“Developing alternatives for illegal chainsaw lumbering through multi-stakeholder dialogue in Ghana and Guyana”

European Commission programme on Tropical Forests and other Forests in Developing Countries

Sunyani District Level Multi-Stakeholder Dialogue (DLMSD 5)

Minutes

Date: 7th September, 2011

Venue: Bob Pierce Conference Hall

by Emmanuel Fosu and Evans Sampane

Members Present

Name	Stakeholder Group
1. Kwasi Anane Yeboah	Chainsaw Machine Operator, Asuakwa
2. Mercy Yeboah	GTA, Sunyani
3. George Takyi	Carrier, Asuakwa
4. J.K.Tawiah	Taungya Farmer, Asuakwa
5. Kofi Yeboah Gyan	Wood Workers Association, Sunyani
6. Charles K. Kumi	Regional Forest Forum, Sunyani
7. Prince Henneh Ofori	Farmer, Ayigbe
8. Stephen Mensah	Chainsaw Operator, Atronie
9. Osei Mensah	Carrier, Atronie
10. Jemima Barrida Mawiah	FSD, Sunyani
11. Donkor Bossman	Chainsaw Operator, Atronie
12. Anthony Adjei	CFC, Atronie
13. Peter Tekyi	Lumber Dealer, Sunyani
14. A. Boakye Akuoku	Municipal Assembly, Sunyani

Project Secretariat

1. John Amonoo	CFA, EU CSM Project
2. Emmanuel Fosu	Project Assistant, EU CSM Project
3. Kow Quason	CFW, EU CSM Project

Agenda:

The agreed agenda for the meeting were:

- feedback from National MSD5, and,
- stakeholder consultation on the policy proposal for the supply of legal lumber to the domestic market.

Acronyms

• CBA	Cost Benefit Analysis
• CFA	Community Forestry Advisor
• CFC	Community Forest Committee
• CFW	Community Forestry Worker
• CSM	Chainsaw Milling
• DLMSD	District Level Multi-stakeholder Dialogue
• EPA	Environmental Protection Agency
• EU	European Commission
• FSD	Forestry Services Division
• GTA	Ghana Timber Association

- MOFA Ministry of Food and Agriculture
- MSD Multi-Stakeholder Dialogue
- RFF Regional Forest Forum
- SWOT Strength Weakness Opportunity and Threat
- TIDD Timber Industry Development Division
- VPA Voluntary partnership Agreement

Proceedings	**Action**
1.0 Opening The meeting started at 11:10 am with a prayer by Mr. Yeboah Gyan, a representative of Sunyani Wood Workers Association. **2.0 Introduction** The CFW introduced members present by mentioning their names, stakeholder group/institution/organization they represent and the community they came from. He then introduced the new CFA **2.1 Opening remarks** The CFW thanked members for their support from the initial stages of the project. He told members that collaboration with TIDD to develop the draft policy proposal showed that the government has trust in the process as the way to find a lasting solution to the illegal CSM problem. He finally welcomed members to the meeting **2.2 Purpose of the meeting** The Project Assistant presented the purpose of the meeting as; to consult stakeholders to develop strategies to address the drivers of illegal CSM in Ghana. Results were to serve as inputs for the policy proposal aimed at the supply of legal lumber to the domestic market. **3.0 Reading and Acceptance of Previous Minutes** Copies of previous minutes were distributed to members. The CFW read the minutes and translated it to the local language. After corrections were made, Mr. Charles Kwesi Kumi from the Brong Ahafo RFF moved for the acceptance of the minutes. He was seconded by Mr. Donkor Bossman, a chainsaw operator. **4.0 Report on National MSD 5** Mr. Donkor Bossman, a chainsaw operator gave a summary of outcomes of national MSD 5 as follows. • Strategies in the policy proposal do not adequately address the drivers of illegal CSM. It was recommended that district and market level stakeholders should also be consulted to make inputs	

- The exclusion of logosol from the list of equipment for artisanal milling was not acceptable. There is the need to finalize discussion on the definition and concept of artisanal milling

The CFW also added that an action plan for implementing activities aimed at getting key stakeholder buy-in into the agreed policy direction was also developed at the meeting.

5.0 Group work on the draft policy proposal

The Project Assistant explained that the purpose of policy proposal was to operationalize policy option two to ensure the supply of legal lumber to the domestic market. He took members through the drivers of illegal CSM, outcomes of SWOT analysis of policy option two and key outcomes from the CBA of the three policy options (Annex C). He asked members to discuss the drivers of illegal CSM and develop strategies to address them by considering the following issues.

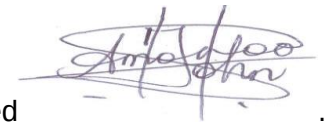
- The domestic market requirements of the VPA
- Sustainability of the timber resources
- Population growth and rapid infrastructural development in Ghana
- Rural unemployment

Members were grouped into four. Each group was given a list of drivers of illegal CSM to discuss and develop strategies to address them. Two groups discussed the same list of drivers, but from different directions. After about two hours of discussions, Each group made a presentation on the outcomes of their group work (Details in Annex B). After the group presentations, members were given time to ask questions and inputs.

6.0 Closing

The CFW thanked members on behalf of the project for making time to attend the meeting. A closing prayer was offered by Ms. Mercy Yeboah of GTA. The meeting formally ended at 4:05 pm.

Signed: 
Emmanuel Fosu (Recorder)

Signed 
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John Amonoo (CFA) - Chairman

Annex A: Guiding question for group discussions to develop strategies to address drivers of illegal CSM

Question: *In the context of the agreed policy direction (policy option 2), the current situation (forest degradation, population growth and rapid infrastructural developmental in Ghana), develop strategies to address the under listed drivers of illegal CSM in Ghana:*

- Domestic market demand
- Rural unemployment
- Weak institutions
- Inequity in access and benefit sharing (tenure)
- Corruption
- Ambiguity in the law banning CSM
- Easy entry into the trade
- Lack of political will to enforce the ban
- Political interference
- Cross border trade
- Lack of sustained public awareness creation
- Appropriateness of CSM technology in areas where it is not economical for conventional logging
- Lack of proper means for securing protected areas

Annex B: Outcomes from group discussions on strategies for addressing drivers of illegal CSM

1. **Domestic market demand**
   - Encourage the use of wood substitute such as metals and plastics
   - Link artisanal millers to sawmillers to utilise their logging residue
   - Ensure that the sawmillers supplies their quota of lumber to the domestic market
   - Develop and implement aggressive tree planting programme
   - Develop legal and regulatory frame to ensure that artisanal millers supplies only the domestic market.
   - Reduce lumber export.
   - Encourage the import of timber/ lumber for processing by giving tax exceptions and increase taxes on export.

2. **Rural unemployment**
   - Develop and promote tree planting as a viable alternative livelihood for rural people
   - Build capacity of local people to able them implement viable alternative livelihood programmes.
   - Develop viable rural based alternative livelihoods that do not depend on the forest for rural youth

3. **Weak institutions**
   - Discourage politicians from interfering with the work of institutions that manages the country's forest.
   - Encourage institutions such as EPA, MOFA etc to collaborate with FC to manage the forest.

4. **Inequity in access and benefit sharing (tenure)**
   - Review current benefit sharing scheme to include the farmer/landowner
   - Educate communities on how benefit are shared
   - Ensure more transparency and involvement of local people in the process of removing trees by concessioners.
   - Develop clear and understandable laws/policies regulating access to timber for domestic use by local people.
   .

5. **Corruption**
   - Strengthen existing laws on corruption to include stiffer punishment for offenders and reward for sincere staff
   - Develop simple, clear and understandable policies/law to regulate artisanal milling
   - Name and shame corrupt traditional authorities and politicians

6. **Ambiguity in the law banning CSM**
   - Develop simple, clear and understandable laws/policies to regulate artisanal milling concept.
   - Create awareness on laws/policies formulated

7. **Easy entry into the trade**
   - Develop a regulatory framework for entry into artisanal milling and trading in lumber.

- Develop guidelines on who qualifies to be train as an artisanal miller
- Certify and licence artisanal millers
- Review regulations on importation of chainsaw machines to control it use.
- Facilitate establishment of a strong association of artisanal millers and lumber traders

8. **Lack of political will to enforce the ban/political interference**
   - Discourage politicians from interfering with forestry.
   - Educate the populace on how to ensure that government takes forestry issues seriously.
   - Set up a neutral body to address forest related problems

9. **Cross border trade**
   - Ban cross border trade

10. **Lack of sustained public awareness creation**
    - Develop and undertake aggressive and sustainable awareness creation and education involving relevant agencies on the ban on chainsaw milling and the concept of artisanal milling
    - Establish conservation education unit to sustain the education.

11. **Appropriateness of CSM technology in areas where it is not economical for conventional logging**
    - Artisanal milling concept will address this driver

12. **Lack of proper means for securing protected areas**.
    - Enhance the capacity of local people (CFCs) and involve them in protecting the forests.
    - Demarcate clearly all protected areas.

ANNEX C SCENARIO AND COST BENEFIT ANALYSIS OF PROPOSED POLICY DIRECTION FOR THE SUPPLY OF LEGAL TIMBER TO THE DOMESTIC MARKET

EXECUTIVE SUMMARY

Introduction

Much of Ghana's forest sector problems can be traced to illegal chainsaw lumber production which presently stands at about 2.5 million m^3 accounting for 80% of total supplies on the domestic market. This has contributed significantly to forest depletion and decline in the forest sector's contribution to GDP from about 6% in the 1990s to roughly 2%. Price distortions on the domestic market, largely caused by over concentration on the export market for better turnovers and an unwillingness to sell grade lumber on the domestic market by the formal sector have created a large supply gap which has been met largely through illegal chain saw lumber supplies. Attempts to regulate forest use through enforcement of legislation have not been successful but rather generated a lot of conflicts and undermined good forest governance.

Under the VPA with the European Union Ghana has made a commitment to ensure that legal timber is not only traded on the export market but on the domestic market as well and is therefore seriously looking for options for supplying legal timber to the domestic market. The EU is supporting the Government through the NREG Programme and a Tropenbos International Ghana led project to develop alternatives to illegal chainsaw milling through a multi-stakeholder dialogue process backed by scientific research. These initiatives have developed the following three policy directions as a first step towards formulating specific strategic options for dealing with the problem:

1. Sawmills to supply the domestic market with legal timber obtained from sustained yields;

2. Sawmills and artisanal millers[1] supply the domestic market with legal timber obtained from sustained yields ; and
3. Artisanal millers supply all lumber required by the domestic market while sawmills focus on export, in keeping with the legal timber framework.

However the current, stakeholder understanding of the costs and benefit implications of prospective intervening measures associated with these policy directions is scanty. Therefore this research was commissioned to provide a cost benefit analysis in order to inform policy decision on the most appropriate policy strategy.

The analysis has been carried out at the backdrop of the following forest sector conditions: weakness in forest regulation and enforcement associated with rent- seeking behaviour among public officials; a high rate of illegal logging by both formal and informal forest businesses; a likely future decline in resource availability; increasing share of harvest by a few but large scale companies and a shrinking forest industry. In addition, inadequate legislation has worked against community access to timber: in particular, the non-existence of timber felling rights to the informal sector, farmers' tenurial rights to naturally regenerated trees on farms and failure of distributed forest revenues to trickle down to forest fringe communities. These create a disincentive for local support for enforcement of forest laws and actually encourage farmers to do business with illegal CSM operatives who offer them better deals.

The Methodology employed in the research has four key components, viz: Developing the critical parameters for analysis through stakeholder consultation, literature review, and secondary data collected from a number of recent empirical studies in the sector, stakeholder consultation and modelling. The financial and economic modelling of the formal and informal wood businesses and state revenues and costs was done to identify and analyze the impacts of key policy scenarios (as

[1] Artisanal milling is the use of small-medium motorized mobile milling equipment capable of recovering ***at least 50%*** dimension lumber from logs purposely for the domestic market. Artisanal mills should include all bush mills, lucas mills, wood mizer sand mobile dimension mills but exclude any form of chainsaw machines (source: TIDD/TBI discussion paper on domestic supply of timber)

measures) under each of the three policy options (as strategies). The model was designed on the basis of key assumptions consisting of researched 2007 indicators. Secondly, a unit cost analysis of business operations for three categories of producers was constructed using industry source data. These two compartments were combined to produce complete value chains for the producers comprising total volumes and values of timber inputs, domestic and export sales values, cost of timber inputs, other costs and profits. Below the business operating line, the model recalculates the components of forest revenues and other payments to stakeholders and cost of institutions. The weaknesses of the model are that it is not designed to forecast level of demand or the degree of substitution of imports for domestic supply. Levels of demand are determined outside the model by policy; prices are also imposed on the model and not determined by it. A full investigation of environmental impacts of the options has not been included in the research work.

Scenarios and key assumptions for the Cost-Benefit Analysis

In order to proceed with the analysis, four scenarios departing from the baseline (business-as-usual) situation were developed under the 3 policy options:

1. Sawmills only supply legal lumber to the domestic market (policy option 1)
2. Sawmills and artisanal millers supply legal lumber to the domestic market under conditions of a lumber export ban (policy option 2)
3. Sawmills and artisanal mills supply legal lumber to the domestic market under a regime of domestic harvest quotas and fiscal incentives (policy option 2)
4. Artisanal millers only supply legal lumber to the domestic market (Policy Option 3)

The Baseline Model consists of a progressive shift of policy from the "Business-As Usual" conditions of 2007 to a full implementation by 2015 of legal timber enforcement under VPA. No other major policy reform is assumed to occur under this model. Reference to the 2007 baseline, sawmills consumed about 910,000m^3 of timber in 2007 and produced a total of 360,000 m^3 of lumber, of which about 150,000m^3 was disposed on the domestic market.[2] CSM produced an additional 497,000 m^3 of lumber. In terms of business profits, export markets, with better prices (US$425 per m^3) than the domestic (US$180 per m^3)

[2] Recovery from sapwood is a major component of joinery works in the informal sector. Joinery for low cost housing and furniture and joinery for local food bars depend on this material.

provided better business opportunities in 2007 for sawmills to return business margins of between 9% and 14%. CSM was a still better business option with a return of 28%, twice that of the integrated mills

In terms of forest taxes and other transfer payments, Sawmilling contributed about US$8 million in stumpage fees and export levies in 2007. This was equivalent to US$9.50 per m^3 forest tax. CSM informal payments were also equivalent to about US$5.5 per m^3 of input used. CSM contributed to livelihoods to the tune of some US$130 million and about US$12 million to developments in Districts. The integrated sawmills are reported to make informal payment amounting to US$8/$m^3$ of timber harvest and may also have contributed about US$7 million in informal payments to traditional authorities and their subjects through logging activities. They would also have made additional cash payment of about US$400,000 in Social Responsibility Agreements.

In terms of employment, direct employment in sawmills was about 11,500 persons. In contrast, CSM employed 130,000 persons. These consisted of 70,000 direct employments in production.

The cost-benefit analysis of the scenarios was informed by key assumptions that were maintained as constants.

1. Even though the current annual allowable cut is fixed at 2 million cubic meters, a VPA Assessment Study put the sustainable annual harvest limit tentatively at 700,000m^3 (Mayers et al. 2008). This study prioritized sustainability in the analysis and thus maintained this figure as the annual sustainable cut (ASC) awaiting any further national inventory that might provide a different estimate.
2. Wood sourced from plantations and underwater reserves are not factored into the analysis
3. Based on recent national market survey, the domestic demand for lumber is estimated as 600,000m3
4. Based on comparative study of different milling techniques which gave an average recovery of 54.5%, it is taken that a milling recovery of 55% should be taken for the scenario analysis.
5. It is assumed that given the history and politics around determination of stumpage regime in Ghana, the stumpage fees are retained at their 2007 level estimate of US$8.44/$m^3$
6. It is assumed that domestic prices of lumber will improve by increasing from about US$180 to US$310.

Results of the Cost Benefit Analysis and Modeling

Based on unit production costs, informal payments, institutional costs, predicted resource availability and production levels, export-domestic distribution of production, pricing, employment prospects and prevailing fiscal fees, the various scenarios generated different levels of net financial and economic benefits. The situation under the different scenarios in terms of availability of resources (log inputs), domestic lumber volume and export volume is summarized in table 1.

Table 1 Log input and domestic lumber production for both domestic and export markets under different scenarios

	Log input from natural forest ((‘000) m^3	Domestic lumber volume (‘000) m^3			Export lumber volume(‘000) m^3	Critical condition
		Sawmill	artisanal	chainsaw		
Baseline	2550	150	-	497	210	
Scenario 1(policy option 1)	409	600	-	-	224	1,091,000 m^3 of round wood imported
Scenario 2 (policy option 2)	562	183	114	-	-	
Scenario 3 (policy option 2)	562	88	135	-	91	

Reduced future harvest levels, due to continued depletion of the resource means future domestic supplies of lumber to the domestic market, including large proportions of Lesser-Used and Lesser-Known Species, will be inadequate to meet the current estimated demand of 600,000m^3. It will therefore be necessary to either import logs (in the short term) for domestic processing or lumber. Importation of logs for processing for the domestic market will be unprofitable for sawmills. Consumers will depend for at least 50% of demand on importation of lumber and also face higher price in the order of US$310/$m^3$. Thus domestic price are likely to rise up to the import parity price level.

Declining resource volumes will also negatively affect both State revenues and other payments to forest communities (represented by Traditional Authorities, District Assemblies, communities and farmers). This could reduce opportunities for creating incentives for protecting the remaining timber trees in off-reserves and promoting sustainable forest management in forest reserves.

The economy will benefit from engagement of Artisanal Millers in production of lumber for the domestic market as they show potentials for creating value added in processing. Potential employment levels will continue to depend on availability of timber. Still within this limit, increased large-scale sawmill costs in the future threaten the realization of this potential limit of employment. For AMs, they will only be able at the maximum provide direct employment for about 21,000, compared to the 130,000 under CSM. This is also a challenge. Interventions in minimizing adverse impact of reforms may have to pay attention to both CSM and the formal sector.

The results of the financial, economic and social cost benefit analysis (CBA) conducted using the broad spectrum of research results and in particular a result of the model scenarios is summarized in table 2:

Table 2: Cost benefit analysis results of policy options: NPVs discounted @ 20%, (US$,000)

	Baseline	Sc.1 (Option 1)	Sc.2 (Option 2)	Sc.3 (Option 2)
Financial	895,290	-311,286	808,417	846,879
Economic	***125,016***	***-513,683***	***125,630***	***203,048***
Incremental NPV of options (over baseline), US$,000				
Financial		-1,206,576	-86,873	-48,411
Economic		-638,698	615	78,032

A highly positive financial return and a contrasting significant economic loss in the baseline case confirm the existence of the situation under which policy makers do not address the issue of economic pricing of timber and as a result processors do not have the incentive to improve efficiency. Informal payments from CSM operations sustain the operation which is inefficient. While these create economic costs which are not considered by private operators, failure of policy to correct the wrong market signals end up putting money in private pockets.

In all the scenarios, it is the third that promises maximum impact of reforms. It shifts policy towards allowing greater roles in the markets for artisanal millers as micro enterprises. Comparing the financial gains in Scenario 3 to the Baseline, there is a financial loss of about US$ 48 million, but an economic gain of about US$78 million (**Table 2**). This implies in the shift of policy choice, some stakeholders are bound to lose. However, there are opportunities and good justification for the state to invest in mitigation measures, using the economic gains, to turn the outcome into a "Win-Win" situation. A comparison of the options using Option1 as the standard clearly shows that scenario 3 (of option 2) is by far the most economically efficient policy choice (**Table 2**). Scenario 3 also uses a deliberate state policy to positively influence access to forests by improved artisanal millers. It should be noted that the CBA results reveal potential impacts. The numbers do not suggest the forest economy is out of the woods. The models show that efficiency and market pricing need to work simultaneously to achieve the Scenario 3 results.

Reflecting on the sustainable harvest of 718,000 in relation to an AAC of one and two million cubic meters, all things being equal, table 3 shows how lumber production by the various players under conditions of scenario 3 will look like.

Table 3: lumber production by various producers under scenario 3 conditions at different annual allowable cut levels

Lumber Supplier	**Mill input RWE (m3)**	**Share**	**Lumber Production**
AAC: 718,000 m3			
Integrated Mill	33,000	8%	18,150
Non-Integrated Mill	127,714	30%	70,243
Artisanal Mill	269,033	62%	134,577
TOTAL	**429,747**	**100%**	**222,970**
AAC : 1000000 m3			
Integrated Mill	45,905	8%	25,248
Non-Integrated Mill	178,271	30%	98,049
Artisanal Mill	374,928	62%	206,211
TOTAL	**599,105**	**100%**	**329,508**

AAC : 2000000 m3			
Integrated Mill	91,810	8%	50,496
Non-Integrated Mill	356,542	30%	196,098
Artisanal Mill	749,857	62%	412,421
TOTAL	**1,198,209**	**100%**	**659,015**

Conclusions and Recommendations

Conclusions

The analysis suggest that any possible reforms to supply legal timber to the domestic market at sustainable levels must be done with difficult decisions, both politically, economically and socially speaking

Even though the scenario where both sawmills and artisanal mills produce for both the domestic and export market under harvest quotas and fiscal incentives promises to be the most economically efficient option, the choice comes with some costs.

Under the best scenario, supplying the domestic market with legal timber will require that:

- integrated mills, non-integrated mills and artisanal mills are given 163000, 128000 and 269000 cubic meters of timber resources from the forests
- only integrated mills should be allowed to export lumber export at a level not exceeding 91000 cubic meters
- Only 243000 cubic meters out of the 600,000 cubic meters (40%) of the domestic demand can be supplied from natural forests.
- Fiscal incentives must be developed to enable domestic market price to ‘jump’ to USD 310/m3
- Institutional costs for forest management and monitoring should not exceed levels reached during VPA negotiation

- Chainsaw operations are fully cramped down and that about some 20,000 affected operators are possibly integrated into artisanal milling sub-sector to fill the job opportunities that will be created by it

Recommendations

There is the need for political decision to shift timber harvest volumes from natural forests from the current 2 million to about 700,000 cubic meters in order to operate at sustainable levels

There is the need for industrial standards to be developed and the industry retooled to build their capacity to recover at least 50% of lumber from round logs.

Provide both social and economic incentives to support full enforcement of the chainsaw ban

Introduce fiscal incentives such as reduction of stumpage for mills producing for local market, use of export quotas on traditional species and retention of special value added tax for tertiary processors.

It is the scenario where sawmills and artisanal mills should supply legal lumber to the domestic market under a regime of domestic harvest quotas and fiscal incentives that promises maximum impact of reforms.

SWOT ANALYSIS OPTION: DOMESTIC LUMBER SUPPLIED BY SAWMILL AND ARTISANAL MILLS ONLY

Options	*Strengths*	*Weaknesses*	*Opportunities*	*Threats*
2 (Domestic lumber supplied by sawmills and artisanal millers)	▪ Industry in Ghana are currently retooling to check inefficiency ▪ Funds are available under NREG ▪ Collaborative resources Management initiatives in Ghana ▪ Existing institutions to monitor harvesting and enforce laws (FSD, TIDD, Immigration Service etc) ▪ Labour groups and Associations ▪ CFC's and unit committees to support monitoring ▪ Current initiatives that supports sustainable forest management (REDD, VPA) ▪ Access to timber resources ▪ Available labour force , skills logistics and technology ▪ Ability to meet local lumber demand ▪ Availability of market ▪ Capital base available ▪ Availability of forest resources. ▪ Favourable climate conditions. ▪ The blend of manual and	▪ Community unit committees are not functional. ▪ Resource monitoring agencies are under resourced ▪ National data capturing system is weak. ▪ Difficulty in monitoring the operation of the two parties. ▪ Lack of adequate financial resources for chainsaw millers to acquire new machines ▪ Lack of expertise in the business by chainsaw millers ▪ Ability to pay for cost of improvement ▪ Low capacity in terms of supply ▪ Unskilled labour by chainsaw operators ▪ Obsolete machinery on the part of sawmillers ▪ The blend may lead to corrupt practices. ▪ Most of artisanal millers use human beings to convey lumber to accessible place which is very risky ▪ Internal conflict ▪ Conflict between	▪ Improved efficiency from free hand chainsaw operation to artisanal milling ▪ High Demand (available Market) ▪ Formation of associations (CSM) to enhance monitoring and sustainable forest management ▪ Modern technologies available ▪ Provide secured employment for fringe communities. ▪ Reduction in chainsaw related conflicts and associated risks ▪ Improved community livelihoods ▪ Availability of alternative livelihoods. ▪ Increased revenue to government (tax, stumpage etc) and all stakeholders. ▪ Transform chainsaw operators to artisanal millers. ▪ Access to funding and credit facilities ▪ Reduced illegality in the timber industry ▪ Efficiency and reduction of	▪ Depletion of the timber resource ▪ Loss of jobs by some operators ▪ Poor monitoring of the two parties ▪ Organizing chainsaw operators makes them strong ▪ Lack of political will ▪ Dwindling resource base ▪ Interferences by traditional authorities and farmers ▪ Illegal logging ▪ Potential occurrences of conflicts between the artisanal millers and sawmillers ▪ Potential differences in prices of lumber ▪ Extreme weather conditions affecting the forest and productivity ▪ Potential problems with utility services ▪ Substitution of wood with other non-wood materials ▪ Bush fires ▪ Destruction of farm crops and smaller trees. ▪ Likely fall in profit

	technological capacities to produce effective and efficiently. ▪ Will be able to produce higher quality at affordable prices. ▪ Will be able to create more jobs in rural communities. ▪ Will generate revenue to the government. ▪ There will be relatively low waste in lumber production. ▪ The two groups will be able to produce sustainably than a one group. ▪ Artisanal millers can operate at where saw millers cannot. ▪ Reduction in waste with the use of the logosol and sawmill machines.	sawmillers and artisanal millers	waste in the system ▪ Satisfy VPA requirement ▪ Plantation development activities ▪ Enhanced Donor support ▪ Competiveness leading to potential reduction in cost of lumber ▪ Opportunity to involve chainsaw operators in re-afforestation programmes	margin as a result of oversupply to the market. ▪ High cost of equipment