A Proposal for the Establishment of a ‘Smallholder Sustainable Land-Use Institute’

Mursalin New & Freeman Wyllie
Borneo International Pty Ltd
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>3</td>
</tr>
<tr>
<td>Overview</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Background</td>
<td>4</td>
</tr>
<tr>
<td>A Sustainable Land-Use Institute for Smallholders</td>
<td>6</td>
</tr>
<tr>
<td>Training Focus</td>
<td>6</td>
</tr>
<tr>
<td>Apprenticeships</td>
<td>6</td>
</tr>
<tr>
<td>Short Courses &amp; Seminars</td>
<td>6</td>
</tr>
<tr>
<td>Learning About the Industry</td>
<td>7</td>
</tr>
<tr>
<td>Site Selection</td>
<td>7</td>
</tr>
<tr>
<td>Land Preparation</td>
<td>7</td>
</tr>
<tr>
<td>Natural Soil Fertility</td>
<td>7</td>
</tr>
<tr>
<td>Oil Palm Horticulture</td>
<td>8</td>
</tr>
<tr>
<td>Intercropping</td>
<td>8</td>
</tr>
<tr>
<td>Small Scale Milling</td>
<td>8</td>
</tr>
<tr>
<td>Co-operative Administration</td>
<td>9</td>
</tr>
<tr>
<td>Lab, Workshop and Infrastructure</td>
<td>9</td>
</tr>
<tr>
<td>Family Health &amp; Welfare</td>
<td>9</td>
</tr>
<tr>
<td>Native Forest Regeneration &amp; Conservation</td>
<td>9</td>
</tr>
<tr>
<td>Smallholder Biodiversity Training</td>
<td>9</td>
</tr>
<tr>
<td>Restoring Traditional Agroforestry</td>
<td>9</td>
</tr>
<tr>
<td>Protecting Orangutans</td>
<td>10</td>
</tr>
<tr>
<td>Research &amp; Development</td>
<td>10</td>
</tr>
<tr>
<td>Integrated Intensive Agriculture</td>
<td>10</td>
</tr>
<tr>
<td>Appropriate Technologies</td>
<td>10</td>
</tr>
<tr>
<td>Community Biodiesel Plant</td>
<td>10</td>
</tr>
<tr>
<td>Value Added Cottage Industries</td>
<td>10</td>
</tr>
<tr>
<td>Institute Governance</td>
<td>11</td>
</tr>
<tr>
<td>Project Financing</td>
<td>11</td>
</tr>
<tr>
<td>Conclusion</td>
<td>11</td>
</tr>
<tr>
<td>References</td>
<td>12</td>
</tr>
</tbody>
</table>
Foreword

Several years ago, the authors were approached by groups of Dayak and transmigrant farmers in Central Kalimantan, requesting assistance to develop community based oil palm projects. This proposal for a ‘Smallholder Sustainable Land-Use Institute’ represents part of our ongoing response to this request.

Overview

This paper proposes the setting up of a 1,000 Ha ‘Smallholder Sustainable Land-Use Institute’ in Central Kalimantan, as a demonstration, training and research facility to assist smallholder oil palm growers.

The proposal is a response to the needs of smallholder and indigenous communities. It is set in the context of the recent establishment of the RSPO, and the move by the industry towards a sustainable model for the production of palm oil.

The Institute will aim to become a ‘center of excellence’ with peer to peer training in the form of medium term apprenticeships for smallholders and cooperative staff, plus a range of short courses, workshops and seminars.

Training will cover a ‘sustainable’ approach to smallholder oil palm development, including: a global and local perspective on the industry, economic social and environmental considerations, site selection and land preparation, natural soil fertility, oil palm horticulture using best management practices [BMPs], intercropping, small scale milling operations, cooperative administration and family health and welfare.

The Institute’s training focus will also include regeneration of biodiverse native forests on degraded lands to provide riparian zones, corridors and the re-establishment of orangutan habitat. The reforestation projects will also aim to re-establish traditional indigenous agroforestry practices to provide a sustainable harvest of non timber forest products [NTFP’s].

Research objectives will include, increasing food security and improved nutrition through the development of an integrated, intensive agriculture systems based on the recycling of mill wastes. The mill will contain a demonstration mini biodiesel plant to fuel farm vehicles. Research will cover improved BMPs and appropriate technologies for farmers, plus potential cottage industries and value added enterprises based on oil palm residues, mill by-products, and forest NTFP harvests.

A governance model is suggested based on broad stakeholder representation. An implementation budget of Euro 4m over four years is required and funding options are considered.

The paper recommends the establishment of an ongoing dialogue with interested stakeholders and potential project partners to further refine the proposal and carry it forward.
Introduction

The Institute will be a stakeholder governed non profit educational center. It will operate as a fully functional smallholder oil palm cooperative. Facilities will include:

- Smallholder demonstration and training plots.
- Seedling nursery.
- Small scale palm oil mill.
- Co-operative administration offices.
- Lab and workshop.
- Intensive agriculture zone.
- Native forest regeneration reserves.

The work of the Institute will focus on several key areas which are important to the future development of a truly ‘sustainable’ and ‘socially responsible’ palm oil industry, including:

- Promoting sustainable oil palm cultivation practices for smallholders.
- Co-operative association and management.
- Utilizing oil palm cultivation as a tool for restoring degraded and fire-prone landscapes.
- Multi-cropping for diversifying income and maintaining food security
- Re-establishing biodiversity and animal habitat.
- Equitable participation by indigenous communities and traditional land-owners.

The proposed institute will provide a resource to further the aims of the RSPO, and a venue for extension activities by other stakeholders, agencies and NGOs, such as the Indonesian Palm Oil Commission [IPOC], The Center for International Forest Research [CIFOR] and WWF Indonesia.

Background

The Round Table has developed ‘Principles and Criteria for Sustainable Palm Oil Production’ to assist the palm oil industry to move towards sustainable and socially responsible palm oil production and trading [1]. The criteria were developed after extensive stakeholder consultation. This consultation process identified the special needs of the smallholder sector. Further development of the criteria will be necessary to ensure smallholders are not disadvantaged, are provided with appropriate and achievable management practices, and are able to access the developing global market for ‘sustainable palm oil [2].

Smallholders account for more than 30% of palm oil production in Indonesia. Introducing appropriate sustainable ‘best management practices’ to the smallholder sector could help to significantly minimize further forest loss, and reduce smoke haze and stream pollution. However
smallholders generally lack the resources, information and incentives required to adopt BMP's without assistance.

Kalimantan - Indonesian Borneo, has been targeted for major expansion of oil palm cultivation [3]. Much of this expansion is still aimed at clearing forested areas. However, there are many areas which were formerly rainforest which have now become degraded due to logging and clearing. Natural forest regeneration is often prevented by the ongoing cycle of annual wildfires.

In Central Kalimantan Province, there are large areas of degraded land which could be usefully dedicated to palm oil production. The locally based NGO, Borneo Orangutan Survival Foundation, has identified up to three million hectares of degraded land which no longer contains significant amounts of high conservation value forests [HCVF’s] and viable orangutan habitat [4].

Indigenous communities, whose traditional lands undergo conversion to palm oil production, face particular challenges in adjusting to the resulting economic and social changes [5]. The traditional economy of Dayak communities was partly based on the sustainable collection and trade of forest products such as rattan, resins, nuts, natural latex, medicinal herbs etc. Much of this resource is now lost as a result of forest logging and clearing.

In recent years, Dayak communities, as well as many transmigrants and settlers, have relied on incomes from paid labour, illegal logging and gold dredging. However, these opportunities are also diminishing. Many of these communities now consider agricultural production, agroforestry, and particularly oil palm cultivation, as perhaps the only means available to gain sustainable livelihoods. Dayak families also often see participation in agricultural land development as a necessary means to secure tenure of their customary lands [6].

Most smallholder development in Indonesia has been associated with plantation projects, originally through nucleus estate/smallholder [NES] or inti/plasma [PIR] schemes, and more recently, a variety of smallholder cooperative [KKPA] schemes. These schemes largely depend on finance sourced via a sponsoring plantation company [7]. In recent times, the percentage of land devoted to formal smallholder schemes has been declining.

On the other hand, there has been a growth in spontaneous smallholder plantings in the vicinity of palm oil mills. Apparently, in parts of Sumatra, some smallholders operate outside the formal sector altogether, growing and pressing palm oil fruit for local stock feed manufacturers [8].

A pro-active approach will be required to increase the participation of smallholders and indigenous communities in oil palm cultivation, to maximize benefits to growers and the local community, and to promote widespread adoption of appropriate and effective sustainable land management practices.
A Sustainable Land-Use Institute for Smallholders

The proposed Institute is intended to establish a model ‘centre of excellence’ for oil palm cultivation by smallholders [9].

The core role of the Institute will be to train smallholder families, community leaders, co-operative staff, mill workers, local government planning staff and agricultural extension officers, NGO field workers, and plantation company smallholder scheme supervisors - in the planning, implementation and management of sustainable and socially appropriate smallholder oil palm projects.

The institute will contain a seedling nursery, around 350 two hectare model plots, a small 2 tonne/hr palm oil mill, administrative offices, lab, workshop and basic infrastructure. An intensive agricultural zone will be sited next to the mill. The Institute will contain 200 Ha. of natural forest reserve and reforestation projects.

Training courses will range from medium term residential apprenticeships for smallholders, administrative staff and mill workers, practical short course programs and workshops for NGO field workers and government extension officers, and seminars for managers, industry leaders and policy makers.

Training Focus

The training emphasis is on practical field knowledge, and acquiring the skills and understanding needed to implement and carry out sustainable BMPs by smallholders and their co-operatives.

Apprenticeships

An ‘apprenticeship’ program for growers and their families, mill workers and technicians, administrative staff and managers will form the backbone of the training program. These apprenticeships may last for 1 - 6 months. The trainees will live on-site and carry out the normal working practices of a functional ‘sustainably managed’ smallholder community. Daily work routines will be under the supervision of experienced peer group trainers. Day and evening classes will provide the supporting theoretical knowledge. Discussion groups will help to assimilate and socialize the concepts and provide a user feedback mechanism to assess and improve the BMPs.

Short Courses and Seminar

Short courses and seminars will focus on drawing lessons from the practical work of the Institute and elsewhere. Emphasis will be on analyzing and improving the results, with the aim of extending BMPs to smallholder farmer groups throughout Kalimantan and Indonesia.

Training modules will draw on expertise from within the palm oil industry, from Round Table members, government agencies, and environmental and social NGO’s.
Learning about the Industry
The starting point for developing sustainable best management practices is to raise participant awareness of the overall economic, social and environmental context of smallholder oil palm cultivation. Participants will be provided with a broad and balanced overview of the palm oil industry, the economics of palm oil production and commodity trading, and the environmental and social issues on a local as well as global scale. Participants will gain information on financing, government regulations and support services provided by government agencies, the industry and NGO's.

Site Selection
Participants will learn the fundamentals of site selection, basic environmental and social impact assessments, land tenure, traditional land ownership, community relations, soils and hydrology, access and transportation. They will learn how to identify and maintain high conservation value forests and animal habitat.

Land Preparation
Land preparation training will concentrate on restoring cleared and degraded landscapes. Participants will learn techniques for no-burn and minimum burn land clearance using a variety of manual, low tech and semi mechanized approaches. Road layout and bridging will be studied. Alternative transport methods such as buffalo carts and two wheel tractor trailers will be demonstrated. Participants will learn to select and establish suitable leguminous cover crops. The economics of various approaches to land preparation will be examined.

The Institute itself will be established on cleared lands. In the beginning, training programs will concentrate on sustainable land preparation and soil improvement techniques. Other courses in sustainable oil palm horticulture will be added as the institute’s own oil palm groves become established.

Natural Soil Fertility
Building and maintaining soil fertility is the key element in the long term economic viability, environmental benefit and sustainability of oil palm cultivation. It is particularly essential for smallholder farmers, who need to achieve high productivity to gain livable incomes, but cannot afford the high input costs of industrial fertilizers.

Farmers will learn to understand and analyze their soils, and the use and recycling of soil nutrients [10]. They will learn the essentials of the organic approach to soil fertility, utilizing green manures, mulches, composts, animal manures and chicken deep litter, ‘terra preta’ black soil formation, microbial brews and compost tea foliar sprays. In addition the Institute will also introduce the concept of complete fertilizer formulation and blending to smallholders and their cooperative associations. They will learn to select industrial fertilizer formulas which do not adversely affect natural soil fertility, and to combine these with rock dusts, composts, powdered charcoal and soil microbe cultures. They will learn to ‘prill’ these blends into slow release pellets which will improve fertilizer
efficiency, reduce costs and significantly minimize the environmental consequences of fertilizer run-off into rivers and wetlands.

**Oil Palm Horticulture**
The plantation industry has developed the science of oil palm cultivation to achieve high levels of productivity, from the nursery stage through the entire growth and harvest cycle. More recently, industry researchers and progressive plantation companies have developed a range of improved sustainable management techniques, such as integrated pest management [IPM] to reduce the health hazards, costs and environmental risks of pesticides and herbicides. The Institute will maintain liaison with research centers and the plantation industry, to facilitate the ongoing transfer of oil palm horticulture BMPs to help smallholders operate sustainably and to maximize their productive potential.

Perhaps the most pressing basic skill needed by smallholder growers at this stage is to understand the importance of seedling variety selection and to identify reliable supply sources of high quality, high yielding seedlings [11].

**Intercropping**
The promotion of intercropping and undergrazing within the oil palm groves is a vital strategy to enhance sustainability and build a viable agro-ecosystem. This practice can diversify smallholder income streams to hedge against fluctuating commodity prices, help maintain local and national food security, improve family nutrition, and increase palm grove biodiversity. A great deal of research and practical experience with intercropping [tumpangsari] is available from Indonesian based institutions and NGO’s. The Institute will provide a venue for the transfer of this practical knowledge to smallholder oil palm growers.

**Small Scale Milling**
The Institute aims to introduce small scale palm oil milling technology and management for Indonesian smallholder cooperatives. The Indonesian palm oil industry has so far followed a production model based on large scale plantation based milling. This means smallholder farming is, by necessity, grouped around extensive company plantations.

The adoption of efficient and well managed small scale milling technology in Indonesia could provide significant benefits for the development of a sustainable smallholder oil palm sector. Firstly, cooperative milling will allow farmers to recover and recycle nutrient rich composts and fertilizers made from the palm oil mill wastes and effluents. Secondly, small scale milling allows a more diverse use of the landscape. Instead of creating huge monocultures covering 10,000 to 100,000 or more hectares, it enables the development of a mixed and biodiverse patchwork of land uses which can combine oil palm cultivation with food cropping, agroforestry and native forests reserves.
Co-operative Administration
The Institute’s productive activities will be organized on a co-operative model. This will enable practical in-house training of smallholder cooperative staff in ‘best practice’ cooperative administration and management systems.

Labs, Workshops and Infrastructure
These facilities will also provide apprenticeship opportunities for cooperative staff to learn laboratory techniques, repair and maintenance, infrastructure design and construction.

Family Health and Welfare
In addition to occupational health and safety training for farmers, the institute can provide training for family members and children to improve their nutrition, health and well being. Training for women can assist them with infant and child care, as well as broadening their participation in the social and economic development of their communities. Their children will have an opportunity to acquire some basic computer literacy skills.

Native Forest Regeneration and Conservation
In parallel with smallholder training in sustainable oil palm cultivation, the Institute will specialize in providing training in the re-establishment of native forests on cleared and degraded land.

Smallholder Biodiversity Training
Smallholders and cooperative staff will be provided with an understanding of the role of forests in sustainable land-use, and the skills required to set up and maintain biodiverse native forest reserves, riparian zones, animal habitat and corridors. Oil palm cultivation has the potential to facilitate the restoration of forest reserves on degraded lands. The Institute will encourage smallholder cooperatives to set aside 15-25% or their land area for native forest regeneration and conservation. The spatial layout of palm groves can create firebreaks to enable the process of natural forest regeneration to begin. The smallholder groves surrounding forested areas also acts as a buffer to incursion by ‘illegal’ loggers.

Restoring Traditional Agroforestry
The restoration of native forests on cleared and degraded lands, can also provide an opportunity to revive the traditional forest harvest economy of indigenous traditional land-owners. It can increase the stake-holding of local indigenous families in the land conversion process.

The ‘Tengkawang’, or borneo nut agroforests of West Kalimantan result from intentional planting of Shorea species tree seedlings by Dayak villagers. These plantings lead to the regrowth of a dense and highly biodiverse forest system which closely resembles a mature natural secondary forest [12]. The economic value of these diverse agroforests can be further enhanced by additional plantings of native resin and latex trees, rattans, forest fruits and medicinal and essential oil plants.
Customary forest ‘ownership’ rights are commonly associated with the planting and owning of individual trees. The replanting of native agroforest trees, within biodiversity reserves adjacent to smallholder oil palm projects, can help re-establish forest stewardship by local indigenous societies.

Protecting Orangutans
The Institute will aim to encourage smallholders to adopt a conservation and guardianship role towards orangutans and native fauna. The planting of forage trees in forest reserves, riparian zones and corridors can provide increased habitat. The Institute will work with orangutan conservation NGO’s to promote orangutan survival and provide re-introduction sites.

Research and Development
The Institute can become a focus for the development of improved management practices, economic activities and appropriate technologies, to promote sustainability for the smallholder sector. There are many institutions in Indonesia and around the world, which have developed useful systems and technologies which could be demonstrated and applied at the Institute. Some key research aims include:

Integrated Intensive Agriculture
The high output of nutrient rich organic matter and effluents from the palm oil mill, provides an opportunity to develop an associated intensive agriculture zone, which can increase community income, improve family nutrition and food security. This integrated food production zone would include aquaculture and hydroponics, intensive food gardens and chicken and small livestock raising. This integrated system, along with intercropping and undergrazing in the palm groves, allows a high degree of internal nutrient recycling, and multiplies the productive and economic potential of the entire land-use area.

Appropriate Technologies
Productivity can be improved with hand tools and mechanized equipment for land preparation, harvesting and transport. Local forest herbs and useful plants such as jatropha, can be trailed for natural insecticide properties for use in smallholder IPM systems. Smallholder communities can also benefit from the introduction of various appropriate technologies for improved housing, water supply and sanitation.

Community Biodiesel Plant
The Institute will have a demonstration community scale biodiesel plant which will produce palm oil biodiesel for the Institute’s tractors and diesel fuel vehicles.

Value Added Cottage Industries
Family based cottage industries and cooperative value added industries, can provide further income earning opportunities for the community. The by-products of oil palm cultivation, palm oil milling, intensive farming and minor forest products harvesting, provide a stream of raw materials that can be further processed into value added crafts, building materials,
processed foods and nutraceuticals, essential oils, oleo-chemicals and biotechnology products.

**Institute Governance**

The governing body of the proposed Institute should represent smallholder interests, plus a range of industry, government, community and NGO stakeholders, committed to building sustainability in the smallholder sector. Management of the institute should provide a skillset which balances a thorough understanding of palm oil industry horticulture and smallholder scheme management, with a deep understanding of related social and environmental issues and indigenous people’s interests. An innovative approach to sustainability education, research and development will be essential.

**Project Financing**

The establishment of the proposed 1,000 Ha. Institute, with 750 Ha. of operating oil palm groves, small scale mill and infrastructure facilities, along with the forest reserves, would require a funding input of around 4 million Euros over a 4 year development phase.

The Institute will aim to operate as a financially viable ‘non profit’ enterprise, with income derived from palm oil sales and other products. On this basis, the Institute could be funded through a combination of establishment grants and soft loans. Ongoing external funding would be directed towards subsidizing participant tuition and subsistence costs.

**Conclusion**

The establishment of a Smallholder Sustainable Land-Use Institute in Central Kalimantan can provide a significant resource to assist the complex and long term task of promoting real sustainability throughout the smallholder sector of the palm oil industry.

We hope that this presentation to the membership of the RSPO at the RT3 Conference, will be the first step towards creating a Smallholder Sustainable Land-Use Institute, to assist indigenous, transmigrant and settler families to achieve secure livelihoods within an environmentally sound and socially appropriate smallholder palm oil production sector.

We look forward to establishing a dialogue with interested stakeholders and potential partners to provide feedback, help further refine the concept and collectively move it forward towards realization.

Mursalin New  mursalin@borneo-international.com
Freeman Wyllie  freeman@borneo-international.com
Borneo International Pty Ltd  www.Borneo-International.com
References

[1] RSPO
‘RSPO Principles and Criteria for Sustainable Palm Oil Production’
Public release version
Round Table on Sustainable Palm Oil 17/10/05

[2] ProForest
‘Key Issues arising from the second public consultation on the RSPO Principles
and Criteria for Sustainable Palm Oil’
Prepared for the 3rd meeting of the RSPO Criteria Working Group,
21-22 Sept 2005

‘Future Rides on Land Use’
Jakarta Post, Wednesday, March 30, 2005

[4] Lone Droscher Nielsen, Borneo Orangutan Survival Foundation
‘Personal communication’
Rungan Sari, Central Kalimantan, July 2005

[5] Down to Earth
‘Gunung Nuit - a community rejects oil palm plantations’
DTE 66 / August 2005:

[6] Pak Bartianus, community leaders,
‘Field conversations’
Sei Gohong village, Central Kalimantan, 2001
Rawa Sari & Ketapang transmigrasi sites, Central Kalimantan, Jan 2003

[7] Eric Wakker
Greasy palms - The social and ecological impacts of large-scale oil palm plantation
development in Southeast Asia
Friends of the Earth January 2005

[8] Sdr Susilo Utomo
‘Personal communication’
Rungan Sari, Central Kalimantan, July 2005

[9] Gunter Pauli
‘The Paradigm Shifted: the Renaissance of the Rainforest’
http://zeri.org

[10] Morten Tange Olsen
‘Soils and Nutrient Dynamics of Tropical Ecosystems’
Soil 451, http://soils.ag.uidaho.edu

‘Personal communication’
Kasongan, Kabupaten Katingan, Central Kalimantan

‘Agroforest Khas Indonesia’
ICRAF, 2000