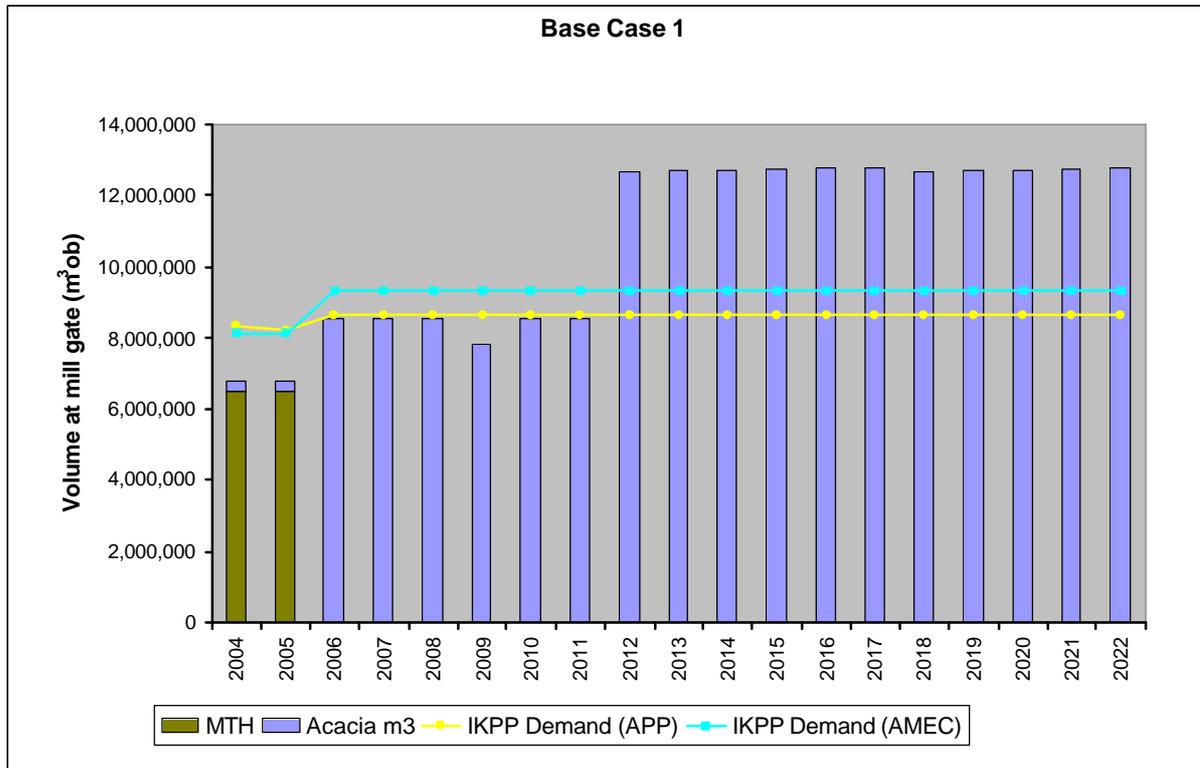
The assumptions and constraints are as follows:

- MTH harvesting on APP/SMG lands ceases by December 2005.
- Plantation harvesting levels are constrained to meet, but not significantly exceed, mill demand up to 2009.
- New planting on unstocked and bareland areas is scheduled for 5,000 ha in 2004 and 2005 and 10,000 ha in 2006 and 2007.
- New planting targets for available plantation lands in Palembang are restricted to 20,000 ha, 30,000 ha, 30,000 ha, and 20,000 ha over the four years from 2004 to 2007, respectively.
- In the AA base case, *Acacia* harvesting will be constrained to 300,000 m³ in 2004 and 2005. In the following years, the plantation will be cut at its full potential supply rate towards meeting the mill demand. When the forest production exceeds mill demand, the forest will be managed in order to generate a non-declining yield.
- In the AA alternative scenario, *Acacia* harvesting will be set higher at 1.0 million m³ in 2004 and 2.0 million m³ in 2005. This scenario models utilization of *Acacia* resources at higher initial levels than planned within the base case scenario.

IV.C.1.b Base Case Wood Supply Projections

The base-case scenario estimate of wood production is illustrated in Figure IV-1. The base case projects significant shortfalls in wood production in 2004, 2005 and 2009 totaling about 4.3 million m³. The rationale for this scenario is to provide additional land base for plantation expansion, maintain planting rates at achievable levels, and allow current plantation to grow for two years more.

Figure IV-1 Base Case wood supply forecast from AA (2004–22)



IV.C.1.c Base Case Harvest and Planting Area Projections

The base case indicates about 67,000 ha/year of Plantation Development Area and an average of 1,600 ha/year of Acacia plantation will be harvested in 2004–05 (Figure IV-2). In the following years, a mix of *Acacia crassiparva* (AC) and *Acacia mangium* (AM) plantations will be harvested. As expected, the annual plantation harvest area is correlated with average plantation age at harvest. The plantation age is maintained above 6 years. Between 2006 and 2022 the plantation harvest area ranges from 35,000 ha to 79,000 ha.

New plantation development and replanting is illustrated in Figure IV-3. New plantation establishment on currently unstocked plantation land and wastelands will be in the range 25,000 – 40,000 ha/year in 2004–07. The new Palembang management area in South Sumatra will be planted by end of 2007. The combined plantation establishment rate for the AA and Palembang management areas is at a maximum in 2005 (98,000 ha). In the following years, the establishment rate averages about 66,000 ha/year.

Figure IV-2 Base Case harvest area forecast for AA (2004–22)

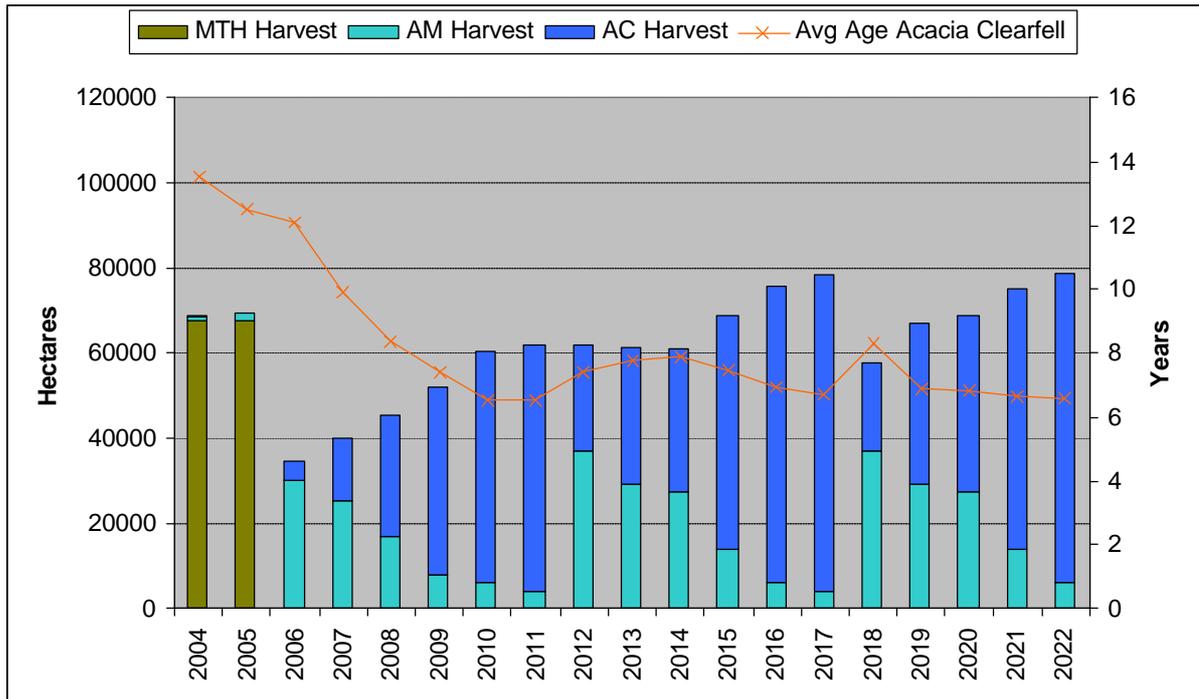
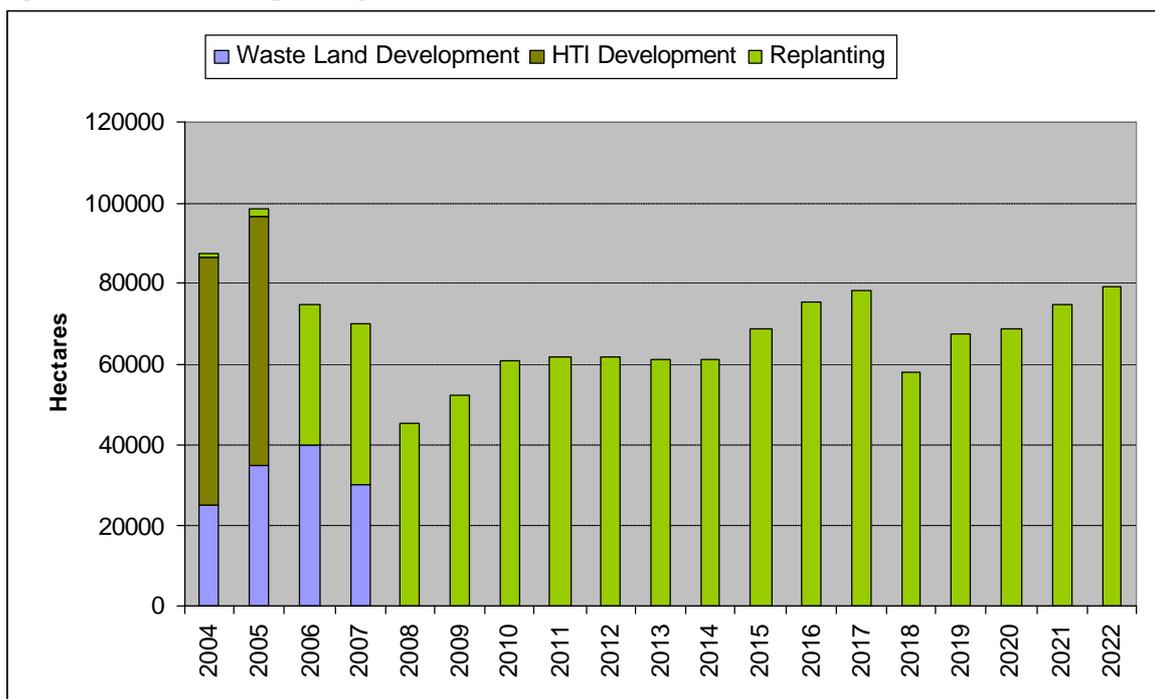


Figure IV-3 Base Case planting area forecast for AA (2004–22)



IV.C.2 Arara Abadi—Alternative Scenario

IV.C.2.a Higher Harvest Rates for Acacia Plantations in 2004-05

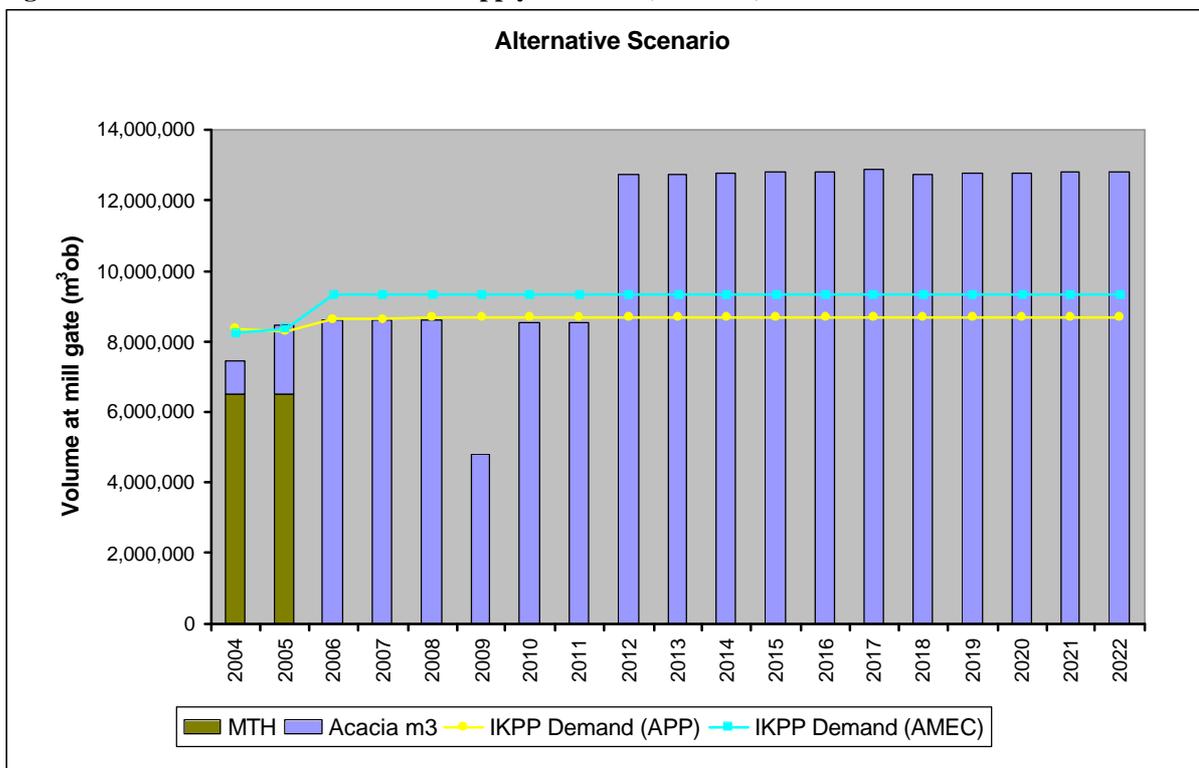
The rationale for this scenario is to utilize currently available Acacia pulpwood instead of external AFS to meet expected deficit in 2004–05, to provide additional land base for plantation expansion, and keep planting rates to achievable levels.

Compared with the base case, the impact of higher Acacia supply in 2004–05 is an additional 1.0 million m³ to the AA deficit. The total AA supply deficit is 5.3 million m³.

This scenario models the utilization of Acacia resources at a higher level in 2005–05 than the base case. Acacia supply is set at 1.0 million m³ in 2004 and 2.0 million m³ in 2005. In comparison to the base case, harvesting more Acacia in 2004–05 provides significantly higher wood supply from APP/SMG forests, reducing the deficit to about 900,000 m³ in 2004 and meeting demand in 2005–08. However, the deficit in 2009 is increased from about 830,000 m³ in the base case to about 3.9 million m³ because two additional years of plantation growth is forgone.

In the short term, there will be lower Alternative Fiber Supply requirements as shown in Figure IV-4. In the medium term, APP/SMG will gain sufficient opportunity to source appropriate Alternative Fiber Supplies to meet 2009 demand. The total impact on delivered wood cost will be significantly greater than the base case.

Figure IV-4 Alternative scenario wood supply from AA (2004–22)



IV.C.2.b Alternative Scenario Harvest and Planting Area Projections

In comparison to the base case the alternative scenario simulates a harvest of about 3,800 ha and 8,400 ha of Acacia plantation in 2004–05 (Figure IV-5). The Plantation Development Area harvest area in 2004–05 is unchanged from the base case. In 2006–22, the plantation harvest level is also similar to the base case with the exception the current APP/SMG plantations in AA cannot meet demand in 2009. Between 2006 and 2022 the plantation harvest area ranges from 35,000 ha to 76,000 ha.

New plantation development and replanting under the alternative scenario is illustrated below (Figure IV-6). Like the base case, new plantation establishment on currently unstocked plantation land and wastelands will be in the range 25,000 – 40,000 ha/year in 2004–07, and the new Palembang management area in South Sumatra will be completed by end of 2007. The combined plantation establishment rate for the AA and Palembang management areas is at a maximum in 2005 (105,000 ha) which is considered to be at the upper end of APP/SMG operational capacity. In the following years, the establishment rate averages about 65,000 ha/year.

Figure IV-5 Alternative scenario harvest area forecast for AA (2004–22)

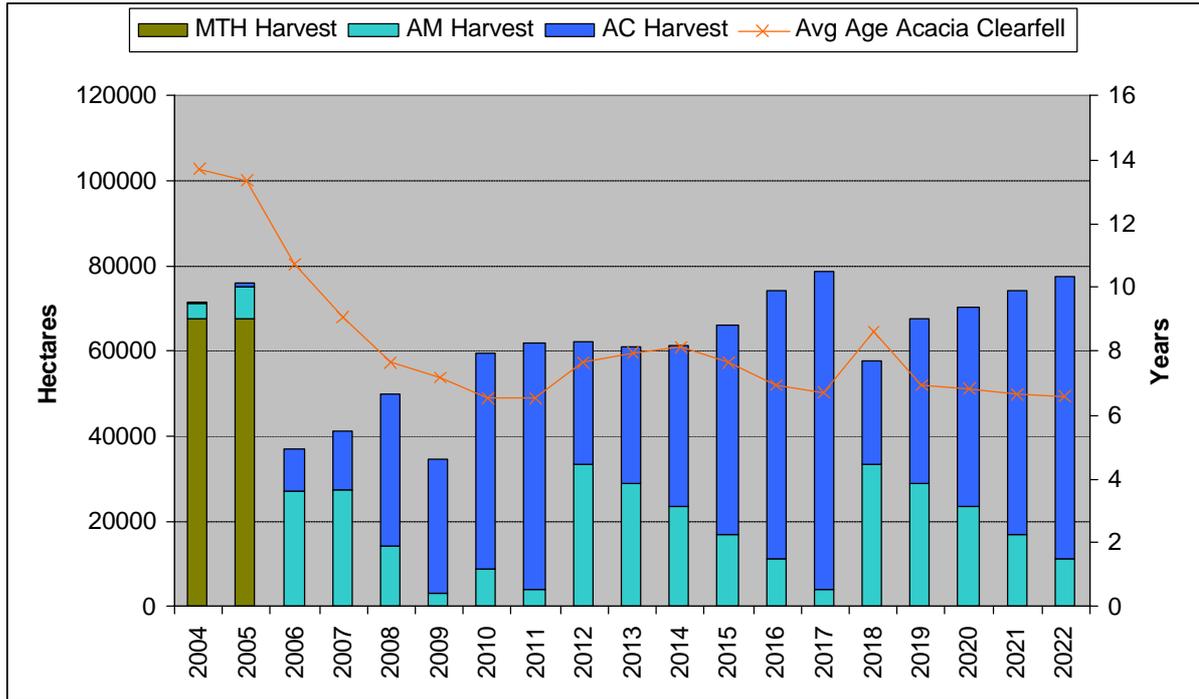
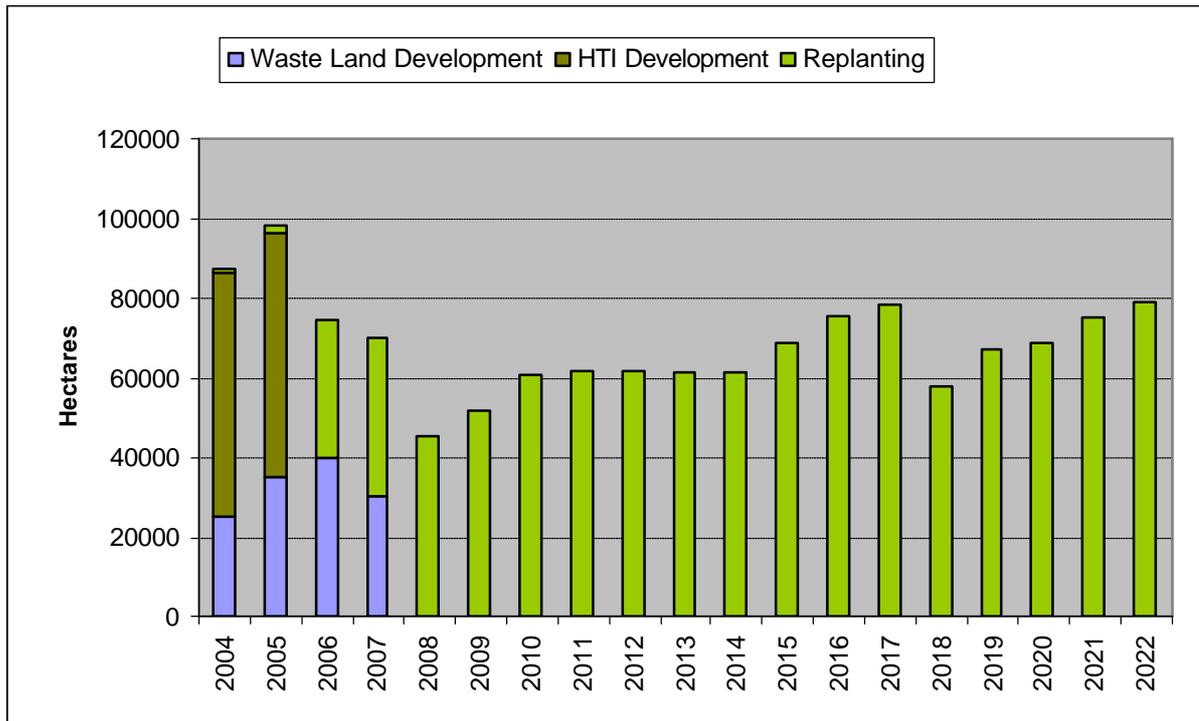


Figure IV-6 Alternative scenario planting area forecast for AA (2004–22)



IV.C.3 Wirakarya Sakti—Base Case

IV.C.3.a Base Case Assumptions and Constraints

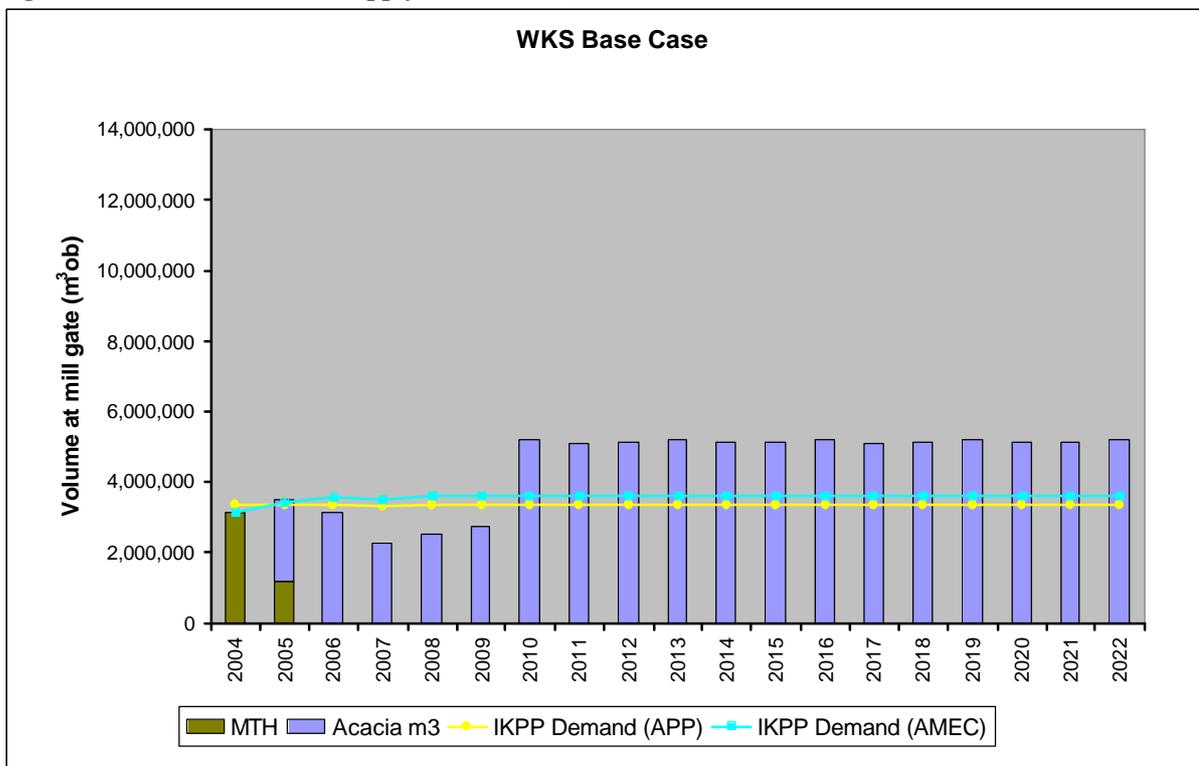
In addition to the base assumptions and constraints outlined in Section IV.B, the WKS scenario was modeled under the following assumptions and constraints:

- Plantation harvesting levels are constrained to meet but not significantly exceed mill demand up to 2009.
- MTH harvesting in APP/SMG concessions ceases by December 2005.
- MTH harvesting is maximized (i.e., to meet mill demand) in 2004 and the residual forest areas are harvested in 2005.
- Acacia is cut at the maximum level from 2005 to 2010. From 2011, Acacia is cut on a non-declining yield basis.
- New planting targets on unstocked and wasteland areas are 12,000 ha/year in the period 2004–06.

IV.C.3.b Base Case Wood Supply Projections

The WKS base-case scenario estimate of wood production is illustrated in Figure IV-7. The total supply deficit is estimated at 2.9 million m³, with the maximum deficit of about 1.0 million m³ occurring in 2007. The majority of the WKS supply deficit for WKS occurs between 2007 and 2009.

Figure IV-7 Base Case wood supply from WKS (2004–22)



IV.C.3.c Base Case Harvest and Planting Area Projections

The WKS base case simulates a Plantation Development Area harvest of 39,000 ha in 2004, and 15,000 ha in 2005. Plantation harvesting commences in 2005. However, due to the relatively immature age of the current plantations and the imposed constraint to harvest only at age 6 years or older, the area is insufficient to meet LPPPI demand until 2010. The average plantation harvest is about 18,200 ha/year in 2005–09, increasing to a non-declining harvest area averaging 29,000 ha/year in 2010–22 as shown in Figure IV-8.

New plantation development and replanting under the alternative scenario is illustrated in Figure IV-9. New plantation establishment on currently unstocked plantation land and wastelands in WKS is set at 12,000 ha /year in 2004–06, which is the total unstocked and wasteland area currently identified. The plantation establishment rate for WKS management area is at a maximum in 2004 (47,000 ha). In the following years, the establishment rate averages about 28,000 ha/year.

Figure IV-8 Base Case harvest area forecast for WKS (2004–22)

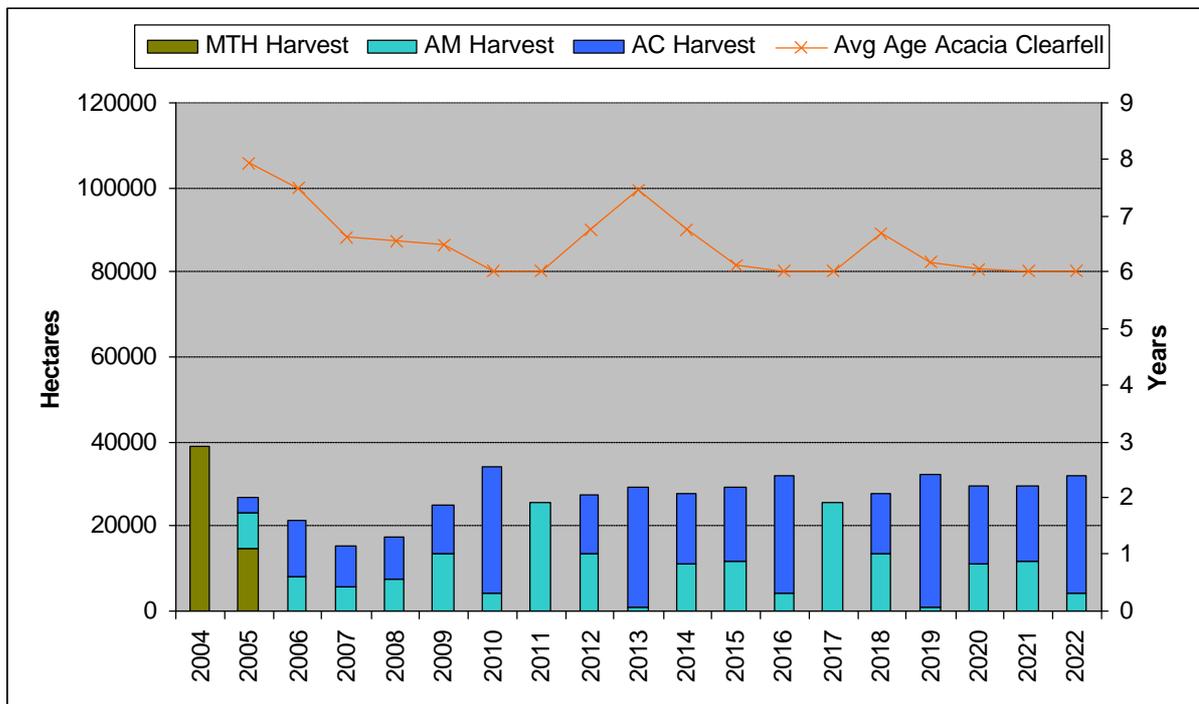
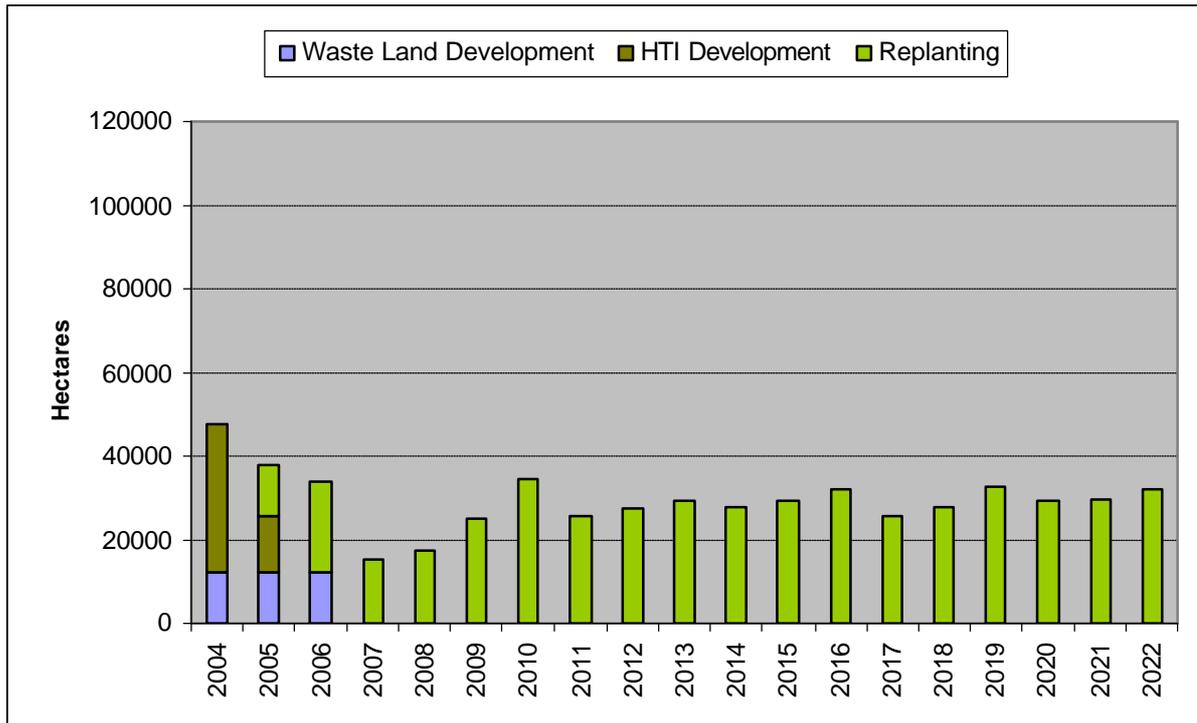


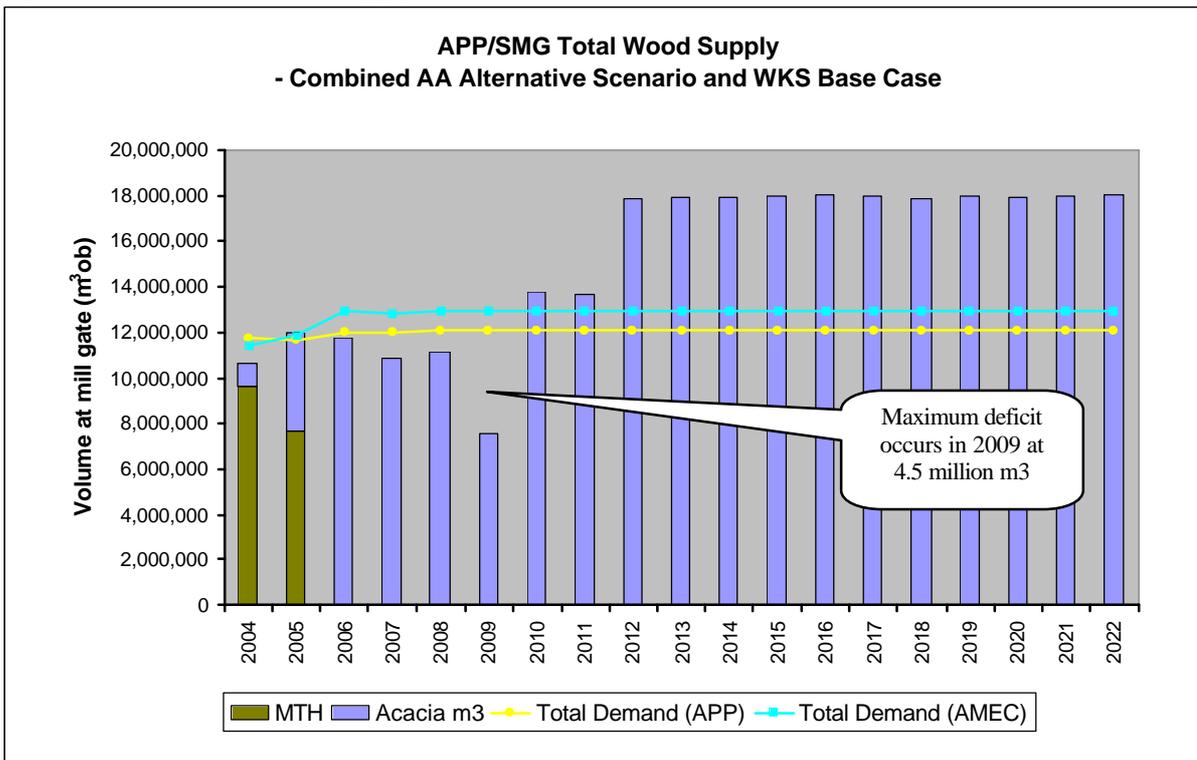
Figure IV-9 Base Case planting area forecast for WKS (2004–22)



IV.C.4 Wood Supply Summary for Combined APP/SMG Forest Estate

The combined wood supply projections for AA and WKS indicate that deficits in annual pulpwood supply occur only in the period 2004–09 (Figure IV-10). When new plantations established from 2004 mature in 2012, there appears to be sufficient supply to meet and even exceed demand.

Figure IV-10 Combined wood supply from WKS and AA



The total deficit for all APP/SMG concession areas is estimated to be at least 7.1 million m³ under the AA and WKS base case scenarios (Table IV-3).

With increased harvest of Acacia plantations in 2004–05 as illustrated above, the total deficit increased by 1.0 million m³ to 8.1 million m³ (Table IV-4). The total deficit assumes that surplus supply is not swapped between the two mills when available. There is opportunity to direct surplus supply from WKS to AA in 2010–11, which would fill the small deficits that occurs in those years. In this case, the total deficit would be reduced to 7.9 million m³.

The impact of removing an additional 6,000 ha of Plantation Development Area from production zones has a smaller impact, further increasing the deficit to about 8.3 million m³.

Table IV-3 Deficit summary for AA base case and WKS base case (2004–11)

Year	AA-Base (m ³ ob/year)	WKS-Base (m ³ ob/year)	Total (m ³ ob/year)
2004	1,551,812	202,046	1,753,859
2005	1,395,333	0	1,395,333
2006	81,739	207,718	289,457
2007	81,735	1,023,033	1,104,768
2008	86,619	828,835	915,454
2009	832,461	616,429	1,448,890
2010	113,252	0	113,252
2011	103,801	0	103,801
TOTAL	4,246,752	2,878,062	7,124,813

Table IV-4 Deficit summary for AA alternative scenario and WKS base case (2004–11)

Year	AA-ALT. (m ³ ob/year)	WKS-Base (m ³ ob/year)	TOTAL (m ³ ob/year)
2004	914,142	202,046	1,116,189
2005	0	0	0
2006	81,739	207,718	289,457
2007	81,733	1,023,033	1,104,766
2008	86,620	828,835	915,455
2009	3,872,827	616,429	4,489,256
2010	123,372	0	123,372
2011	103,801	0	103,801
Grand Total	5,264,233	2,878,062	8,142,295

V. PLANTATION DEVELOPMENT

Highlights

Achieving a sustainable wood supply will require strengthening the following:

- Research and development programs
- Tree nursery operations
- Silvicultural planning and operations
- Hazard assessment and mitigation planning
- Monitoring and auditing of performance

V.A Issues and Purpose

Underpinning the wood supply forecasts presented in Chapter IV are the twin assumptions that not only does APP/SMG have the capacity to rapidly ramp up the output levels of its plantation development operations, but that it can also significantly improve the quality of those operations. These objectives are highlighted because the company recognizes that they represent significant challenges from 2004 onward. In recognition that it has not always demonstrated adequate operational performance in the past, APP/SMG has developed detailed Action Plans and milestones to ensure that the company addresses all the relevant issues concerning plantation development to meet its future objectives. APP/SMG will invite stakeholders to regularly monitor, verify and report on the company's progress in achieving these targets.

There are several explanations for APP/SMG's relatively poor performance in plantation development. Despite the previous introduction of SOPs, their potential effectiveness was undermined by several factors, including the following:

- Onerous approvals systems (leading to crucial silvicultural activities being delayed);
- Quality of seedlings (due to poor selection and inadequate "hardening" of seedlings);
- Substandard site preparation (poor harvesting practices leading to soil disturbance);
- Insufficient forestry management expertise; and
- Poor standards of contractor management and coordination (due to inefficient quality control).

APP/SMG has already made significant steps to rectify these problems in the past six months in light of the findings in the AMEC report on silviculture. These areas of progress include:

- Management has been restructured to avoid multiple levels of authority;
- SOPs continue to be reviewed and improved; and
- In order to make even more rapid progress toward improving APP/SMG's performance, McKinsey & Company, a leading management consultant, is currently being engaged by APP/SMG to assess and rationalize its entire plantation development operation. APP/SMG has confidence that, with McKinsey taking a role in evaluating current plantation development practices, APP/SMG will achieve its proposed plantation development targets.

This Chapter describes the strategic issues that APP/SMG has addressed and the Action Plans needed to ensure that sufficient capacity is developed and maintained thereafter in order to meet these challenges. These strategic issues and their related Action Plans cover the following plantation development operations at APP/SMG:

- Research and development programs
- Tree nursery operations
- Silvicultural planning and operations
- Hazard assessment and mitigation planning
- Monitoring and auditing of performance

V.B Research and Development

Since the 1980s, APP/SMG's R&D programs have been tasked with two broad objectives:

- Continuous genetic improvement of trees (e.g., disease resistance, faster growth rates, increased pulp yields), including development of commercial-scale propagation techniques.
- Trialing and introduction of forest management techniques that are cost effective and environmentally benign, and increase plantation productivity.

The fundamental R&D program successes to date are the identification and selection of provenance seed sources for *A. mangium* and *A. crassicaarpa*, resulting in increased plantation productivity by about 15 m³/ha/year across APP/SMG plantations. Furthermore, the R&D program established SMG-owned and controlled sources of improved seed, providing substantial cost savings for APP/SMG and building technology capacity in Indonesia. Importantly, the R&D program has identified *A. crassicaarpa*, a species new to commercial plantation forestry worldwide, as suitable for planting on peatland in Sumatra. Contributing to these efforts are the strategic research associations APP/SMG has developed with both Indonesian and overseas organizations.

Action Plans:

- External review of the priorities and effectiveness of current and future R&D strategies (which have an outlook to 2015), including the development of Standard Operating Procedures (SOP) for R&D project evaluation methods applicable to APP/SMG, and a review of R&D human resource strategies.
- Strengthen the extension of successful research results to operational divisions by enhanced communication methods (including workshops, field trial visits and seminars) and by maintaining current SOPs and associated competency-based training programs for APP/SMG staff and contractor workforce.
- Strengthen pest and disease control research to determine causal agents and develop effective solutions to prevent infestations. This includes developing more effective monitoring and reporting systems.
- Increase APP/SMG's capacity to produce and supply genetically improved seed in quantities sufficient for the increased plantation targets.
- Develop APP/SMG's vegetative propagation capacity up to an operational scale.

- Ongoing research of the natural peatland water systems, their response to climatic cycles and other systemic influences. This research will provide benchmarks from which APP/SMG may judge the impact of its artificial control systems.
- Hydrology research to establish SOPs for designing and constructing a system of canals, locks and monitoring gauges across the peatland area, to enable APP/SMG to manage the water table depth more flexibly.
- Establish species- and site-specific water table prescriptions to optimize pulpwood production, with consideration for peat oxidization rates and soil compaction.
- Develop breeding programs to produce hardwood trees with desirable traits for pulpwood production in Sumatra, e.g., fast growth, disease resistant (especially to root fungal diseases), and high cellulose content. Strategies will include:
 - Establishing root fungal disease resistant tests under laboratory conditions;
 - Commencing research to develop specific genetic markers to protect the intellectual property of elite clones before release;
 - Develop gene selection techniques to shorten the genetic improvement and selection process; and
 - Develop specific markers to monitor inbreeding level of seed from the seed orchard.
- Establish faster tree breeding techniques for selecting desirable tree characteristics and to develop these techniques to the required scale of production. Strategies will include combining conventional tree breeding with tissue culture techniques to mass produce genetically superior clones for operational use, and using gene-markers to enable selection of superior materials at seedling or seed stage in the nursery (thus shortening the breeding cycle).
- Promote the operational use of cuttings, with a target supply of *A. mangium* cuttings to exceed 50% of total planted stock of *A. mangium* by 2005.
- Establish long-term evaluation of alternate rotations of Eucalyptus and Acacia.

Milestones:

- R&D workshop and field test visit conducted in early 2004 (done)
- Extension program for 2004–05 developed by mid-2004.
- SOPs for design and construction of canals, locks and monitoring gauges across peatland, reviewed and upgraded by mid-2004.
- Experimental design for water-table benchmark study complete by end-2004.
- Research objectives of tests for alternate rotations of Eucalyptus and Acacia, reviewed by end-2004.
- Supply of *A. mangium* cuttings exceeding 50% of total planted stock of *A. mangium* by 2005.
- External review of all R&D strategies complete by early 2005.
- Effective pest and disease monitoring and reporting system developed and tested by mid-2005.

- Effective SOP for treatment of the main pest and disease problems by the end of 2005.
- Supply of genetically improved seed meeting demand set by annual planting programs.
- Operational scale of vegetative propagation introduced to all centralized nurseries by mid-2005.
- Optimal water table prescriptions developed by the end of 2005 for every specific site-species interaction.
- Tree breeding programs for hardwood trees with desirable traits for pulpwood production in Sumatra:
 - Tests for root fungal disease resistance (under way).
 - Genetic markers protecting intellectual property of elite clones (under way).
 - Gene selection techniques shortening the genetic improvement and selection process (under way).
 - Specific markers monitoring inbreeding level of seed from the seed orchard (under way).
 - Develop techniques to accelerate tree breeding for selecting desirable tree characteristics (under way).

V.C Nursery Operations

For APP/SMG to meet increased planting targets from 2004 (and its Sustainable Wood Supply), the company requires significant quantities of uniform, high quality plants. This necessitates high quality nurseries.

APP/SMG recognizes that large-scale production of high quality seedlings requires good production facilities, efficient seedling production and handling procedures and, most of all, quality nursery management. Various actions are required to ensure production of large quantities of high quality planting materials to meet APP/SMG's forestry planting program.

Action Plans:

- Review nursery system to determine best practices and future capacity to produce high quality seedlings and cuttings, addressing supply chain issues and on-site storage.
- Develop competency-based training and assessment program.
- Train nursery workers in best nursery practices using competency-based training program.
- Develop procedures to ensure rapid deployment of the most improved genetic material to meet operational planting targets.

Milestones:

- Nursery system report completed by mid-2004.
- Competency-based training for nursery practices under way by mid-2004.
- Procedures to ensure the rapid deployment of the most improved genetic material to meet operational planting targets implemented by mid-2004.

V.D Plantation Silviculture

Improved silviculture and field management methods are required to increase future plantation growth and yields.

Action Plans:

- Review all SOPs (site preparation, pre-planting herbicide application, planting methods, fertilizer application, singling, monitoring and auditing) and update with best available practices as developed or introduced.
- Develop competency-based training programs for all SOPs.

Milestones:

- All silvicultural SOPs reviewed, updated and approved by Forest Operations Department (FOD) by the end of 2004.
- SOPs being used and implemented.
- Competency-based training for silvicultural operations under way by early 2005

V.E Strategic and Operational Risks

Strategic and operational risks associated with the APP/SMG plantations include: peatland development, fungal root rot disease, harvesting methods, planning and administrative procedures, and fire.

Action Plans:

- Develop strategic alliances with other organizations that have experience with plantations on peatland to improve management planning. Particular issues of interest are soil nutrient status, soil structure, tree stability, pulpwood productivity, harvesting impact and further understanding of the hydrology of peatland.
- Develop an R&D effort to develop a root fungal disease response strategy, including confirmation of causal agents across sites, wider deployment of more tolerant Eucalyptus, developing tolerant clones of Acacia, and testing potential control measures.
- Review and update plantation organizational responsibilities and administrative procedures to improve plantation development efficiency.
- Continuing to prevent and suppress fire by enforcing the “no burn” policy, implementing the SMG Fire Management Plan and continuing support of the Haze Prevention Group.
- Detail operational plans and budgets to meet annual plantation development targets for 2004.
- Attract and retain qualified and skilled management and administrative staff.
- Develop effective procedures for screening, selecting and appraising performance of contractors for improving plantation development.

Milestones:

- CEO approval of 2004 operational plans and budgets.
- Fungal disease-response strategy by the end of 2004.
- Collaborative research program by the end of 2005, covering all issues of interest associated with peatland management.
- Progressive reduction in the area of plantations destroyed by preventable fires, as evidenced by Fire Department records. (Annual Review)
- Procedures for screening, selection and appraising performance of contractors being used, implemented and monitored.

V.F Monitoring

APP/SMG will continue to develop its internal monitoring procedures and performance indices to measure progress toward wood supply sustainability. Results of internal reviews will be available for independent review.

Action Plans:

- Reconcile yields from known areas by comparison of wood deliveries (tonnes at mill weighbridge) with pre-harvest inventory results (standing volume). Pilot study to test methodology by mid-2004.
- Update and consolidate harvesting performance measures into SOPs, end of 2004. Implement assessments, early 2005.
- Amalgamate existing research data, analyze and report on the rate, extent and causes of plantation stocking decline by early 2005.
- Update estimates for genetic and silvicultural gain factors used for yield forecasts by investigating R&D field trials by the end of 2005. Use comparative analysis of R&D trial results with operational results.
- Benchmark a cross-section of stands at post-establishment, at mid-rotation, and at pre-harvest stages across the plantation estate, to ensure best practice silviculture implementation. Carry out a monthly analysis of QC results and report these to FOD, also on a monthly basis.
- Conduct residual wood assessments to benchmark processing inefficiencies against 85% log processing efficiency targets (i.e., 15% residual wood). Monthly analysis of QC results. Report monthly to FOD and District Managers.
- Carry out annual sample audits of Permanent Sample Plot (PSP) measurements and data processing, conducted within one month of the annual PSP measurements.
- Validate effectiveness of water management plans by investigating water table levels and post-planting survey results. Use comparative analysis of QC results with water table gauge data.
- Implement post-harvesting assessments in plantations, with performance measured against criteria developed from SOP, generic-harvesting prescriptions, generic contract conditions and government regulations, where applicable.

- Conduct semi-annual sample validation of FMIS records and information reporting procedures.

Milestones:

- Pilot area investigation commenced in early 2004.
- Pilot study to test yield reconciliation methodology commenced by mid-2004.
- Annual FMIS validation report to FOD, by the end of 2004.
- Report on rate, extent and causes of plantation stocking decline, prepared by early 2005.
- Post-harvesting assessments in plantations, under way by mid-2005.
- Existing estimates for genetic gain factors and silvicultural gain factors verified or updated by the end of 2005.
- Methodology and resource plan for investigation of water table impact on peatland plantations prepared by the end of 2005.
- Monthly silvicultural practices QC reports to FOD.
- Monthly residual wood assessments reports to FOD and District Managers.
- PSP plots audited within one month following annual PSP measurements.

VI. INFRASTRUCTURE, HARVESTING AND TRANSPORT

Highlights

APP/SMG is now committed to maximizing the potential of the resources at its disposal. Significant gains in infrastructure, harvesting and transport can be achieved leading to greater fiber availability.

- Improving contractor management to reduce environmental damage
- Improving health and safety through training as well as designing and implementing safety standards
- Vastly upgrading water management and transport systems
- Investigating conditions of peatland plantation harvesting
- Improving efficiency through reducing waste
- Reducing site/soil damage caused by Acacia-harvesting operations
- Achieving higher levels of organizational and management capacity

VI.A Issues and Purpose

Previously, APP/SMG has lacked the necessary management capacity to realize the full potential of its plantations. As a consequence, plantation resources were not maintained to a sufficiently high standard, investments into the improvement of infrastructure and transport systems were inadequate and often reactive, and harvesting practices were allowed to deteriorate. Overall, these inefficiencies reduced APP/SMG's performance at an operational level and, more importantly, limited the scope for the company to expand its plantation development areas to the extent required in order to achieve sustainability.

APP/SMG is now committed to maximizing the potential of the resources at its disposal. This is crucial if the company is to achieve its ambitious targets for expanding plantation resources and achieving mill demand efficiencies. A number of the necessary changes have already been initiated, most crucially in terms of improved management.

Aware of its previous weaknesses and acknowledging the need to build increased credibility in its forestry management operations, the company has outlined detailed action plans designed to maximize resource use and achieve significant efficiency gains. These action plans address issues in four main areas: (1) forestry operations management, (2) infrastructure and transport, (3) harvesting, and (4) general management factors.

The immediate and rigorous application of these coordinated action plans by the company will have two important impacts. First, they will ensure that the resources at the disposal of APP/SMG are used to maximize the utilization of available fiber. Second, they will help to ensure and maintain the longer-term sustainability of the company's operations once full supply from plantation sources of fiber has been achieved in 2007.

VI.B Forestry Operations Management

VI.B.1 Improving the Contracting System

Improving contractor performance and reducing failure levels within the contracting system will lead to lower environmental damage levels (site damage, chemical misuse). Such damage adversely affects APP/SMG's efforts to achieve a sustainable wood supply.

Action Plans:

- Ensure the tendering process becomes more transparent and effective in selecting the most effective contractors, instead of selection based purely on price.
- Ensure contractors employ best (most appropriate, cost effective) technology levels and operate that technology efficiently.
- Ensure effective skill level deployment in the field (training of operators and workers).
- Ensure effective communication between contractor teams and company support/administrative systems.
- Ensure company support and administrative systems function to support field operations, including support for contractors.

Milestones:

- Logging waste assessment before replanting (e.g., logs left behind in the field, and whether an area was logged to its correct boundaries). Achieve maximum acceptable waste level of 15% of standing volume at harvest.
- Internal assessment of plant survival rates after three months. Achieve minimum survival level of 90%.

VI.B.2 Improve Short-term Operational Planning, Coordination and Control Procedures

To improve operational planning, and coordination and control procedures in weed control and water management, APP/SMG will implement the follow measures:

Action Plans:

- Implement procedures for operational planning, coordination and day-to-day operational control and update infrastructure, equipment and facility requirements.
- Identify all critical steps and requirements from operations support (e.g., fertilizer supply, canal engineering, seedling delivery), and ensure that communication procedures between the various elements are effective.
- Specify minimum requirements for communication, transport and facilities necessary to ensure field staff can do their jobs effectively.

Milestones:

- Targets set for each year: achievement against these annual set targets for harvesting, planting and maintenance.
- Bonus system to encourage target achievement.

VI.B.3 Supply Chain Management Improvements

With improvements in operations, APP/SMG aims to achieve and maintain internationally competitive fiber supply costs. Improving operations in this area is crucial to the company's successful achievement of a sustainable wood supply system.

Action Plans:

- Establish a unit (to service both AA and WKS) specifically tasked with operational analysis and forestry systems development. This unit will provide the basis for continuous improvement in forestry performance and fiber supply to APP/SMG customers.
- This unit will take a leading role in revising the processes used for monitoring operations for both forest management needs for control and providing reliable and consistent data for analysis.
- The unit will conduct supply chain management in relation to silvicultural, harvesting and support operations with an objective of achieving ongoing systems efficiency and improvement in fiber supply to APP/SMG mills.

Milestones:

- A unit for operational analysis and forestry systems development (2Q04).
- A secure seed/germplasm tracking system (2Q04).
- Analysis and benchmarking of plantation performance (1Q04).

VI.B.4 Improving Skill Levels, Training and Occupational Health and Safety

Required improvements in health and safety will reduce accident and injury levels.

Action Plans:

- Assess and implement appropriate technical training in required work methods and company standards for all company staff and extend this training to the operations contractors' supervisory staff.
- Reappraise practical training needs and adequacy of training delivery for field workers, particularly those employed by contractors (e.g., machine and chainsaw operators).
- Work toward defining, supporting and enforcing safety standards in all field operations (including contractors' operations).

Milestones:

- Workers to complete a competency-based course on workplace health and safety (1Q05).

VI.C Infrastructure and Transport

The two most critical components of the company's infrastructure with regard to achieving a sustainable wood supply are its water management systems and its transport systems. Therefore, there is an urgent need to review and upgrade road planning and maintenance systems, together with a review of water control strategies and implementation.

VI.C.1 PT. Arara Abadi

Water Management Action Plan

- Decentralize water management operation from Perawang to the District level. Conduct all water management operations at the District level with technical support from the engineering team in Perawang. Station one water management team in each District. This team will be fully responsible for planning, implementation, management, operation and monitoring canal system maintenance.
- Recruit qualified water management specialists, engineers and surveyors within the first six months of 2004.
- Complete all planned water-control infrastructure, including water gates, overflows and blockages within the existing forestry area by the end of 2004.
- Conduct a catchment-wide hydrological investigation starting in the second half of 2004, for completion by 2006.
- Install monitoring equipment in each Resort by mid-2005.
- Develop Water Management Operation Plan (water-level management) in each District according to the District operation schedules/plans. Each District Plan will incorporate cutting and planting sequencing to facilitate harvesting and to avoid flooding of growth/planted area. This Plan will become the basis for the water management operation.
- Review and refine the Water Management Operation Plan over time to reflect changes in the environment. Fully document and analyze any impact in water management.
- Evaluate the impact of water discharge from the existing canal system to the downstream communities or water receptacle, and negotiate with the affected communities on discharge access.
- Give districts full authority in contracting as well as responsibility for contractor performance.
- For the new concession areas, allow a period of six to eight months of planning, including topographic surveys, design, contracting and implementation, before operation activities begin.
- Maintain an effective singular reporting/communicating channel.
- Conduct regular water management operational training for new/inexperienced staff.

Land Transportation Action Plan

- Recruit experienced engineers within the first six months of 2004.
- Overall, strategic review of company transport system and develop integrated fiber transportation strategy by the end of 2005.
- Complete all road construction within the existing forestry areas by 2006.
- Limit construction activities during the drier period of the year, especially in areas involving grubbing, excavation, and/or grading.
- Conduct regular maintenance on all existing main roads and critical secondary roads in accordance with the District Operational Plan.
- Reassess the current engineering practice on road construction prior to implementing improvements.
- Revisit the need for additional primary road systems in some areas.
- Conduct regular training for District staff as well as contractor supervisors on company policy, technical requirement, quality assurance and work requirements.

Milestones

- Water management team established by the end of June 2004.
- A Water Management Operation Plan developed for existing forestry areas by the end of 2004. Revisions to Plan based on actual site operating conditions in each District.
- A catchment-wide hydrological investigation for existing forestry areas starting by mid-2004.
- Monitoring equipment installed in each Resort by mid-2005.
- A fiber transport strategy by the end of 2005.
- Complete installation of planned water structures in existing forestry areas by the end of 2008.

VI.C.2 *PT. Wirakarya Sakti****Water Management Action Plan***

- Base the water management team in the main office. Control all water management related operations from the main office.
- Recruit additional qualified water management staff by mid-2004.
- Develop Water Management Operation Plan by the end of 2004, based on District operation schedules.
- Install monitoring equipment in each Resort by mid-2005.
- Complete Infrastructure Master Plan implementation by the end of 2005.
- Develop an Operational Plan (to be carried out by each District), incorporating cutting and planting sequencing to facilitate harvesting and to avoid flooding of growth or planted areas.
- Monitor canal maintenance in accord with the District operations schedule.

- Upon implementation of the Water Management Operation Plan, review the need for a catchment-wide hydrological investigation.
- Allow at least six to eight months for planning, including topographic surveys, engineering design and implementation, before entering into operations in any new areas.

Land Transportation Action Plan

- Conduct regular maintenance of roads, particularly of primary roads and critical secondary roads.
- Reassess road construction methods and road requirements.
- Complete fiber transport strategy by the end of 2005.

Milestones

- Qualified water management personnel recruited by mid-2004.
- Water Management Operation Plan developed by the end of 2004.
- Monitoring equipment installed in each Resort by mid-2005.
- Implementation of Water Management Master Plan and Fiber Transport by the end of 2005.

VI.C.3 Palembang Plantation Development

Water Management Action Plan

- Conduct all design work at the head office. Head office to control field level implementation.
- Purchase required equipment, e.g., GPS, by mid-2004.
- Complete the management structure by the end of 2004.
- Recruit additional trained/experienced staff by the end of 2004.
- Install rain gauges, water level gauges and groundwater level gauges in all Resorts by mid-2005. The water management team will be responsible for collecting and recording data. Maintain all collected data in the main office and analyze for water management operation (water level control).
- Complete the Water Management Master Plan for existing forestry areas and implement by 2006 (i.e., over 90% of the Master Plan, including topographic surveys and system design, will be completed by 2005).
- Complete the Water Management Operation Plan, including a maintenance program, by 2006 with regular reviews based on actual operating conditions in each area.
- Upon implementation of the Water Management Operation Plan, review the need for a catchment-wide hydrological investigation.

Land Transportation Action Plan

- Not applicable (all transportation by river barge).

Milestones

- Management structure in place by mid-2004
- Trained/experienced water management personnel in place by the end of 2004.
- Water Management Master Plan completed by 2006.
- Water Management Operation Plan completed by 2006.
- Water management infrastructure completed by 2006.

VI.D Harvesting

There are unique conditions for peatland plantation harvesting that require investigation in order to implement operationally proven system for Acacia harvesting on peatland.

Action Plans:

- Establish a cost-effective, low-impact system for peatland Acacia harvesting and transportation.
- Record and analyze operational performance in relation to stand conditions, as a basis for planning and contract management.
- Document best operating practice procedures as a basis for training, planning, management, supervision and impact monitoring.
- Investigate interaction between requirements of water zone management and efficient canal transport operations.

Milestones:

- Log waste assessment before replanting (e.g., logs left behind in the field, and whether an area was logged to its correct boundaries). Achieve maximum acceptable waste level of 15% of standing volume at harvest.

VI.D.1 Management Program for Harvesting Waste Reduction

This Chapter outlines the reasoning behind the difference in waste management efficiency gains estimated by AMEC on the one hand, which proposes a waste estimate of 23.5%, and APP/SMG on the other, which proposes a significantly lower level of waste estimate, benchmarked at only 15.3%.

It is important to note that the AMEC waste estimate proposal was theoretical in nature, and not based on practical data generated by measuring post-harvesting waste from the standing tree to the weighbridge. The alternative APP/SMG benchmark adopted in modeling is based on the following more practical definitions and assumptions:

- **Non-utilizable waste** refers to the portion of unavoidable fiber waste originating from the entire tree, estimated at 8.0m³/ha (equivalent to 6.7% based on an MAI of 20 at 6 years). This includes:
 - The stump height.
 - Stem malformation, such as forks.
 - An upper stem region that is less than 8cm in diameter.
 - Breakage, including small log sections that are uneconomical to salvage.
 - Chainsaw waste during “bucking”.
- **Extraction waste** refers to the residual merchantable wood (trees and logs) that is not extracted. In terms of Acacia, 1.0m³ of Extraction Waste is equivalent to about 26 x 3.0m long logs (as based on a study conducted by MHP). APP/SMG has adopted the harvesting waste benchmark of 5.0m³/ha (4.2% based on MAI of 20 at 6 years), which is equal to 130 logs/ha based on an assumption of a 3.0m log length.
- **Loading waste** refers to the waste at roadside resulting from loading activities. APP/SMG has adopted the Loading Waste benchmark of 2.0m³/ha (equivalent to 1.9% of roadside stocks based on an MAI of 20 at 6 years).
- **Transport waste** refers to the loss of fiber after loading at roadside and before arriving at the weighbridge. This includes logs falling off trucks and barges, and losses incurred during the transfer of logs to and from barges and trucks. APP/SMG has assumed a Transport Waste benchmark of 2.0% based on roadside stocks.

Action Plan to achieve 15.3% waste benchmark

Stepped-change progress resulting from the implementation of improvements is expected to take almost one year to achieve the final 15.3% target. A waste level of 20.0% is assumed by the end of February 2004, falling to 17.5% by July 2004, and finally reaching the benchmark level of 15.3% by December 2004. The Action Plan to achieve this ultimate benchmark level focuses on efficiencies gained in harvesting, loading and transportation through efficiency based contractor management supported by contractor skill training and improved equipment (grapple) specifications.

Action Plan:

- APP/SMG will revise existing contractor contracts to include quality and efficiency controls with financial penalties imposed for poor performance.
- APP/SMG will establish Quality Control teams that will conduct joint audits with District staff and contractor representatives prior to releasing an area for plantation establishment.

- APP/SMG will implement a certificate-based harvesting and extraction training program.

Measuring efficiency gains

- Sample plots will be used to measure efficiency. Stratified sampling will be conducted on a plot intensity of 1 plot per 5 ha of harvested area.
- Strata will include landings and wood stacks, perimeter areas and the main harvesting zone.
- The fixed dimension of each linear sample plot will be 50m x 2m (100m), equal to 1.0% of 1.0 ha.
- Random sampling techniques will be based on pre-determined plot locations, prior to site assessment.
- Normally, from the total number of plots 33% (one third) will be located within each stratum.
- The measured results will be the strata-weighted average of the total number of plots.
- Waste measurements will be defined by weight, using a conversion factor of $1.142\text{m}^3 = 1\text{gmt}$.

Sample Measurements

- Allowance for stump height exceeding 10cm should not exceed 10%.
- Harvesting Waste measurement should not exceed $6.0\text{m}^3/\text{ha}$ or $0.06\text{m}^3/100\text{m}^2$. The maximum tolerance is 68.5kg/ plot. (Waste material includes material less than 8cm in diameter and breakages that are not economically salvageable. The collected waste is measured by weight.)
- Extraction waste measurements should not exceed 13 logs per plot (equal to 1% of 130 logs/ha). All logs found within the plot area will be included within the measurement. All un-extracted merchantable material will be measured.
- One full tree is considered to be the equivalent of 7 logs.
- Loading Waste measurement includes all portions of extracted fiber found within the plot. Total waste should not exceed $2\text{m}^3/\text{ha}$ or $0.02\text{m}^3/\text{plot}$, equal to 23kg.

Transport waste is not as easily quantified given the number of variables involved. To counter potential losses, APP/SMG wood supply will implement SOPs to minimize these losses. These will include:

- Securing loads on trucks and barges.
- Minimizing double handling.
- Using only rotary grapples for handling logs.
- Conducting salvage operations.

VI.D.2 Site/Soil Damage caused by Acacia Harvesting Operations

There is evidence of significant site/soil damage from Acacia harvesting operations on both peatland and on mineral soil areas. This damage reduces soil fertility and reduces forest growth rates on mineral soils, while causing depression on peatland leading to waterlogging or a shallow water table, likewise reducing forest growth rates.

Action Plans:

Mineral soil

- Establish operational guidelines for log extraction on mineral soils to address:
 - Compaction
 - Top-soil loss
- Review and improve research into soil amelioration techniques and growth-rate impacts of soil disturbance

Peatland

- Conduct operational trials to develop Acacia harvesting techniques for peatland that achieve low levels of soil disturbance

Milestones:

- Mean annual increment on mineral soils of 35m³/ ha per year across all plantation areas established from 2006 onward.
- Mean annual increment on peatland of 28m³/ ha per year across all plantation areas established from 2006 onward.

VI.E General Management Factors

VI.E.1 Improve Organizational and Management Capabilities

APP/SMG recognizes that higher levels of organizational and management capacity are required to meet the targets of the expanded forestry program.

Action Plans:

- Seek high-level specialist advice to determine an appropriate skill complement for the senior management teams of the forestry companies.
- As APP/SMG companies operate in a highly competitive global environment, develop a program to benchmark their performance to international standards.

Milestones:

- Organizational and management benchmark report (1Q05).

VI.E.2 *Formal Quality Assurance System*

APP/SMG acknowledges that there is a need for a formal quality assurance system to underpin continuous improvement and provide a basis for external reporting. This will enable both internal management and external stakeholders to judge the progress toward sustainability. As a result, the company will adopt the follow actions:

Action Plans:

- Implement a formal quality assurance process covering core business activities.
- Develop system to incorporate monitoring and reporting processes, which also generates data for external reporting to stakeholders.
- Continue improving operations under the principles of ISO 14001 certification or equivalent system.

Milestones:

- A quality assurance system covering core business activities, which generates appropriate data for external reporting by the end of 2004.
- ISO 14001 certification is maintained.

VII. COMMUNITY DEVELOPMENT AND LAND CLAIMS

Highlights

The development and implementation of a sustainable Community Development (CD) Program in APP/SMG's Sumatra operation areas is fundamental to sustainable management of forests.

- Continued enforcement of commitment not to develop Industrial Tree Plantation in areas where there are legitimate land claims and to respect the rights of indigenous communities
- Setting up a CD advisory committee to address outstanding land claim and community relations issues
- Initiating and maintaining external partnerships on CD issues
- Creating and publishing a human rights policy and code of conduct
- Outsourcing the management of the CD program including internal capacity development for next 2 years
- Recruiting and training skilled CD staff and ensuring gender balance on CD team
- Prioritize broader community involvement of women and young people

VII.A Issues and Purpose

The development and implementation of a sustainable Community Development (CD) Program in APP/SMG's Sumatra operation areas is fundamental to sustainable management of forests.

Considerable research went into assessing the sustainability of APP/SMG's current CD Program. AMEC conducted research in both 2002 and 2003, and additional internal research was carried out by the company's Community Forester. The results of the research indicated that a significant paradigm shift is required by APP/SMG to achieve a sustainable CD Program.

Two fundamental issues have been raised as a result of this research. First, the company needs to improve the quality and scope of its community development and relations program in order to meet the complex challenges encountered in the field. A second, but closely related, issue is the significant number of land claims that remain outstanding. The research indicates that the overall focus of the existing CD program gives excessive attention to the short-term resolution of claims rather than addressing the underlying problems. The result of this one-sided focus may be that land claims have actually been encouraged.

In view of the results of the research, APP/SMG will develop and implement a sustainable CD Program based on the following broad orientations, management and staffing approaches.

VII.B Program Orientation

VII.B.1 *Broad Community Involvement*

Moving away from previous practices, APP/SMG's sustainable CD Program will seek broad community involvement. This will involve all sectors of the community, especially women and young people, in the process of settling conflict and deciding development priorities. The company

will facilitate a participatory planning process, in cooperation with community members and support from NGOs and local government.

VII.B.2 Land Claims

APP/SMG has a legacy of land claims in Sumatra that continues to impact negatively on the company's operations. This may be in part because in the past the land-claims issue tended to overshadow other aspects of the CD Program. In order to rectify this, APP/SMG will invest to improve its CD Strategy and Programs, systems for conflict resolution and the system of land registration. An emphasis on building sound, positive relationships with neighboring communities will include programs to assist communities to attain economic independence and diversity.

Notwithstanding the shift in emphasis toward a broader CD focus, the issue of community land claims remains of great importance and one that the company hopes to tackle with far greater success. APP/SMG has been encountering problems since the late 1990s in settling land claims. Going forward, the company intends to address all outstanding land claims in a more transparent manner than previously, paying particular attention to the nature and origin of the claims submitted. In particular, APP/SMG makes the following firm commitments:

- APP/SMG does not, and will not, develop industrial tree plantations in areas that are under legitimate community land claims.
- The rights of indigenous communities will be fully respected. However, the company will endeavor to distinguish between indigenous communities, and recent economic and spontaneous migrants whose claims are of a more opportunistic nature.

The company will work with local NGOs, all levels of government and community leaders to develop a transparent and equitable framework for the settlement of land claims and community conflicts. As part of this strategy, APP/SMG will implement the following action plan:

- Clarify issues surrounding traditional land rights and the company's obligations with respect to these rights, in order to fully understand and avoid, or at the very least mitigate, additional future land disputes. (End of 2Q04)
- Set up an advisory committee to address outstanding land claim and community relations issues. The advisory committee will include representatives of local government as well as members of civil society. (End of 2Q04)
- Catalog and assess all community land claims and conflicts. (2Q04)
- Regularly monitor and publish Land Claim Settlements, together with a list of claims that remain outstanding. (2Q04)
- Create and publish a human rights policy and code of conduct consistent with the Voluntary Principles on Security and Human Rights. Develop a Code of Conduct for Security Providers consistent with the Voluntary Principles. (4Q04)
- Solicit donor and NGO assistance to build capacity for a rigorous land registration system in partnership with government. (4Q04)
- Investigate the feasibility of and support for third-party participation in land claim adjudication.

VII.B.3 External Partners

APP/SMG will lobby government at all levels to become more involved in CD issues. This includes offering government officials the opportunity to participate in CD training programs organized for company staff, so officials will understand the importance of improving levels of service in, for example, land claim adjudication, verifying documents lodged with land claims, law enforcement, and providing services such as health and education. APP/SMG proposes that other private companies operating in the region leverage integration of company-sponsored CD activities into government development programs.

Similarly, relationships with local NGOs are critical and will be actively encouraged. This will enable APP/SMG to tap into the wealth of knowledge that many local NGOs have about local community aspirations and needs.

VII.B.4 Social Sciences Research and Community Assessments

APP/SMG will actively foster partnerships with local, national and international institutions to improve its knowledge level of communities surrounding the company concessions, creating a database for future reference. Such information will also function as a baseline survey, providing details on current demographics and trends.

VII.C Sustainable Community Development Capacity Building

The AMEC assessment highlighted the urgent need to develop capacity and improve the structure of APP/SMG's community development program. It also indicated the need to increase participation by the community and civil society, shift towards a longer-term focus away from short-term quick fixes, achieve gender balance on the CD team and integrate CD efforts with forestry operations.

Since both the capacity and the structure of the CD team needed to be improved while simultaneously creating new programming and settling land claims, it was decided that the best way to achieve this was by outsourcing the management of the CD Program. APP/SMG will outsource this task preferably to an NGO-partnered contractor with proven expertise in capacity building. The terms of reference will include:

- Assess all affected communities using participatory methods and create a database on communities living in and around APP/SMG operation areas;
- Design a sustainable CD Strategy;
- Train and build an internal capacity to conduct participatory assessments, program design and conflict resolution;
- Design and implement the sustainable CD Programs using the newly empowered and equipped internal capacity, together with external relationships;
- Design job descriptions for new staff recruitment, with particular emphasis on recruiting women;
- Compile and assess a register of community land claims and conflicts;
- Establish quantitative and qualitative monitoring, evaluation criteria and systems; and
- Aim for full internal capacity to maintain and expand the sustainable CD Program within two years.

VII.D Management Issues

VII.D.1 Budgets and Program Planning

APP/SMG will approve firm and adequate budgets for CD Programs as a fundamental requirement for the development and implementation of credible sustainability. To achieve this, APP/SMG will streamline administrative procedures for funding community projects. Decentralizing authority and removing unnecessary chain of approval requirements will increase fund access and efficiency, improving community respect for fulfilling promises.

VII.D.2 Programming vs. Cash Payments for CD Activities

Previously, there was emphasis on direct cash payments in CD work, primarily directed toward local village elites. This practice, although common in and across industries, can lead to dependency, lack of transparency and social jealousy. Emphasizing program development and implementation over cash payments will help to build broad-based development planning capacity.

Specific target audiences for the programming will be women, youth and those whom company operations affect directly. Specific attention also focuses on indigenous people whose livelihoods are dependent upon the forest.

VII.D.3 Logistics

APP/SMG will provide community field staff with adequate logistical equipment for CD staff to carry out functions as required by the sustainable Program.

VII.D.4 Planning and Coordination

APP/SMG will coordinate community relations planning with operational activities such as planting and harvesting. Any department planning activities where community interactions are likely to occur will advise the CD department, to ensure that communities are made aware of proposed activities.

VII.E Staffing Issues

VII.E.1 Recruitment and Training

APP/SMG will recruit people with appropriate social sciences backgrounds to professionalize its CD Program. All CD field staff will receive appropriate training in principles and methods to understand their job requirements. Building on current progress in vocational training programs and facilities, a comprehensive system of training needs will be developed to fully train staff within two years.

VII.E.2 Gender Balance

There are few women on the CD staff at AA or WKS. This reflects the low priority given to women's programs and consulting women. APP/SMG intends to correct this imbalance by recruiting women into its CD team and in CD Program planning.

VII.E.3 Strategic Plan

Leading on from the broad program orientation, management and staffing approaches, APP/SMG outlines a strategic plan that includes outsourcing the design and implementation of a sustainable CD Program. To implement this, a private contractor will be directly responsible for building internal capacity. Simultaneously, the contractor will design and then implement an external field assessment program and CD-related communications programs. Additionally, the private contractor will assist APP/SMG with the design and outsourcing of additional thematic CD-related programs and a framework for the equitable settlement of land claims. The contractor will be in place by the end of 2Q04. A specific time-bound action plan to implement the CD strategy will then be compiled by the end of the 3Q04 and the strategy itself will be implemented in its entirety by the end of the 4Q04.

VII.F Internal Capacity Building: Outsourced

VII.F.1 Commitment to Corporate Change

Agreement on corporate approach to CD:

- Corporate management and operations management to discuss and agree upon approach to community relations and development.
- Re-invigorate the previously established CD Steering Committee to guide this process.
- Ensure corporate commitment throughout the company to paradigm change in CD.

VII.F.2 Communication System Improvement

- Develop an internal corporate communications plan for CD issues.
- Coordinate internal and external communications plans on CD issues.
- Ensure that all employees are aware of new approaches and new policies and procedures as they emerge.

VII.F.3 Coordinated CD Approach across Company Operations

Integrate services dealing with CD.

- Activities including land claims, CD, community forestry services, security and fire prevention to be closely coordinated to ensure a harmonized and efficient approach.

Integrate CD Program planning with operational plan.

- Previously, land claims were triggered by major field operations without community consultation. Integrating forestry and community plans with community consultation will benefit community relations. Where feasible, planting and harvesting activities to become part of CD plans and programs.

VII.F.4 Human Resources

- Recruiting company staff with appropriate backgrounds and qualifications, in particular aimed to recruit women to redress the current gender imbalance in CD staff.
- Staff trained to a level that allows them to perform their duties effectively.

VII.F.5 Physical Resources

Community relations and development staff will be fully equipped with logistical equipment to perform their duties in an efficient and timely manner.

VII.F.6 Administration

To remove structural impediments to effective implementation of CD Programs, a minimal number of signatures will be required to release funds and approve projects based upon pre-approved budgets.

VII.F.7 Field Empowerment

Day-to-day control over community relations and development programs will be decentralized to District level after appropriate capacity building has been completed.

- Disbursement approval for implementing and managing field programs for approval at District level
- Regular reporting and accounting to coordinating staff to be maintained, but District teams of field officers to have autonomy within reasonable operational levels

Field staff will be empowered to become confident in their ability to implement programs and their capacity to take timely actions to build and maintain good community relations. Field officers must have clear and adequate authority levels to reach agreement with community members.

VII.F.8 Monitoring and Evaluation

- Implement systems for the supervision, regular evaluation and reviewing of all CD program-related activities.
- Include external partners in the Monitoring and Evaluation Program.

VII.G External Programs

Programs will be based on effective community consultation, conducted in partnership with local and national NGOs, and government and donor organizations. All such programs will aim to broaden participation and empower communities to achieve sustainable development. To achieve this, APP/SMG will develop a well-planned and monitored CD budget, approved and released for utilization by District CD/CR staff. These programs will be developed and implemented by the end of 2005 unless otherwise specifically noted. A specific detailed time-bound program will be created by the end of 2004 with the guidance of the CD contractor and input from the CD Advisory Committee.

VII.G.1 Community Assessment Program

- Design and implement an assessment program in all communities in APP/SMG concession areas using participatory methods.
- Simultaneously train and build internal capacity to design and conduct future participatory assessment programs.
- Create a database on all affected local communities for future reference.

- Actively foster partnerships with NGOs and academic institutions leading to social research projects to improve knowledge of local communities.

VII.G.2 *Improvement of External Communications System*

- Plan and implement a regular and consistent program of public information, from the local community to the national level.
- Develop a system to inform affected communities of planned actions. (See Chapter above on coordinated approaches to CD).
- At the community level, broaden community involvement away from elite members of society toward active and capable grassroots community members, especially women and young people.
- Establish village community forums for the discussion of social issues.
- Plan and implement a fully participatory community planning process, in cooperation with a broad range of community members, with support from NGOs and local government.

VII.G.3 *Thematic Programs*

A strong and concerted campaign will encourage thematic programs in partnership with government and civil society, covering areas such as community forestry, health, education and security. Specific programs will include:

- Develop community fire prevention programs and capacity;
- Sponsor human rights awareness programs;
- Develop comprehensive community forestry programs stressing alternative livelihoods to illegal logging;
- Create community training centers to developing a local semi-skilled workforce to meet APP/SMP/contractor labor requirements for the future;
- Coordinate with the conservation awareness program to develop community-awareness of forest biodiversity and eco-tourism.

VII.G.4 *Monitoring and Evaluation*

- Establish a multi-stakeholder advisory committee to meet regularly to review and advise on overall CD Strategy, land claims settlements and community conflicts.
- Develop a Monitoring and Evaluation program, with a regular schedule for reporting the results in consultation with external partners and stakeholders.
- Review outcome at least quarterly for swift implementation of necessary modifications.

VIII. CONSERVATION DEVELOPMENT⁸

Highlights

The SAP sets a new standard for environmental responsibility in Indonesia by developing an integrated conservation strategy.

- The US\$1 million per year and US\$2 million being committed for conservation is one of the largest budgets for conservation in Indonesia by any private sector company in Indonesia
- Large tracts of Primary Forest within APP/SMG concessions are being set aside for permanent protection until they can be gazetted and incorporated into the provincial land use plan
- Management plans will be developed for these areas in partnership with the government and stakeholders
- The creation of a large peat swamp forest protection area by the linking together of two nature reserves. APP/SMG's contribution of 72,000 ha creates a contiguous block totaling 175,000 ha
- FSC pre-assessment for the feasibility of FSC certification on all APP/SMG concession areas
- HCVF analyses will be carried out on large forest areas contiguous with Protected Forest and APP/SMG will abide by the results of these

VIII.A Issues and Purpose

This chapter describes APP/SMG's Conservation Policy and outlines how this Policy will be implemented in practice.

The Conservation Policy has been developed first and foremost as a practical approach to the issue of conservation in natural forest areas in the provinces of Riau and Jambi. In the opinion of APP/SMG, such an approach offers an opportunity to make an important and tangible difference not only inside the company's concessions in Sumatra, but also in the broader Indonesian context.

In developing a Conservation Policy it is vital to take into account the real world situation on the ground in the Indonesian context. There are several characteristics in the areas in which APP/SMG operates in Sumatra that make the development of such an approach essential. These characteristics include:

- Rapidly increasing population pressures and the inherent need to derive income from the forest by legal or illegal means;
- Inability of civil society to effectively protect areas already gazetted for protection;
- High degree of legal uncertainty; and
- Underdeveloped institutions and national monitoring systems.

⁸ This summary draws extensively on the AMEC *Conservation and Plantation Development Report*

VIII.B Conservation Policy

In the development of its Conservation Policy, APP/SMG has used the commitments made under the WWF LoI as a guideline. Several reports commissioned by WWF have also proved useful in the process. APP/SMG understands that the conservation value of a forest is not limited to the number and quality of trees or species contained in that forest. Conservation values also include other social, ecological and environmental values that are largely determined by the degree of modification to the forest's primary ecological function.

The APP/SMG Conservation Policy consists of the following components:

1. APP/SMG will comply with relevant national and provincial forestry laws and regulations relating to forestry operations and conservation in Indonesia.
2. APP/SMG recognizes that large contiguous forest may have conservation and environmental values. APP/SMG will commit to HCVF analysis on these areas.
3. APP/SMG will commit to contributing resources and funds toward the development of collaborative conservation plans for large blocks of forest to be designated as Protection Forest or Conservation Areas.
4. APP/SMG will continue to enforce a strict no-burn policy for all land clearing operations for plantation development.
5. All wood purchased from third party suppliers to meet APP/SMG qualifying criteria.
6. APP/SMG will follow a time-bound stepped approach toward certification of forest operations.
7. APP/SMG will classify all forest development areas into Primary, Degraded and Severely Degraded Forest using a system developed by AMEC, which is based on the World Bank definitions of Primary Forest and Degradation. Primary Forest contiguous with large forest blocks will be set aside for protection.
8. In order to contribute to reforestation, APP/SMG will identify and develop plantations on suitable areas of wasteland.
9. APP/SMG will implement the Conservation Strategy that the company developed in collaboration with AMEC.

VIII.C Implementation of the Conservation Policy

VIII.C.1 *Comply with relevant national forestry laws and regulations*

APP/SMG will follow the 1994 Provincial Spatial Plan (RTRWP) and areas designated for conservation under this Spatial Plan will be prioritized for protection.

APP/SMG and its stakeholders will work with the Riau and Jambi provincial authorities to develop Riau/Jambi Land Use Plans (RTRWP)⁹, to be approved as soon as possible by the governors of these two provinces as per the Spatial Planning Law. It is crucial to the implementation of any Conservation Policy that the various land-use plans are rapidly approved and integrated into the overall RTRWP, and that accurate and geo-corrected land-use maps are subsequently prepared and made available to all interested parties.

⁹ *Rencana Tata Ruang Wilayah Propinsi (RTRWP)*, which should be developed according to the provision in the National Spatial Planning Law.

The current position on licensing is that all Concession Licenses for areas designated as Forest Land require Ministry of Forestry authorization, not *bupati* authorization. All applications for Concession Licenses made by APP/SMG must therefore receive Ministry of Forestry approval. Once Concession Licenses have been acquired from the Ministry, the second step in the license acquisition process is that Operating and Annual Licenses (IPK and RKT) must both be obtained. For Production Forest Areas, these licenses are obtained from the *Dinas Kehuatan* at the Provincial level, together with a recommendation from the *Dinas Kehuatan* at the District level. For Non-Forest Areas, as with the Concession Licenses, the Operating and Annual Licenses are obtained directly from the *bupati*.

VIII.C.2 HCVF analysis on large forest areas contiguous with Protected Forest

The company and its JV partners operate concessions in the Bukit Batu district, which is in and around the Giam Siak Kecil and Bukit Batu Nature Reserves. The assessment conducted by AMEC Forest Industry Consulting identifies Primary Forest and critical natural habitats in the area. The area that is identified in the AMEC assessment closely parallels the area that has also been identified in the WWF study using the HCVF analytical toolkit. As a result of both of these studies, the company will add 8,500 ha, previously placed into temporary moratorium, to the area identified for protection. In addition, it will add a further 5,060 ha also identified as Primary Forest with high conservation values. This brings the total area being placed under protection by the company to 72,060 ha, creating a contiguous area for protection/conservation of 171,860 ha of peat swamp forest. This represents a 30% increase in the total protected area of forest in Riau. See Figure VIII-1 and Figure VIII-2.

Figure VIII-1 Proposed Conservation Area in Giam Siak Kecil and Bukit Batu (HCVF Assessment)

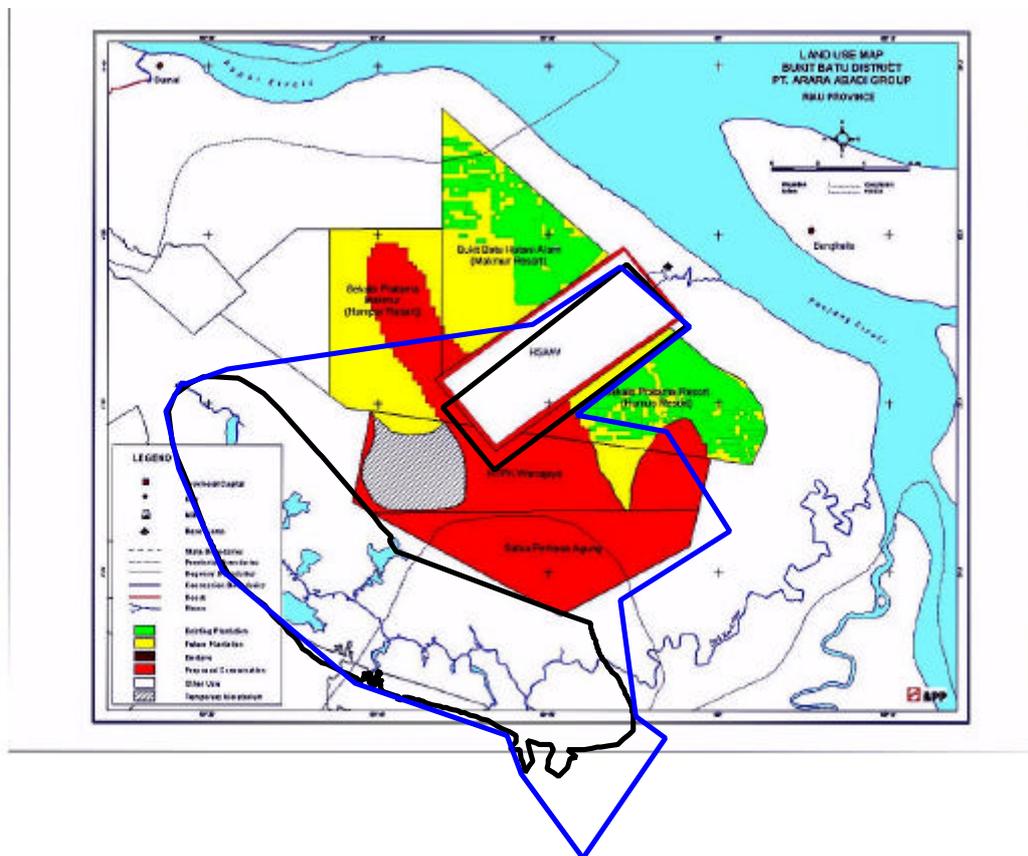
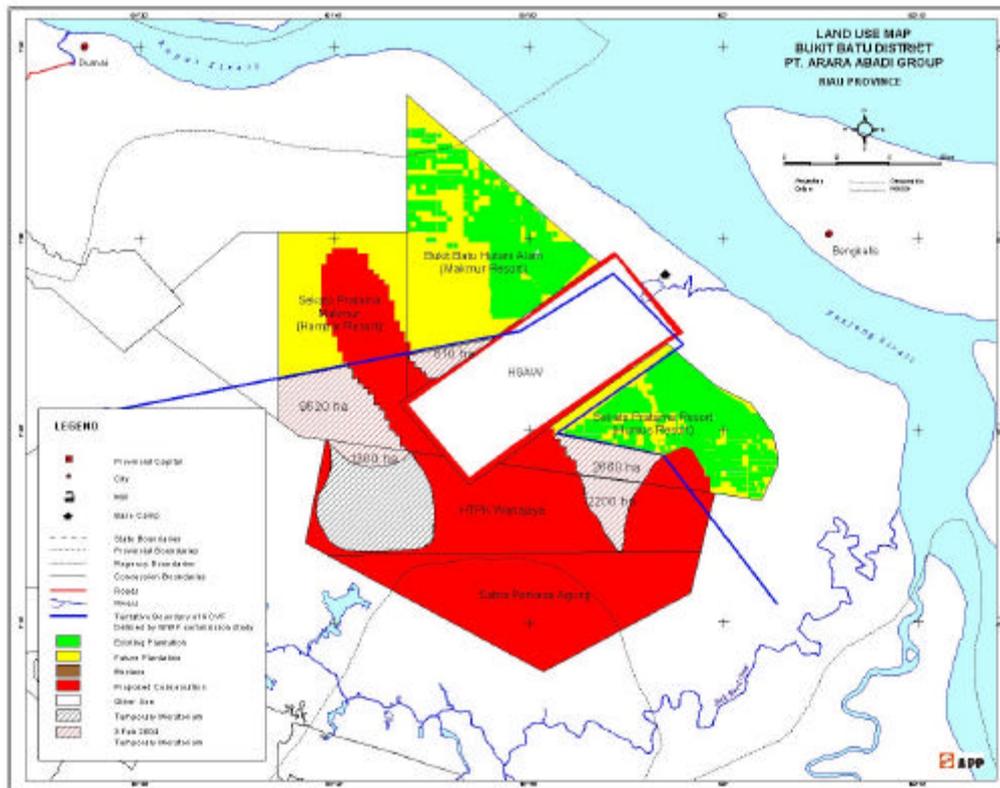
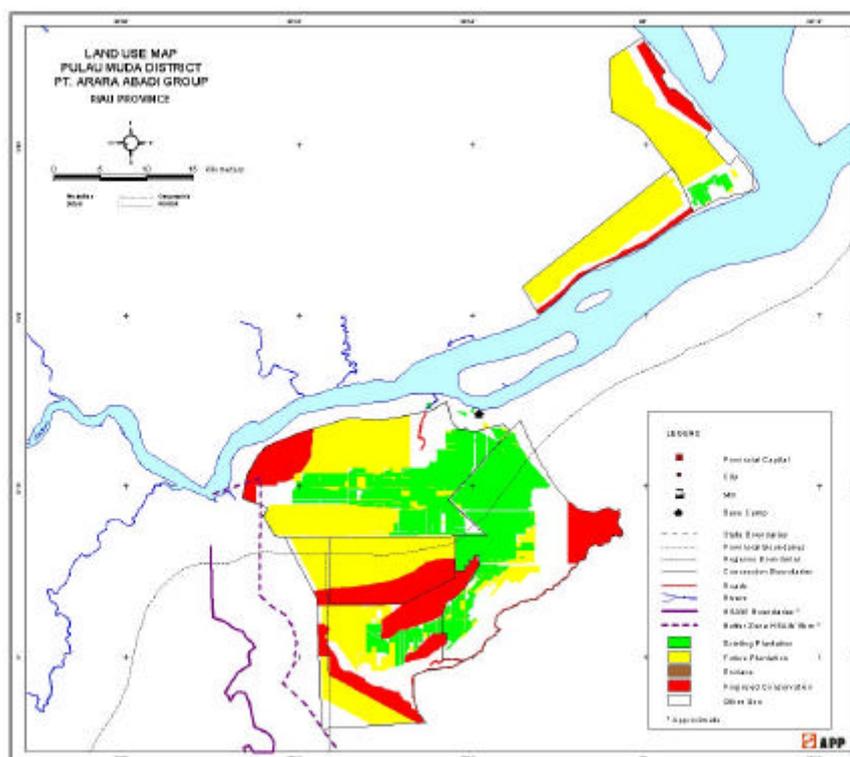


Figure VIII-2 Proposed Conservation Area in Giam Siak Kecil and Bukit Batu (APP/SMG Assessment)



The Kerumutan Nature Reserve area is close to APP/SMG's Pulau Muda District, separated by a 10 kilometer wide strip of land designated as limited Conservation Area. The AMEC assessment indicated that some of the area within the district is Primary Forest that deserves protection. APP/SMG has therefore committed an additional 5,560 ha of land towards permanent protection. Realizing that there may be other conservation values present and, in order to enable a verification of the AMEC assessment, APP/SMG will commission an HCVF assessment of the Pulau Muda district and abide by the results. This HCVF assessment will be completed no later than April 30, 2004. See Figure VIII-3.

Figure VIII-3 Proposed Conservation Area in Pulau Muda

APP/SMG's operations bound a small portion of the Tesso Nilo HCVF area in what has been fully developed into an Industrial Tree Plantation area. In an example of APP/SMG's active involvement in combating illegal logging, it has cooperated with WWF to reduce the access of illegal loggers into the Tesso Nilo HCVF area by closing an access road running along the northeastern border. APP/SMG has also ceased purchasing any wood from suppliers in the area, further reducing the probability of illegal wood coming from this Conservation Area.

VIII.C.3 Collaborative conservation plans for large blocks of forest

To develop and implement a comprehensive Conservation Management Plan for Protection Forest, APP/SMG will provide adequate funding. APP/SMG commits US\$1.0 million/year for the next five years in direct and in-kind funding for conservation development in the Riau and Jambi provinces. Additionally, it will provide up to US\$2.0 million in matching funds for government, civil society and donor funding of conservation projects associated with the approved Conservation Areas over the same period.

A Joint Management Plan for the Conservation Areas of Bukit Batu and Giam Siak Kecil will be prepared by APP/SMG and its stakeholders.

VIII.C.4 Strict no-burn policy for all land clearing activities

All land clearance by APP/SMG will enforce a no-burn policy for all land clearing operations and development operations in its concession areas.

VIII.C.5 Third-party supplier conformance to APP/SMG criteria

The purchase of externally sourced fiber can have negative impacts on the environment. Therefore, in order for third-party fiber supply sources to be acceptable, they must meet all of the relevant APP/SMG criteria for sustainable wood supply. These criteria, the details of which are currently being developed, are as follows:

- Environmental and social impact assessment (Amdal) relating to the land area involved
- Possession of a valid Concession License
- Possession of a valid IPK License
- Possession of a valid RKT License
- No legitimate unresolved land claims
- Fully demarcated boundaries around the concession areas concerned

Contractors for harvesting and transport will have to meet the APP/SMG registration criteria, which include:

- Have their own harvesting plans, with boundaries clearly delineated
- Compliance with APP/SMG standards of harvesting and transportation
- Compliance with APP/SMG wood flow control systems and procedures
- Monitoring of contractors by APP/SMG and stakeholders for compliance with Chain of Custody standards that allow for traceability. These standards will be developed from LEI's earlier LOV pilot project into a full Chain of Custody system that can be applied to all APP/SMG operations in Sumatra, and later adopted as a national LOV system.

VIII.C.6 Certification of forest operations

The company is committed to achieving international standards in its forestry operations. Currently, both Arara Abadi and Wirakarya Sakti have ISO 14000 EMS certification. There are additional market demands for certification and clarification of the standards under which the company operates.

The company intends to meet World Bank standards as set out in the Bank's Operating Policy on Forests OP 4.36. Although these standards have been primarily developed for new project financing, they serve as a strong set of guidelines for the development of internal standards and external verification.

In line with World Bank Operating Policy on Forests OP 4.36, APP/SMG is fully committed to certification of the forests within its concessions. Certification of the company's forests has also been a demand of our customers and other stakeholders. The only international sustainable forestry certification scheme that currently allows an Indonesian company to become certified is the scheme set up by the Forestry Stewardship Council (FSC). However, certification by this route is considered unlikely, but will nonetheless be explored. The Indonesian Ecolabeling Institute (LEI) is currently developing a certification system for pulpwood companies in Indonesia, but it is neither finished nor recognized internationally.

The company commits to initiating a dialog with the World Bank in order to assess its ability to meet those standards. It understands that aspiring to meet those standards does not imply an

endorsement from the Bank nor is it a certification system. This dialog will be conducted by the end of 1Q04.

In addition, the company will conduct a pre-assessment of its forestry operations against FSC certification criteria using an FSC accredited organization. This will be completed by 31 May 2004. If it is deemed possible, the company will pursue certification to FSC criteria.

APP/SMG will also continue to work with LEI and other groups to support its efforts to develop a pulpwood certification program. The company will work to achieve certification under an approved system.

VIII.C.7 Forest classification of Primary, Degraded and Severely Degraded Forest

APP/SMG recognizes and understands the inherent biodiversity and environmental values of large areas of relatively intact forest that are protected and managed for this purpose. Many of these forests in Riau and Jambi are under threat from a range of activities. As the level and intensity of impacts increase on these forests, they can become eroded to such a degree that they are reduced to shrubs and grasslands, thus losing their inherent conservation values. This has been the pattern in many of the forests in Riau and Jambi and has often been exacerbated by unauthorized land-use practices. Consequently, any process involved in determining the biodiversity and environmental values of the forests in APP/SMG concession areas should include a measure of the nature and severity of practices currently being undertaken as well as those that are likely to impact on forest conservation values in the future.

The process for assessing the forests involved identifying all forests that could be classified as Primary Forest using as a basis the definition as outlined by the International Finance Corporation, a part of the World Bank Group. This basic definition was then qualified with criteria that have been determined by an assessment of the current and potential impacts on the forest that would influence the status, or modify its ecological functions and hence values.

Large areas of Primary Forest in Riau and Jambi are important for conserving biodiversity and environmental values, so any modification to these will lead to a degree of degradation and a reduction in their conservation values. In Riau and Jambi modifications to the Primary Forest, particularly those on peat soils have resulted from both illicit and legal activities involving canal development for log transportation, logging of selected species, followed by additional canal development often associated with illegal logging and, in some cases, repeated fires and cultivation of agricultural crops. Hence the modifications have resulted in different forest conditions ranging from degraded forests to those that are highly degraded with little or no forest cover.

The classification of non-Primary Forest areas was described as degraded or severely degraded and these were determined by a number of criteria that are related to forest use resulting in some degree of forest modification. The classification provides a general/preliminary assessment of the inherent values of these forest types based on their condition and their function to support a range of habitat and environmental values.

Production Forest classified as Degraded and Severely Degraded Forest in AA and its joint venture (JV) areas in Riau will be developed as Industrial Tree Plantation by 2007. These lands will be planted and fully developed by the end of 2007.

Production Forest classified as Degraded and Severely Degraded Forest in WKS areas in Jambi will be developed as Industrial Tree Plantation by 2007. These lands will be planted and fully developed by the end of 2007.

The determination of the current inherent conservation values, forest condition and use patterns of the forests in the APP/SMG concession areas was based on internationally accepted definitions of Primary Forest and Degradation and developed by AMEC. The methodology developed to classify the areas of forest (often referred to as MTH) in the AA and WKS concessions and the JV areas in AA involved a description of the forest and criteria relating to structure, social attributes and use.

The purpose of this descriptive approach was to adequately capture the dynamic changes and influences occurring in many of these forests as they come under increased pressure from activities outside the control of APP/SMG. It is the impact of these rapidly occurring modifications to the forests that are likely to influence the degree to which these forests can provide forest conservation values and environmental values.

The forest classification comprises three classes of forest that reflect the inherent ability of the forests to provide both biodiversity and environmental values, based on criteria as indicated.

VIII.C.7.a Primary Forest

This forest is relatively intact ‘natural forest’ and essentially unmodified by human activity for the previous 60-80 years (International Finance Corporation, a member of the World Bank Group).

Criteria:

- Forest shows no evidence of fire;
- No past logging evident in the form of infrastructure such as railways or canals;
- Local people may be present in sufficient low numbers or undertake activities that leave the forest in near-natural condition;
- Forest that does not have adjacent activities that, in the near future, might essentially modify the natural forest cover or leave the forest in other than near-natural condition; and
- Critical natural habitats if they occur in existing ‘protected areas’ and/or in areas that are being proposed for Protection Forest status under Provincial Land Use planning legislation.

VIII.C.7.b Degraded Forest

This is a forest that has been essentially modified by human activity and has reduced the habitat’s ability to maintain viable populations of native species. (This forest type is based on the definition of Degradation that is a ‘modification of a critical or other natural habitat that subsequently reduces the habitat’s ability to maintain viable populations of its natural species’.)

Criteria:

- Under current threat from local people involved in illegal or unauthorised activities or occupation;
- Encroachment threatens forest structure and associated hydrology and thereby its habitat values for the conservation of fauna and flora and sustainable livelihood of local people;
- Previous logging, indicated by evidence of railway lines and large openings;
- Evidence of fire scars; and
- Extensive networks of canals in peat swap forests.

VIII.C.7.c Severely Degraded Forest

This covers forests that have been irreversibly modified by human activity and have reduced the habitat's ability to maintain viable populations of native species.

Criteria:

- Forests under current, increasing and sustained threat from local people and their associated illegal activities. (These activities will continue to degrade the forest structure to a point where it loses substantial forest cover and hence habitat values for the conservation of fauna and flora and the livelihood of local people.)
- Impacted by previous and current illegal logging activities;
- Presence of railway lines or canals;
- Evidence of repeated fires as evidenced by fire scars and vines; and
- Extensive area covered in shrubs and grasslands.

VIII.C.8 Wasteland development

APP/SMG has already identified 166,000 ha of wasteland free of claims that it will develop into Industrial Tree Plantation areas over the next four years.

VIII.D Implementation of the Conservation Strategy

To support the Strategic Conservation development targets delineated above, APP/SMG proposes a five-component Conservation Strategy. This Strategy provides a framework for improved and sustainable management of approved Conservation Areas and Protection or Conservation Forest. The Strategy also facilitates implementation of approved Provincial Land Use Plans that include Conservation and Protection Areas on a region-wide basis. Consequently, the Conservation Strategy covers the entire areas of AA and its JVs in Riau, WKS in Jambi and the Palembang JVs. It also acknowledges that other locations supplying fiber to APP/SMG mills should also be subject to similar criteria.

VIII.D.1 Establishing and Managing Large Areas as Protection Forest

1. Identify, delineate and demarcate for conservation purposes large areas of suitable Primary Forest and Critical Habitat within the APP/SMG concession and JV licensed areas around Bukit Batu.
 - Appoint a Senior Environmental Manager in SMG (AA/WKS) responsible to the Director of Sustainability within APP/SMG for conservation management issues (2Q04).
 - Delineate large tracts of forest within current concession areas to be set aside for protection, agreed by all stakeholders, based on an approved Riau Provincial Land Use Plan (3Q04).
 - Delineate boundaries of the new Protection Forest areas once these have been approved by the provincial authority and included in the Riau Provincial Land Use Plan (4Q04, contingent upon approval of the Land Use Plan).

- Lobby for a geo-corrected Riau Provincial Land Use Plan to be gazetted and associated maps to be finalized and approved by provincial and national authorities (1Q04, according to provisions in the Spatial Planning Act).
 - Demarcate boundaries in the field and survey and plot these on geo-corrected Riau Provincial Land Use Plan maps (4Q04, contingent upon approval of Land Use Plan).
 - Improve the management of Protection Forest in Riau to maintain biodiversity and environmental service values.
 - Agree the terms and conditions with the nominated parties involved in the preparation of the Management Plan for the new Protection Forest (2Q04).
 - Assess forest conditions in the proposed Protection Area of Bukit Batu (2Q04).
 - Prepare a Management Plan for agreed areas, including agreed responsibility for implementation, security, budgets, M&E Systems (3Q04).
 - Present Management Plan draft to stakeholders and customers for comment (4Q04).
 - Formally approve the Management Plan and incorporate this into the Riau Provincial Land Use Plan (4Q04).
 - Release the approved Management Plan for the Bukit Batu Protection Forest and Giam Siak Kecil Conservation Area (1Q05).
 - Monitor and review the Management Plan, including performance criteria and capacity for external independent evaluation, as part of the Plan for the proposed Bukit Batu Giam Siak Kecil Conservation Area (1Q06, annually thereafter).
2. Adopt an objective and unbiased methodology for classifying new forest areas in the AA and WKS concessions and the JVs based on definitions for Primary Forest and Degradation and for the classification of forests into Primary Forest, Degraded and Severely Degraded Forest.
- Train APP/SMG staff to assess forest areas in terms of conservation value and assess the potential for the development of these areas into Industrial Tree Plantation areas (2Q04 onward).
 - Carry out assessment of all forest areas to be included in APP/SMG or its JV licensed areas prior to any land-use decisions, based on current status and use.
 - Allocate forest areas for development/conservation based on an assessment of each area's capacity for future land management.
 - (Conservation Manager to) employ a methodology to assess forested land for conservation or plantation development within the APP/SMG concessions and those of its JVs in Riau and Jambi.

VIII.D.2 Landscape Planning and Improving Management in Plantation Areas

VIII.D.2.a Code of Practice and Guidelines

Improve the current guidelines for conservation, developing a Code of Practice for Industrial Tree Plantation Development and Conservation.

- Review current codes on plantation development and subsequently draft an APP/SMG Code of Practice for Plantation Development and Conservation, with input from stakeholders and customers (2Q04).
- Trial the draft Code on a small-scale basis in appropriate Resorts/blocks within WKS and AA areas (3Q04).
- Have the Code approved by government authorities to ensure compliance with current policies and legal requirements (4Q04).
- Release the Code (1Q05).
- Review SOPs in WKS and AA areas based on the approved Code (1Q05).
- Appoint trained and experienced APP/SMG Environmental Managers at the District/Resort levels, responsible to the Senior Environmental Manager (3Q04).
- Prepare terms of reference for District Environmental Managers responsible for:
 - Buffer zone management;
 - The clear delineation and demarcation of Conservation Areas and protection areas prior to clearing;
 - The assessment of Conservation Areas and rehabilitation/protection plans;
 - The accurate mapping of Conservation Areas for inclusion in a company database.
- Develop a training program for Code implementation (2Q05).

VIII.D.2.b Improve conservation management in AA and WKS concessions.

- The Environmental Manager will appoint a team to develop a Conservation Management Plan for both WKS and AA concessions and their JV areas (Interim Plan immediately, Master Plan after approval of Code of Practice).
- Development of this Conservation Management Plan to be based on the Conservation Strategy and the Code of Practice for Plantation Development and Conservation.
- Conservation Management Plan to include targets, roles, responsibilities, staffing and performance indicators, together with details on how the Environmental Manager will audit implementation of the Plan as part of APP/SMG's Sustainable Wood Supply Plan process.

VIII.D.3 *Develop Institutional and Research Capacity for Conservation Strategy Implementation*

Provide for strategic research into improved conservation management practices for forests inside and outside plantation areas.

- Seek collaboration with national and international research organizations on conservation issues, in the context of plantation development.
- Encourage organizations to establish long-term research on conservation to improve conservation management.
- Provide a number of research scholarships in conservation management for specific topics as outlined by the Environmental Manager (3Q04).

VIII.D.4 *Ensure Political, Customer and Other Stakeholder Support for Conservation Strategy*

Publish and distribute the Code of Practice for Plantation Development and Conservation and Conservation Management Plans to customers and other major stakeholders, and post these on the APP website for global access (2Q05).

VIII.D.5 *Implement Conservation Strategy Monitoring and Auditing*

Improve the quality of Conservation Management through incremental changes in planning and management.

- Environmental Manager to design and implement a credible internal audit system for the reporting Conservation Strategy and Conservation Management Plan status (4Q04).
- Determine new minimum compliance levels and set a date for achieving these new levels (4Q04).
- Monitoring and Evaluation Process to commence with on-the-ground support from key conservation and forestry staff.
- Carry out first compliance audit to assess operational standards against the specified predetermined standards (3Q05).
- Implement ongoing monitoring and auditing with annual SMART objectives (specific, measurable, attainable, relevant and time-bound) to guide future activities.

Provide for independent verification by stakeholders and customers of the implementation of APP/SMG Conservation Management Plan and Conservation Strategy.

- Carry out a baseline audit to determine current operating standards and levels of compliance with current SOPs (3Q04).
- Develop performance criteria indicators for an independent third-party to audit the Conservation Management Plan (4Q04).
- Develop a third-party independent monitoring and audit mechanism (4Q04).
- Provide customers and stakeholders with the results of the independent audit and the company's response to those results (2Q05).

VIII.E Policy Outcomes

Implementation of the Conservation Policy will involve appropriate actions by all stakeholders, not only APP/SMG, but also product buyers, financial institutions, and international and national NGOs. In addition, the Indonesian government at the national, provincial and District levels, is integral to the success of the Policy and will need to provide regulatory support, and assist with monitoring and evaluation mechanisms.

APP/SMG, NGOs and local government will have the primary role in implementing their policy in the Conservation Areas and Protection Forest inside and outside APP/SMG's plantation areas. Successful implementation of the Policy will result in:

- An increase in the area of Primary Forest designated for conservation/ protection in Riau and Jambi.
- Improved security for those Primary Forest areas set aside for protection and conservation.
- More sustainable and competitive forest plantations; the management and subsequent development of these Industrial Tree Plantation areas will consider the social and environmental values of the forest.
- Improved institutional capacity and capability of company staff in planning and managing Primary Forest for conservation.
- Enhanced understanding of forest ecosystems and their use by local people—an understanding that can then be used to improve management of residual forests for conservation.

IX. WOOD TRACKING, LEGAL ORIGIN VERIFICATION AND ILLEGAL LOGGING PREVENTION¹⁰

Highlights

Total confidence in the origin of the wood supply for APP/SMG's two Sumatra paper mills is fundamental to the credibility of the company's overall Sustainability Action Plan.

- International standard stump-to-mill wood tracking systems
- Creation of Wood Flow Control Units
- Legal Origin Verification system developed
- Multi-stakeholder program to combat illegal logging
- Zero tolerance policy on illegal logging
- Forest certification will be achieved under available system

IX.A Issues and Purpose

There is widespread evidence, both anecdotal and documented in a recent audit conducted by the Indonesian Ecolabeling Institute (LEI),¹¹ that APP/SMG's current legal verification process—and therefore its wood supply security system—is subject to abuse. Consequently, there exists the potential for illegally felled and/or stolen logs to be unwittingly received by APP/SMG into its pulp mills.

There are two main areas of concern for the company: first, that inadvertent purchase of illegally felled logs from the natural forest contributes to deforestation; second, that APP/SMG's wood is subject to theft for resale back to the company.

The cutting and transport of pulpwood is controlled by a government permit system in Indonesia. The system, which focuses on the transport phase of the process, is designed to exact taxes and royalties, and prevent illegal logging. However, this system is widely considered to be ineffective. It is circumvented by log sellers who fraudulently obtain transport permits and then misrepresent the origin of their logs by recording another legally active cutting area, not the true origin of the logs.

More generally, it is difficult to apply the government's permit system to pulpwood primarily because it is modeled on a more widespread system used for sawn-log and ply-log transportation. The sawn-log system has the major advantage that all logs are individually paint-marked at the stump or first landing. Marking allows a unique log identity to be verified by officials at any time during subsequent transportation. This is not the case with pulpwood logs. These are unmarked due to the lack of any practical and economical means of marking pulpwood given the large number of small logs. This renders the government system unsuitable for legally verifying the origin of pulpwood.

APP/SMG accepts the importance of resolving these issues in line with its Sustainability Action Plan. It is difficult, and possibly impossible, to detect this type of fraud at the receiving

¹⁰ This summary draws extensively on the AMEC Wood Tracking Report, 330 SSP P126A D10

¹¹ Legal Origin Verification PT. Indah Kiat Pulp & Paper, Legal Origin Verification PT. Lontar Papyrus Pulp and Paper Industries, Indonesian Ecolabeling Institute (LEI), 2003

weighbridge simply by inspecting the paperwork. For this reason, APP/SMG has requested assistance from other stakeholders to develop a Wood Tracking and Legal Origin Verification (LOV) system.

Based on the concerns highlighted above and in collaboration with stakeholders, APP/SMG has developed the following strategic plan for improving pulpwood tracking, developing a Legal Origin Verification system and addressing the issue of illegal logging. One additional benefit of a multi-stakeholder approach is that this will ensure that existing industry standards are improved. As a result, the intention is to develop a system whereby wood fiber supplied not only to APP/SMG pulp mills, but pulp mills throughout Indonesia, can be proven to originate from legally verifiable sources.

APP/SMG is also committed to developing a multi-stakeholder approach in order to address illegal logging and to formulate programs to reduce local community reliance on illegal logging activities.

IX.B Action Plans

IX.B.1 Improving Pulpwood Tracking

APP/SMG will develop and implement the following key elements of a stump-to-mill pulpwood-tracking strategy in partnership with major stakeholders, in particular LEI.

- Formation of two specifically tasked Wood Flow Control Units (WFCU) in AA and WKS to control wood flows from stump to roadside and from roadside to mill (1Q04). These units will be responsible for operating a routine control system and providing a higher level of security capability.
- Establish a Fiber Supply Division for APP, as the principal customer of the wood supply companies (by March 2004). The Fiber Supply Division will monitor Wood Flow Controls (independently of the WFCUs) for all suppliers and will act as point of contact for any APP pulp and paper customers concerned about any legality of origin, Chain of Custody or other wood supply issues. This will provide a clear point of contact for both the customer and the forestry supply companies.
- Develop and implement a control system based on:
- Registration and marking of all log trucks delivering to the IKPP and LPPPI mills. A database truck registration system to be linked to Ijin Pemanfaatan Kayu (IPK)¹² origin and updated on a daily or weekly basis. Only registered trucks on trips that originate from a legally active IPK will be allowed to pass the weighbridge (1Q04).
- An improved system of accounting for volume between the field and the mill.
- Increase effort in cooperation with contractors and outside suppliers in marking and enforcing IPK boundaries and in managing log stockpiles. WFCU to increase surveillance of activity at the sites of external suppliers.
- Develop a high-level security capability (risk assessment unit) within the WFCU to implement risk management strategies and to investigate significant incidents involving illegal log transportation, attempted infiltration of illegal logs and log theft.
- Cooperate with local, regional and national law enforcement efforts.

¹² Ijin Pemanfaatan Kayu (IPK) = wood utilization permit

- Conduct comprehensive risk assessment of illegal logging activities.
- Investigate and report incidents.
- Adopt a zero-tolerance policy toward offenders and compile a blacklist of offenders and non-compliant suppliers and contractors.
- On-going revision of policies, practices and contract arrangements covering JV agreements, contractors and external wood purchase agreements related to illegal log transportation or purchase.
- Qualify external wood supply sources so that they become compliant with the Wood Tracking System and Legal Origin Verification (2Q04).
- Create Code of Conduct for all external suppliers of fiber consistent with APP/SMG's Fiber Procurement Policy (2Q04).
- Audit contractors on a regular basis for compliance.
- Use only those suppliers that are compliant with APP/SMG's Fiber Procurement Policy.

IX.B.2 Legal Origin Verification (LOV)

Fieldwork by experts is required to develop a state-of-the-art system of LOV for pulpwood.

- **Research, design and develop a LOV system** for pulpwood in cooperation with LEI and any additional external support required and build internal capacity for system implementation. This will build on work already done by LEI.

IX.B.3 Illegal Logging Prevention

APP/SMG will instigate the following programs to address the underlying causes of illegal logging.

- Using a multi-stakeholder approach, work with NGOs, members of the donor community, other industry members and the government to develop a comprehensive strategy to combat illegal logging; consultations to include other pulpwood industry operators in Riau and Jambi provinces (start in 3Q04).
- As part of a comprehensive strategy to combat illegal logging, cooperate with stakeholders on a public awareness campaign addressing the issue (start in 3Q04).
- Work with stakeholders to develop programs creating alternative livelihood opportunities for local community members engaged in illegal logging activities and other destructive environmental practices (start 3Q04).

IX.B.4 Monitoring and Evaluation

- Draw up a Monitoring and Evaluation program and a regular schedule for monitoring progress in wood tracking, LOV and illegal logging in consultation with external partners such as the government, local community and NGOs (1Q04).
- Review outcomes at least quarterly so required modifications can be implemented.

IX.B.5 Forest Certification System

In line with World Bank Group OP.4.36 on Forestry, APP/SMG will submit its forest concessions in Sumatra to a pre-certification assessment by an international assessor with Forestry Stewardship Council (FSC) accreditation. This pre-certification assessment will be conducted in 2Q04. However, it is unlikely that APP/SMG will achieve certification from the FSC in the foreseeable future. In this event, APP/SMG will then enter into dialog with the World Bank to discuss ways of assessing the company's forest concessions that are acceptable to the WB in the absence of FSC certification.

One promising alternative option is for APP/SMG to work with the Indonesian Ecolabeling Institute (LEI) to develop and adopt a Forest Certification System specific to the Indonesian environmental context. LEI recently conducted a pilot project with a forestry company in Sumatra aimed at developing such a Forest Certification System for pulpwood plantations in Indonesia. Following on from the results of this pilot project, APP/SMG intends to work with LEI and other stakeholders to finalize and later adopt a Forest Certification System once this has been approved by LEI. In the absence of FSC certification, APP/SMG hopes that its forest concessions can be certified using an LEI system with backing from the World Bank and other stakeholders. It is also hoped that this Indonesia-specific system will gain international acceptance under existing mutual recognition programs.

X. STAKEHOLDER CONSULTATION AND ENGAGEMENT

Highlights

Consultation is vital to achieving sustainability by integrating stakeholder aspirations and concerns into the production equation. This will be done by:

- Holding annual stakeholder reviews with directly-impacted local communities and indirectly-impacted local communities in Riau, Jambi and Palembang
- Holding annual national level stakeholder reviews in Jakarta.
- Holding regular reviews with international stakeholders in key markets
- Engaging stakeholders in two-way dialog through Web site, updates, white papers, field visits and publication of results of research scholarships

X.A Stakeholder Consultation

APP/SMG is committed to appropriate and comprehensive stakeholder engagement. Proper consultation also is an Indonesian regulatory requirement and part of the operating principles of most international institutions.

For APP/SMG there are four basic categories of stakeholders with which consultation is important. The most critical are the communities that are directly impacted by the company's Sumatra operations in Riau, Jambi and Palembang. Consultation with these stakeholders will be held on an on-going basis and facilitated by the CD team. Issues on which the communities will be consulted include company operations, development opportunities, employment opportunities, traditional forest rights, human rights and security issues. Efforts will be made to include local representatives in broader regional stakeholder meetings.

The stakeholders in the next category are the indirectly and economically affected communities in the respective provinces, as well as interested parties such as NGOs, regional government representatives, educational and social institutions and business organizations. Key concerns for this constituency are land-use issues, transportation and other infrastructure, illegal logging, conservation, local and regional autonomy issues, and security and human rights issues.

- APP/SMG commits to conducting annual stakeholder reviews in each of the three provinces concerned (i.e. the provincial capitals of Pekanbaru, Jambi and Palembang), in addition to normal engagement by CD and public affairs staff.

National level stakeholders are the third category and include domestic NGOs and local representatives of international NGOs, national government including parliamentarians representing the respective provinces, international donor agencies, customers and customer representatives, trade associations and other forestry products producers, and educational and social institutions. Key issues for these stakeholders are conservation, security and human rights, illegal logging, sustainable forestry development, legal reform and legislative development.

- APP/SMG commits to holding an annual national level stakeholder review in Jakarta.
- Additional workshops will also be held at least annually to address specific topics that impact the forestry sector, such as illegal logging, human rights, community development and sustainable production.

At the international level, the stakeholders are primarily NGOs, donor agencies, and customers. Their primary interests are sustainable forestry, human rights, conservation, illegal logging, governance and legislative development. Their interests will be met by overseas APP offices in coordination with the Indonesia-based sustainability team.

APP/SMG is committed to having stakeholder reviews on an annual basis in each of its major market areas, including the United States, the United Kingdom, Germany, Japan and Australia.

X.B Stakeholder Materials and Methods of Communication

It is important to keep stakeholders informed of APP/SMG efforts to achieve sustainability. Given the diversity of locations, the Internet and APP website will be main channels of communication. An interactive feature will be built into the website enabling two-way communication.

- All publicly published materials and reports generated by the company will be made available on the website in a timely manner. This will include conservation and community development.
- APP will also publish at least quarterly ‘Sustainability Updates’ detailing recent achievements toward sustainability and conservation of forestry operations.
- APP will publish a series of White Papers by noted experts on topics germane to the development of sustainable forestry in Indonesia and the region. These will be the basis of an annual company-sponsored sustainable forestry workshop.
- APP will sponsor field visits to its operations for media, NGOs and other interested stakeholders at least semi-annually.
- APP, through its conservation strategy, will sponsor research scholarships on forestry issues. These will be made available publicly via the website and the forestry workshops.

XI. MONITORING, VERIFICATION AND REPORTING

Highlights

A time-bound, stepped program of change to achieve sustainability enables stakeholders to monitor the progress that is being made toward sustainability. To achieve this there will be:

- Internal monitoring and reporting on Specific Action Plans
- Independent monitoring, verification and certification of wood tracking
- Establishing independent panel of experts to monitor and verify APP/SMG's progress towards sustainability
- Sustainability reporting every two years

XI.A Monitoring

APP/SMG has committed to pursuing a time-bound, stepped program of change to achieve sustainability. This method enables stakeholders to monitor the progress that is being made toward sustainability.

Each one of the specific Action Plans calls for improved internal monitoring and reporting. The timing and scope will vary according to the particularities of each process. Objectives will be set that are specific, measurable, attainable, relevant and time-bound.

There are four main operational areas that must be verified: Plantation Development, Conservation Management, Community Development and Wood Tracking. Of these four, only Wood Tracking will eventually have an independent system of monitoring, verification and certification.

Minimum levels of compliance will be set wherever applicable against which performance can be monitored. Setting and monitoring these compliance standards will give stakeholders an objective basis of evaluation. The compliance levels, once established, will be institutionalized by inclusion in the various ISO 14000 EMS certification systems, enabling a further method of monitoring, verification and reporting. All compliance levels will be reviewed by the end of 2004.

XI.B Verification

Credibility will be achieved only if the monitored results are also verifiable by independent third parties. APP/SMG is committed to facilitating this type of verification. The company has a broad and diverse number of stakeholders with differing agendas. As such, the best manner to establish the credibility of verification is by including a number of the stakeholders in the processes.

Currently, the individual APP/SMG units are ISO 14001 certified, but not the larger organizations. The specific objectives, commitments and targets will be institutionalized into the ISO 14001 system, providing one system of verification.

APP/SMG will develop an external verification process that includes relevant stakeholders, representatives of the company and appropriate experts. The scope of the verification will cover silviculture practices and management, conservation and community development to verify stated sustainability objectives. Each specific process will be determined as meeting regulatory, stakeholder and market expectations.

The plan for monitoring, verification and reporting includes the creation of an independent panel of experts to monitor and verify APP/SMG's progress toward meeting its sustainability objectives.

Strong internal monitoring systems will be developed that rely on time-bound, stepped change objectives and will serve as the basis of this external verification.

It is the objective of APP/SMG to achieve sustainable wood certification for its fiber supplies. It is unlikely that APP/SMG will qualify for sustainability under FSC certification schemes for all of its concessions. Nonetheless, the Industrial Tree Plantation area being developed near Palembang will be able to qualify for an FSC certification scheme and the company is committed to achieving it. The company anticipates the development of a Forest Certification System by LEI for the pulpwood industry. LEI has recently conducted a pilot project with a view to developing such a system. Upon approval, APP/SMG intends to adopt the system to cover its other concession areas.

XI.C Reporting

Monitored and verified results must be reported in a manner that is both comprehensive and readily available. APP/SMG has previously committed to Sustainability Reporting on a bi-annual basis. The format and content of this reporting will follow Global Reporting Initiative Guidelines.

Additional reporting of specific processes will be carried out with greater frequency. The exact timing will be dependent on consultation with affected and interested stakeholders and the timeliness of the data required.

Stakeholders will be kept abreast of progress via the APP/SMG Sustainability Update, published at least on a quarterly basis. These updates will also be available through the APP/SMG website.

Other relevant reports and data will also be published on the website, enabling easy and constant access. Specific feedback mechanisms will be incorporated to enable stakeholder comment on company initiatives.

XII. ALTERNATIVE FIBER SUPPLY

Highlights

The company faces a significant gap between mill demand and wood supply from internal concession areas over the next few years. For this supply gap to be manageable, alternative fiber sources that are both legal and traceable need to be established.

All external wood supply sources must meet stringent APP/SMG criteria:

- Legal origin
- No activity on legitimate land claim areas
- Not sourced from Primary Forest or Critical Forest Habitat

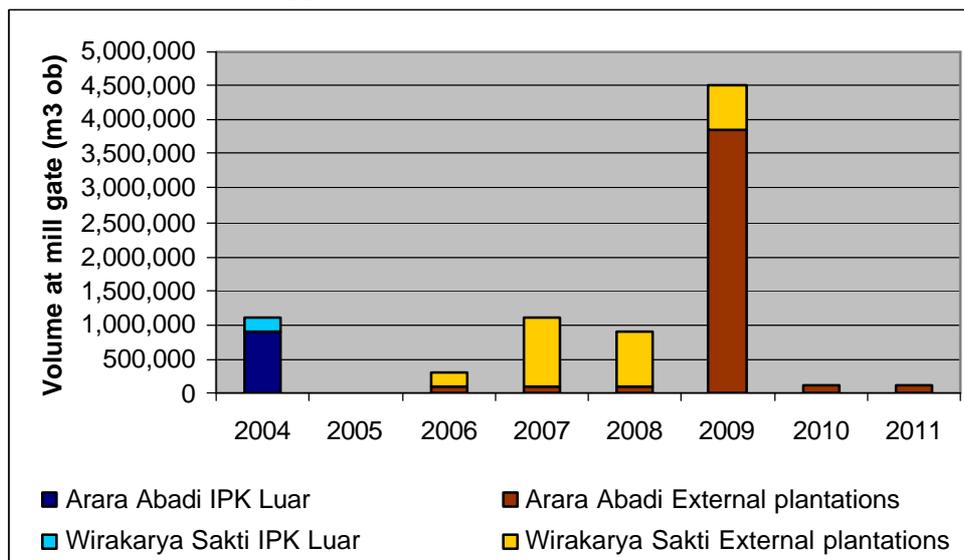
XII.A Issues and Purpose

The wood-flow modeling reported in Chapter IV identifies a total supply gap of between 7.1 million and 8.1 million gmt over the duration of the forecast period. APP/SMG plans to fill this gap from Alternative Fiber Supplies, namely, fiber sources that are not currently within the APP/SMG group of companies.

APP/SMG has made a commitment to its stakeholders that after 2007 its mills will only accept sustainable plantation fiber as shown in Table XII-1. Therefore, the fiber gap will need to be filled from such external fiber sources. Prior to this 2007 commitment, APP/SMG may source some of its Alternative Fiber from external MTH suppliers in Sumatra, provided that they meet strict criteria.

This chapter describes potential sources for and conditions under which APP/SMG will accept this fiber.

Table XII-1 Alternative Fiber Supply Sources for PT. Arara Abadi and PT. Wirakarya Sakti 2004–11



XII.A.1 Short-term alternative fiber supply

In the period to 2007 APP/SMG may source a portion of its wood supply from *IPK luar* suppliers in the provinces of Riau and Jambi. However, only suppliers that can meet the following criteria will be acceptable:

- Environmental and social impact assessment (Amdal) relating to the land area involved
- Possession of a valid Concession License
- Possession of a valid IPK License
- Possession of a valid RKT License
- No cutting or development on areas with legitimate unresolved land claims
- Fully demarcated boundaries around the concession areas concerned
- In addition, contractors for harvesting and transport will have to meet the APP/SMG registration criteria, including:
 - Have their own harvesting plans, with boundaries clearly demarcated
 - Compliance with APP/SMG standards of harvesting and transportation
 - Compliance with APP/SMG wood flow control systems and procedures
- Furthermore, there will be monitoring of contractors by APP/SMG and stakeholders for compliance with Chain of Custody standards that allow for traceability. These standards will be developed from LEI's earlier LOV pilot project into a full Chain of Custody system that can be applied to all APP/SMG operations in Sumatra, and later adopted as a national LOV system.
- Finally, upon implementation of the LEI wood-tracking system in 2Q04, all wood supply will be tracked from stump to mill in order to ensure compliance with the above standards.

XII.A.2 Long-term alternative fiber supply

Post-2007, alternate fiber will be supplied from sustainable plantation estates. APP/SMG is in the process of securing additional plantation estates to fill this long-term gap. The company is also in the process of completing the purchase of an established 16,000 ha Acacia plantation in Riau.

In addition, there are a number of established plantation sources in Indonesia that may be available to supply APP/SMG's Sumatra mills in both the short term and the long term. A team from the company has investigated these sources for their commercial and logistical viability.

It should be stressed that the list of companies shown below neither commits APP/SMG to acquiring pulpwood from any of these sources, nor reflects their availability or suitability. However, it does demonstrate that there are potential commercially viable and logistically feasible plantations available that could fill the supply gap and fulfill APP/SMG's commitment to become fully reliant on plantation-grown fiber after 2007.

Some examples of these sources include the following:

- A plantation company in Kalimantan, with close to 40,000 ha planted with Acacia.
- A plantation of approximately 70,000 ha planted with Acacia, located in south-east Kalimantan. These plantation areas were established in 1994–98 and are ready for harvesting.
- A plantation of approximately 13,150 ha planted with Acacia, located in a north-eastern inland area of South Sumatra. These plantations were established in 1997–98.
- An Acacia plantation of approximately 91,000 ha located in South East Kalimantan.
- A plantation located in South Sumatra planted with about 8,380 ha *Acacia mangium*.

XII.A.3 *Alternative Fiber Supply Action Plan*

- Conduct field feasibility studies of existing plantations to confirm status, availability, condition, access and estimated cost of available plantation fiber by 3Q04.
- Conduct feasibility studies of potential plantation establishment areas by 3Q04.
- Secure alternative fiber resources as required to fill the wood supply gap by the end of 2Q04