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# THE REDD OPPORTUNITIES SCOPING EXERCISE (ROSE) FOR GHANA: ROSE EXPERT WORKSHOP REPORT



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## Executive Summary

The Katoomba Ecosystem Services Incubator has developed a tool called the REDD Opportunities Scoping Exercise (ROSE) as a means of assessing how and where to engage with Reduced Emissions from Deforestation and forest Degradation plus<sup>4</sup> (REDD+) in a given country. Specifically ROSE enables the user, which could be a government body or NGO aiming to promote or support a portfolio of forest carbon activities, to classify and prioritize potential REDD+ sub-national activities, and to make an initial assessment of key constraints to project development, including those associated with the legal, policy and institutional framework for carbon finance.

The Ghana ROSE was one of three ROSE country case studies conducted in 2009. It has provided the Katoomba Incubator with a solid basis for strategic engagement with REDD+ in Ghana, both at the project or sub-national level, and at the national or policy level. The ROSE study consisted of two main stages; a two-day key informant or expert workshop, and an analysis of legal and policy constraints by a small in-country team. This report focuses on the first part of the ROSE methodology, the expert workshop; a second Ghana ROSE report, entitled “REDD Opportunities Scoping Exercise: Implications of the Legal and Policy Framework for Tree and Forest Carbon in Ghana”, goes into greater depth on the legal and policy issues surrounding the development of REDD+ in Ghana.

The ROSE expert workshop was attended by 20 key informants from a range of sectors and backgrounds, who were carefully selected to bring a wide range of expertise to the discussion of REDD+ priorities and constraints. This group worked through and decided on a set of criteria for prioritizing REDD+ ‘project types’ and then ranked the most promising project types by using a simple scoring system. A ‘project type’ in the context of ROSE is defined by the following: the ecosystem category, the type of land tenure, and the main deforestation or forest degradation driver(s) for that land use and tenure type. The workshop participants identified eight high potential project types as shown in the following table:

Ecosystem Type	Tenure Type	Main DD driver(s)	Score
Wet Evergreen High Forest	Forest Reserves	Tree/food crops + logging	38
	Off-Reserve (CREMAs/DFs)	Tree/food crops + logging	41
Moist Semi-Deciduous High Forest	Forest Reserves	Logging + wildfire	39
	Off-Reserve (CREMAs/DFs)	Tree/food crops + logging	40
Transition Zone	Forest Reserves	Wildfire	37
	Off-Reserve	Wildfire + charcoal/fuelwood	39
Guinea Savanna Riverine	Off-Reserve	Farming + charcoal + fire + grazing	40
Guinea Savanna Other	Off-Reserve	Farming + charcoal/fuelwood	37

Abbreviations: DFs = Dedicated Forests; CREMAs = Community Resource Management Areas

<sup>4</sup> REDD+, as used in the United Nations Framework for Climate Convention (UNFCCC) ‘Conferences of the Parties’, includes forest conservation, sustainable forest management, and enhancement of forest carbon stocks, including by planting trees.

The expert group then discussed legal, institutional, and policy barriers or gaps, which—if effectively tackled—would result in a major boost for REDD+ in Ghana. Based on the above described process, the participants concluded:

- The fundamental requirements for REDD+ are improved forest governance; clarification of carbon property rights while ensuring positive economic incentives for landowners and farmers; clarification and good governance of benefit-sharing arrangements; an integrated and inter-sectoral land-use policy framework; and strong inter-sectoral coordination.
- A key REDD action, including in *existing* cocoa farms in the more degraded high forest reserves, would be to increase productivity and income of cocoa farms so that these farmers have less need to extend their farms or abandon them for new forest areas – in less degraded forest reserves, there is little alternative to improving forest governance and compliance as proposed under the Voluntary Partnership Agreement (VPA) between the Government of Ghana and the European Union.
- Outside forest reserves, the main hope is for the development of Community Resource Management Areas (CREMAs) or Dedicated Forests (DFs) in which there is more scope for increased farmer or landowner rights over trees, and possibly over carbon; for much stronger community participation in natural resource management; for resolving land tenure issues; and for molding equitable benefit-sharing mechanisms.
- Conversely there is little hope for REDD in the off-reserve high forest areas, assuming a continuation of current tree tenure and institutional arrangements; the latter have created perverse incentives for timber tree retention.
- There is a need to increase the role of district assemblies and traditional authorities in REDD+ activities.
- It is important to improve wildfire control in drier areas as well as the potential for innovative approaches like grazing corridors in the savanna and transitional zones.
- There is a need for a more integrated energy policy incorporating biomass energy.

These ROSE workshop findings were later refined and modified in the companion Ghana ROSE report, entitled “REDD Opportunities Scoping Exercise: Implications of the Legal and Policy Framework for Tree and Forest Carbon in Ghana” (<http://www.forest-trends.org/publications.php>).

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## Acronyms and Abbreviations

CREMA	Community Resource Management Area
DA	District Assembly
DD driver	Deforestation and forest Degradation driver
DF	Dedicated Forest
FC	Forestry Commission
FR	Forest Reserve
FSD	Forestry Services Division
GoG	Government of Ghana
LPG	Liquid petroleum gas
NCRC	Nature Conservation Research Centre
NTFP	Non-timber forest product
PES	Payments for Ecosystem Services
REDD	Reduced Emissions from Deforestation and Forest Degradation.
ROSE	REDD Opportunities Scoping Exercise
TA	Traditional Authority or chieftaincy
TUC	Timber Utilization Contract
VPA	Voluntary Partnership Agreement

## 1. Introduction and Objectives

As in other countries, in Ghana the government, NGOs and other stakeholders have a strong interest in developing Reduced Emissions from Deforestation and forest Degradation (REDD) or REDD+ activities<sup>5</sup>, both at the project and national levels. Ghana is strongly placed to develop a national REDD+ program due to its stable socio-political situation and the initial support from the World Bank Forest Carbon Partnership Facility for its REDD Readiness Preparation Proposal (R-PP).

This report describes the REDD Opportunities Scoping Exercise (ROSE) undertaken by the Katoomba Ecosystem Services Incubator (Box 1). It is the third ROSE study conducted by the Incubator in Africa, following studies in Tanzania and Uganda. It provides the Incubator with a clear framework for understanding the potential and constraints for REDD+ in Ghana, both at the project and national or policy levels. At the national level, ROSE assessments provide a rapid qualitative analysis (based on expert opinion) to identify key emissions abatement opportunities across different forest contexts. At the sub-national level, ROSE takes a first look at the potential for economically and socially viable 'project types', and is a pre-cursor to the costly process of pre-feasibility and feasibility analysis. It provides a framework for a programmatic approach to REDD in which sub-national activities respond to strategic and market requirements.

### **Box 1: The Katoomba Ecosystem Services Incubator**

In 2007 the Katoomba Group launched the 'Katoomba Ecosystem Services Incubator' – or Incubator for short - with the aim of mobilizing comprehensive support to bring promising PES projects to market, inform policy, and build capacity. The Incubator focuses mainly on communities and small to medium landowners, sectors with a critical role in providing ecosystem services, but which also face considerable constraints in accessing and effectively using carbon and other PES finance mechanisms. By investing in capacity- building, project design, and technical assessment, the Incubator creates the platform to leverage other finance, and positions local stakeholders for equitable participation in benefits. It is also increasingly focusing on the interface between projects and policies as shown by the 'ROSE' program of work.

The Incubator has three regional offices and programs – Latin America (with a particular focus on Brazil and the Andes Region), East Africa, and West Africa. It draws on its staff and a roster of partners to link global expertise and local capacity in support of core regional partners with the aim of developing "centers of excellence".

The ROSE process therefore bridges 'projects' and 'policies', and is highly relevant to the development of national REDD programs. For example, the legal analysis from the ROSE study has informed an analysis of Ghana's REDD+ architectural options. Even if REDD+ in Ghana becomes predominantly programmatic and fund-based, the policies and other actions will have to be results-based and will call into play similar criteria to those required for (current) market viability. Box 2 considers the emerging project-policy interface.

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<sup>5</sup> REDD+, as used in the United Nations Framework for Climate Convention (UNFCCC) 'Conferences of the Parties', includes forest conservation, sustainable forest management, and enhancement of forest carbon stocks, including by planting trees.

## **Box 2: Projects and Policies in a post-2012 REDD Architecture**

It is as yet unclear how the post-2012 REDD regime will function, but cost-effective reduction of deforestation and degradation will require a mix of policy and project approaches. The ROSE assessment uses a structured analytical framework to provide inputs into REDD strategies at both national and sub-national levels. Policy and institutional approaches are clearly essential for addressing the underlying drivers of deforestation, including issues around agricultural productivity and expansion, land and tree tenure, forest governance, land-use planning, subsidies, etc.

The Incubator also thinks that sub-national activities will play a key role in a country's suite of REDD+ activities. These activities have proved to be effective mechanisms for building technical capacity and are critical to the process of developing and providing cost-effective land use incentives for the stakeholders who will determine the success of national programs. Specifically, sub-national activities:

- allow for near-term abatement potential to be realized, while enabling conditions are created to deliver results through national-level approaches;
- can attract private capital, which is also needed to achieve emissions reductions;
- allow for innovation and controlled learning before national-level initiatives;
- create platforms for developing contracts, establishing the appropriate level and mix of incentives, and for developing equitable and transparent benefit-sharing mechanisms;
- are important for demonstrating how REDD incentive mechanisms can deliver positive benefits, and for building credibility and momentum behind national-level frameworks.

The objectives of this ROSE study are therefore to:

- assess promising Incubator project types as a preparation for identifying and developing Incubator-supported projects in Ghana;
- develop a methodology or process for the government of Ghana to be able to develop a balanced portfolio of REDD+ projects that responds to national priorities, rather than leaving project selection to happen as an *ad hoc* process;
- determine key legal, institutional and policy constraints, which, if addressed, would significantly facilitate the progress and success of REDD+ in Ghana;
- refine the ROSE methodology as a tool for other organizations or governments to use.

The ROSE process involves two main stages – firstly a two-day key informant or expert workshop, and secondly an analysis of legal, policy, and institutional issues by a small in-country team. This report focuses on the results of the ROSE expert workshop, while the second part of the ROSE analysis is reported in the Katoomba Incubator paper “REDD Opportunities Scoping Exercise: Implications of The Legal and Policy Framework for Tree and Forest Carbon in Ghana.” This can be downloaded at <http://www.forest-trends.org/publications.php>



## 2. Overview of ROSE Workshop and Process

The ROSE expert or key informant workshop was held on 2-3 July 2009 in Accra. It was attended by 20 participants (Annex 1) from a range of institutions who presented a rich inter-disciplinary and cross-sectoral mix of skills and experience relating to Ghana's forest sector, deforestation processes, legal, social, and policy issues, carbon markets, etc. The following organizations or institutions participated: Forestry Commission (including Wildlife Division), Ghana Cocoa Board; Ministry of Food and Agriculture, University of Ghana (Land Resources Centre), Tropenbos, the Sustainable Tree Crops Program of the International Institute for Tropical Agriculture (IITA), Civic Response, NCRC and CARE, as well as various consultants. Two of the participants were on the National REDD Steering Committee. The main steps undertaken at the ROSE workshop were to:

- Classify a set of potential REDD 'project types' based on the forest ecosystem type, deforestation/degradation (DD) drivers, and the tenure basis;
- Agree to a set of criteria for 'successful' REDD projects, focusing on economic and technical viability, as well as allowing for co-benefits and policy priorities;
- Score the 'project types' against the selected criteria;
- Select high potential 'project types' based both on the scores and a more qualitative analysis of key constraints;
- Identify for each 'project type' potential REDD+ project and policy responses to the deforestation and degradation threats or drivers;
- Undertake a brainstorm analysis of the legal and institutional gaps or issues which need to be tackled for REDD to progress for these 'project types', including an initial list of questions requiring clarification or further research.

## 3. Classification and Initial Listing of 'Project Types'

For the purposes of the ROSE analysis, REDD+ abatement opportunities were classified by 'project type'. A 'project type' is defined by the forest ecosystem type, the main deforestation/degradation (DD) driver(s), and the tenure or institutional basis. For example, a 'project type' is wet evergreen high forest (mainly in the Western Region) in production forest reserves under threat from cocoa and logging. As an initial step, the expert group classified Ghana's ecosystems into six main types:

- wet evergreen high forest (found particularly in the Western Region)
- moist semi-deciduous high forest
- upland high forest (also moist semi-deciduous)
- transition zone (mainly in the Abron-Ahafo Region)
- northern savanna composed of the Guinea savanna and woodlands of northern Ghana
- coastal savanna woods and grassland on Ghana's southern coastal belt.

These ecosystem types correspond closely to those defined by Hall & Swaine (1982) and as shown on Map 1. The ecosystem zones were then broken down according to 'tenure type'. The main land tenure situations in Ghana can be listed as production forest reserves; protection forest reserves; off-reserve areas (composed mainly of trees on farms and some forest remnants including sacred groves, mainly around burial spots); Community Resource Management Areas (CREMAs) in off-reserve areas; and Community or 'Dedicated Forests'. Box 3 provides more information on CREMAs and Dedicated Forests. Most off-reserve land in the high forest/transition zone is 'owned' (*allodial* title) by traditional authorities (chieftaincies) and other landowners.

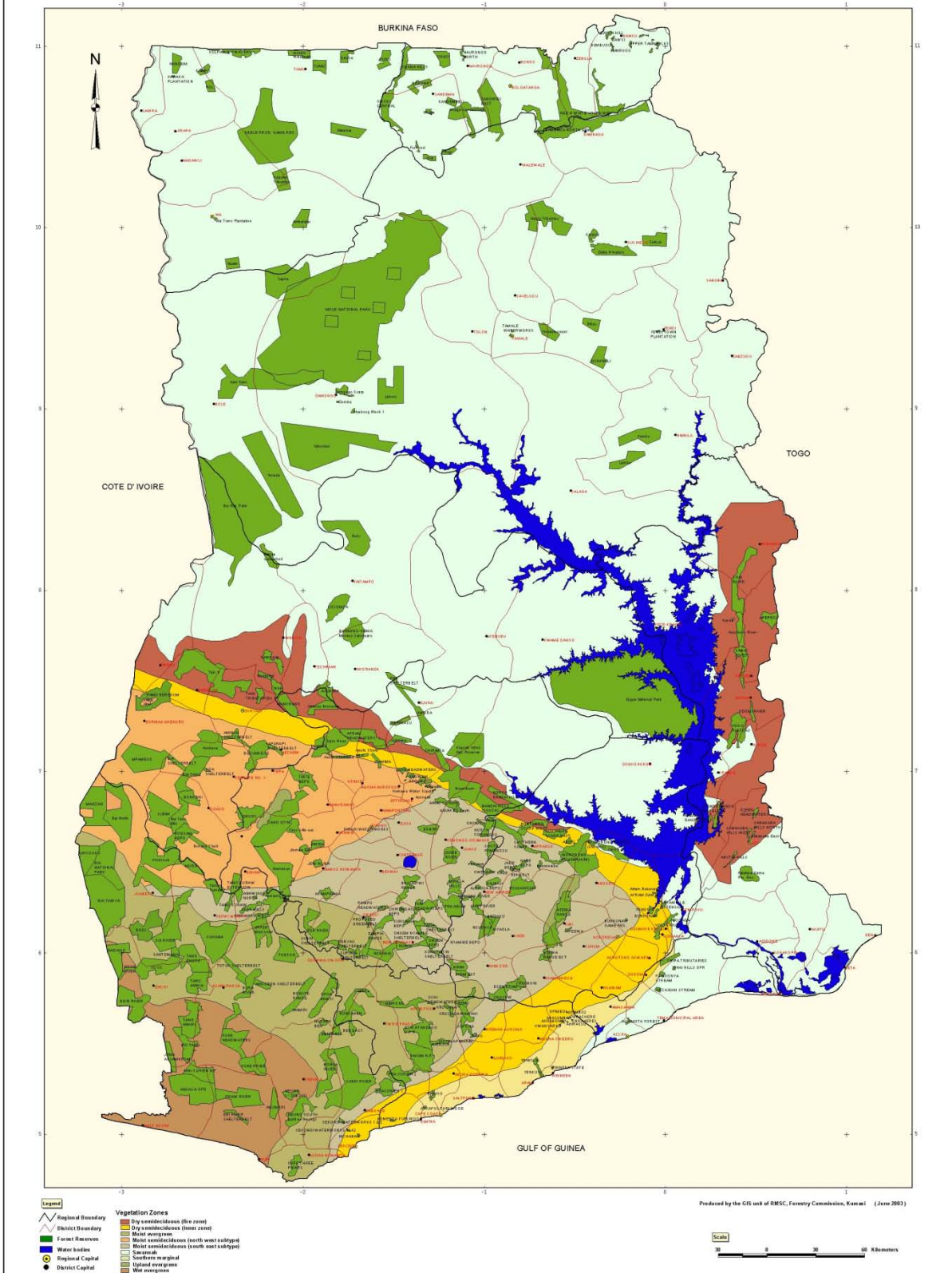
### **Box 3: Off-Reserve CREMAs and Dedicated Forests**

Community Resource Management Areas (CREMAs) are a relatively recent tenure modality in which resident communities in important wildlife or biodiversity areas are given increased tenure security and natural resource management rights. The CREMA concept stems from the 1961 Wildlife Act which allows the Minister to devolve wildlife management authority by conferring 'honorary game wardenship' on 'ordinary' citizens. This allows the latter to perform duties that are by law the preserve of Wildlife Officers. Three CREMAs had been officially established by mid-2009, but a further 16 were in the pipeline (personal communication, Andrew Agyare).

While yet to be backed by legislation, the CREMA policy is clearly defined and the concept is being incorporated into the new Wildlife Bill. The purpose of a CREMA is to enable community-based wildlife management, ecotourism, decentralization of law enforcement, and habitat management to reduce deforestation and wildlife habitat degradation. CREMAs therefore provide a natural resource management structure that is highly conducive to community-based REDD+ projects, particularly in off-reserve landscapes that include mosaics of forests, agroforestry and agriculture. Strengths of CREMAs include clear boundaries, a constitution developed through a participatory process, backing by District Assembly by-laws, strong social cohesion, and opportunities for generating revenue and benefit-sharing outside the normal legal framework.

Dedicated Forests (DFs) provide a similar opportunity for local communities to protect sacred groves or otherwise locally valued forests, and to receive economic benefits through community forestry management. Ghana currently has two DFs that have engaged in attempts at artisanal harvesting of timber and the collection of non-timber forest products (NTFPs). Eco-tourism also plays a minor role. The mandate for DFs evolved in response to the Forestry and Wildlife Policy, and subsequent efforts were made to secure legal backing for DFs through the creation of associated legislation, but this was not successful. Currently, DFs are backed at the district level through by-laws that recognize their status.

## VEGETATION ZONES AND FOREST RESERVE MAP OF GHANA (Hall & Swaine)



Source: Hall & Swaine, 1982.

The main deforestation and degradation (DD) drivers for each combination of ecosystem and ‘tenure type’ were then listed, resulting in an initial 84 possible ‘project types’. These were reduced to 21, as shown in Table 1, following an initial weeding and rationalization process. This included eliminating areas with relatively few trees, such as in the coastal savanna zone (there are few mangroves left); focusing on the main two or three DD drivers; and/or combining the DD drivers where they tend to act together or sequentially. It was also decided to differentiate northern Guinea savanna woodland areas between riverine and other woodlands.

**Table 1: Rationalized List of 21 Potential Project Types**

<b>Ecosystem Type</b>	<b>Tenure Type</b>	<b>DD Drivers</b>
<b>High Forest - Wet Evergreen</b>	Production Forest Reserves	1. Logging
		2. Tree/food crops
	Off-Reserve	1. Tree/food crops
		2. Logging
	Off-Reserve (CREMAs/DFs)	Tree/food crops & logging
<b>High Forest - Moist Semi-Deciduous</b>	Production/Protection Forest Reserves	1. Logging
		2. Wildfire
	Off-Reserve	1. Tree/food crops
		2. Logging
	Off-Reserve (CREMAs/DFs)	Tree/food crops & logging
<b>Uplands - e.g., Atewa Ridge</b>	Protection Forest Reserves	Logging
<b>Transition Zone</b>	Production Forest Reserves	1. Wildfire
		2. Logging
	Protection Forest Reserves	1. Wildfire
		2. Logging
	Off-Reserve	1. Wildfire
	2. Charcoal/fuelwood	
<b>Guinea Savanna – Riverine Woodlands</b>	Off-Reserve	1. Farming/charcoal
		2. Wildfire & grazing
		3. Chainsawing
<b>Guinea Savanna - Other Woodlands</b>	Off-Reserve	Farming/charcoal/firewood

Abbreviations: DFs = Dedicated Forests; CREMAs = Community Resource Management Areas

## 4. Selection of Criteria and Scoring of Project Types

After discussing the criteria used for previous ROSE studies in Tanzania and Uganda, the group selected 15 criteria for scoring the project types:

- Biomass or carbon levels of the ecosystem
- Size of forest blocks and/or aggregation potential
- Deforestation/degradation-threat level or additionality
- Opportunity cost associated with alternative (to REDD) land use
- Clarity of land tenure
- Clarity of tree tenure/carbon property rights
- Probable leakage risk from a REDD project
- Likely permanence level
- Replicability (i.e., potential for scaling up to other similar areas)
- Adaptability, especially to be able to respond to the potential of emerging markets, e.g., for 'organic' and/or 'fair trade cocoa'
- Likely level of government interest
- Level of community or poverty reduction co-benefits
- Compatibility with other livelihood activities
- Level of biodiversity co-benefits
- Potential for bundling (combining carbon payments with other PES)

Each of the 21 potential project types was scored against the criteria. Each criterion was scored from 1 to 3, with a higher score indicating a more viable or attractive project (except for the land use opportunity cost and the leakage risk criteria, for which a higher score represented a lower opportunity cost and lower leakage risk respectively). Table 2 presents the total scores for several criteria for the 21 project types (see Annex 2 for the complete scores).

**Table 2: Scoring of 21 REDD+ Project Types (Selected Criteria)**

Ecosystem Type	Tenure	DD drivers	Total Score	Carbon Content	Size / Aggreg.	Threat / Addit'y	Opport. Cost <sup>1</sup>	Land Tenure	Tree Tenure	Replicability
<b>High Forest - Wet Evergreen</b>	Production Forest Reserves	1. Logging	32	3	3	2	1	3	3	2
		2. Tree/food crops	38	3	3	3	1	1	3	3
	Off-Reserve	1. Tree/food crops	32	3	3	3	1	3	1	3
		2. Logging	33	3	3	3	2	3	1	3
	Off-Reserve (CREMAs/DFs)	Tree/food crops & logging	41	3	3	3	1	3	3	3
<b>High Forest - Moist Semi-Deciduous</b>	Production/Protection Forest Reserves	1. Logging	32	3	3	2	1	3	3	2
		2. Wildfire	39	3	3	3	3	3	3	3
	Off-Reserve	1. Tree/food crops	32	3	3	3	1	3	1	3
		2. Logging	33	3	3	3	2	3	1	3
	Off-Reserve (CREMAs/DFs)	Tree/food crops & logging	40	3	1	3	3	3	3	2
<b>Uplands – e.g., Atewa Ridge</b>	Protection Forest Reserves	Logging	38	3	1	3	3	3	3	1
<b>Transition Zone</b>	Production Forest Reserves	1. Wildfire	37	2	3	3	3	3	3	3
		2. Logging	32	2	3	2	2	3	3	3
	Protection Forest Reserves	1. Wildfire	37	2	3	3	3	3	3	3
		2. Logging	32	2	3	2	2	3	3	3
	Off-Reserve	1. Wildfire	39	2	3	3	3	3	3	3
		2. Charcoal/fuelwood	37	2	3	3	1	3	3	3
<b>Guinea Savanna - Riverine Woodlands</b>	Off-Reserve	1. Farming/charcoal	38	2.5	3	3	1	3	3	3
		2. Wildfire & grazing	40	2.5	3	3	3	3	3	3
		3. Chainsawing	38	2.5	3	3	1	3	3	3
<b>Guinea Savanna – Other</b>	Off-Reserve	Farming/charcoal/firewood	37	1.5	3	3	2	3	3	3

Abbreviations: DF = Dedicated Forest; CREMA = Community Resource Management Area; Aggreg. = aggregation potential; Addit'y = additionality

## 5. Selection of Higher Potential Project Types

The selection of eight higher potential project types, as shown in Table 3, was based mainly on the scores, but also on further discussion of some of the critical criteria, such as the biomass or carbon levels<sup>6</sup>, additionality, size of forest areas or aggregation potential, tenure clarity and replicability, the institutional and/or tenure basis, as well as the project type's strategic or policy importance. The possibility of a higher weighting for such criteria was discussed, but the group decided to retain an equal weighting. There was also a further rationalization process, including combining production and protection forest reserves where the DD drivers and scores were very similar, and of DD drivers acting simultaneously or sequentially. Also the small upland high forest protection forest reserves, such as Atewa Ridge, were combined with the moist semi-deciduous high forest reserves.

**Table 3: Higher Potential REDD Project Types According to ROSE Expert Workshop**

Ecosystem Type	Tenure	Main DD driver(s)	Score
Wet Evergreen High Forest	Production Forest Reserves	Tree/food crops + logging	38
	Off-Reserve (CREMAs/DFs)	Tree/food crops + logging	41
Moist Semi-Deciduous High Forest	Production/Protection FRs	Logging + wildfire	39
	Off-Reserve (CREMAs/DFs)	Tree/food crops + logging	40
Transition Zone	Production/Protection FRs	Wildfire	37
	Off-Reserve	Wildfire + charcoal/fuelwood	39
Guinea Savanna Riverine	Off-Reserve	Farming + charcoal + fire + grazing	40
Guinea Savanna Other	Off-Reserve	Farming + charcoal/fuelwood	37

The selection of higher potential REDD+ projects revealed some interesting patterns:

- Two project types were selected for each of the four main forest ecosystems, implying a balanced focus going beyond the more carbon-rich high forest areas, and reflecting the major threats in the drier transition and savanna zones.
- The main DD drivers in the high forest areas were tree crops (especially cocoa in Western Region), food crops (including during the establishment stage of cocoa), and logging; and wildfire was important in the drier semi-deciduous areas.
- In the transition zone off-reserve areas, wildfire was the main DD driver, followed by charcoal, and in the savanna off-reserve woodland, farming was the main driver, also followed by charcoal/fuelwood.

<sup>6</sup> The workshop did not have access to estimates of biomass or carbon levels, except for some research data on 'cocoa carbon' levels by Reading University in Eastern Region. Wade et al. (2010) recorded above ground carbon levels (including cocoa trees) of about 32 tonnes/ha in full sun cocoa systems, 103 tonnes/ha in shaded cocoa systems, and 156 tonnes/ha in relatively undisturbed natural forest.

The Workshop felt that without CREMAs or Dedicated Forests, REDD+ is not a viable option for off-reserve high forest areas (Table 2 shows that scores for off-reserve areas *without* CREMAs were much lower).<sup>7</sup> The CREMA or Community Forest option was also considered to have high potential for the transition and savanna zones (off-reserve).

It was noted that, although the project types listed in Table 3 scored highest, they faced significant challenges, for example, high opportunity costs in high forest areas associated with cocoa, oil palm, and logging, much of it illegal; and tree tenure was considered highly problematic in off-reserve areas unless CREMAs or Community Forests can be introduced. It was noted that cocoa farmers in off-reserve timber concession areas face perverse incentives for the management or retention of timber trees (Richards & Asare, 1999).

Perhaps surprisingly, land tenure issues were only considered problematic or unclear in the production forest reserves of wet evergreen high forests. This was because of the long-time establishment of cocoa farms in forest reserve areas. Participants felt that in other situations it should be possible to resolve land tenure conflicts, e.g., between 'indigenes landowners and migrant tenant cocoa farmers in off-reserve areas. Conflicts can arise, for example, when migrant cocoa farmers claim that they have been sold rather than leased land.

## 6. Identification of REDD Policy and Project Responses

The expert group then identified a set of potential REDD policy and project responses for each 'project type' situation (see Table 4). The policy, legal and institutional measures identified by the workshop participants included:

- the introduction of CREMAs and/or Dedicated Forests in off-reserve areas, since these represent a shift to increased local control and participation in natural resource management, increase the scope for farmer rights over trees (and possibly over carbon), provide a facilitating framework or platform to sort out land tenure issues and for the design of equitable benefit-sharing mechanisms;
- raising productivity and incomes on *existing* cocoa farms in the more degraded forest reserves, since this should slow down clearance for new cocoa and/or expansion of existing cocoa farms;
- raising farm income and livelihood alternatives in migrant farmer source areas, again to reduce the clearance of new forest;

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<sup>7</sup> It should be noted however that the high forest off-reserve areas were scored assuming that the main REDD response, i.e., CREMAs or Dedicated Forests, was already in place. In fact, at the time of the workshop very few of these had been officially established. The selection of CREMAs or Dedicated Forests as project types therefore reflects a potential future tenure situation rather than the current tenure situation. There is therefore a comparability problem in the off-reserve scores.



- improved inter-institutional coordination, particularly as regards cocoa-farming in the forest reserves, and greater involvement of traditional authorities (TAs);
- better law enforcement, particularly with regard to logging in forest reserves;
- increased resourcing of wildfire prevention programs;
- empowerment and support of District Assemblies and TAs (chieftaincies) in the control of illegal or unsustainable resource management practices and through strengthening traditional or customary institutions and controls, including via local by-laws (e.g., as introduced in parts of Wenchi District and elsewhere);
- creation of grazing or livestock corridors for ‘transhumant’ pastoralists who currently burn for grass regeneration; this includes the introduction of water holes and farming restrictions in these areas, possibly in return for a modest payment by the pastoralists;
- subsidies for herbicide use in high fire-risk areas;
- a change in energy-pricing policy to encourage the use of Liquid Petroleum Gas (LPG) since the latter was (currently) four times more expensive than charcoal, although it was noted that the opportunity cost of this would be high since LPG is an important export;
- land-use zoning by District Assemblies.

It was realized that isolated measures would be insufficient, and what is needed is a concerted multi-sectoral and faceted response. For example, raising incomes and productivity on existing cocoa farms would increase the risk of increased migration – therefore such a policy requires simultaneous measures to improve livelihoods or reduce poverty in the migrant source areas.

Allowing for some overlap with the policy measures and ‘projects’, project suggestions included:

- projects to raise cocoa/farm income and other ‘sustainable livelihood’ options as identified above, e.g., bee keeping;
- once established, linking CREMAs or Dedicated Forests to social service providers;
- the rehabilitation or enrichment of forest reserves in a number of situations;
- implementing wildfire prevention programs, including environmental education (especially to communities) and improved incentives for fire volunteers;
- establishing grazing corridors in transition and savanna areas;
- working with TAs and District Assemblies to promote sustainable charcoal systems in situations where current charcoal production is unsustainable.<sup>8</sup>

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<sup>8</sup> Research by Amanor & Brown (2006) claimed that in some areas of the Transition Zone charcoal production is associated with sustainable coppice-based agroforestry food production systems, and also that chiefs only make money from outsiders practicing more destructive charcoal production – therefore careful research is required on current charcoal production practices and the incentives that drive them.

**Table 4: Potential REDD Policy and Project Responses**

<b>Ecosystem Type</b>	<b>Tenure</b>	<b>DD Drivers</b>	<b>Policy Measures</b>	<b>Project Responses</b>
<b>High Forest - Wet Evergreen</b>	Production Forest Reserves (FRs)	Tree/food crops	Support for <i>existing</i> cocoa farms in degraded FRs; law enforcement; inter-institutional coordination, including with traditional authorities (TAs) and farmers	Raise productivity/income on <i>existing</i> cocoa farms via agroforestry, new crops, timber trees, etc. (although there was concern that this would attract migrants and increase DD pressures)
	Off-Reserve (CREMAs/DFs)	Tree/food crops & logging	Introduce CREMAs/DFs; revise laws regarding rights to trees; develop agreements between landowners & tenant farmers	Raise productivity and income in CREMA areas; work with TAs to improve customary control/institutions; link CREMAs/DFs to social service providers
<b>High Forest – Moist Semi-Deciduous</b>	Production/Protection FRs incl. uplands	Wildfire / logging	Law enforcement - illegal logging	Implement wildfire protection programs (including education); rehabilitation/enrichment of degraded areas; alternative livelihoods in Production Forest Reserves
	Off-Reserve (CREMAs/DFs)	Tree/food crops & logging	Introduce CREMAs/DFs; revise laws regarding rights to trees; develop agreements between landowners & tenant farmers	Same as for wet evergreen off-reserve areas
<b>Transition Zone</b>	Production/Protected FRs	Wildfire	Empower District Assemblies and TAs to pass and enforce by-laws; create grazing corridors for pastoralists; subsidize herbicides	Wildfire prevention programs; incentives for fire volunteers; community environmental education (e.g., to counter 'security' problem of 'high grass' as a motive for burning)
	Off-Reserve	Wildfire & charcoal/fuelwood	Reform Ministry of Energy policy on energy pricing, e.g., subsidize LPG; LPG in schools; and recognize professional charcoal makers	Work with District Assemblies & TAs to encourage sustainable charcoal (woodlots; rotation/concession basis); improved kiln technologies; research to improve stove technologies
<b>Guinea Savanna - Riverine Woodlands</b>	Off-Reserve	Farming & charcoal & wildfire, etc.	Land-use planning: demarcation into zones and introduction of CREMAs; improved law enforcement	Fire control measures; grazing corridors; improved farming productivity/income; alternative livelihoods, etc.
<b>Guinea Savanna - Other Woodlands</b>	Off-Reserve	Farming & charcoal/fuelwood	Same as for Guinea savanna riverine woodlands	Same as for Guinea savanna riverine woodlands

## 7. Legal and Institutional Gaps Analysis

The ROSE Workshop also held some rich discussions around legal, institutional, and policy issues (see Table 5), which helped inform Section 3. The workshop highlighted the following legal issues requiring further research or clarification:

- Laws impinging on land use, ownership, and tenure require careful scrutiny, when considering the design of positive incentives for land users or forest managers.
- Complex land tenure issues around cocoa farms in forest reserves, including the land ownership situation before the reserves were created;
- Uncertainty around carbon property rights which have yet to be addressed by the law;
- Clarification of the right of the Minister of Lands and Natural Resources to abrogate concessions or Timber Utilization Contracts (TUCs) in favor of carbon;
- The potential for CREMAs and/or Dedicated Forests in off-reserve forest areas, including how carbon property rights will be resolved if the state continues to 'own' the trees (noting that continued state ownership of timber rights would not be incompatible with landowner or farmer carbon rights);
- Issues surrounding timber concessions in CREMAs/community forest areas;
- The pros and cons of CREMAs and Dedicated Forests, including the circumstances in which each might be appropriate, levels of political will, and the capacity to influence the legislative processes.

Many of these issues are analyzed in a second companion ROSE paper focusing on the legal aspects of REDD+ in Ghana (Katoomba Incubator, 2010). Some of the main institutional and policy constraints identified<sup>9</sup> were:

- Weak law enforcement will and capacity, partly due to the lack of state institutions on the ground and political interference with law enforcement, as well as weak accountability and transparency;
- Lack of political will for policy reforms and the inter-sectoral coordination needed to tackle the main DD drivers – REDD+ should form part of an overarching policy framework for a sustainable land-use planning across local, regional and national scales;
- Weak or unclear benefit-sharing arrangements – a key research area for equitable REDD;

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<sup>9</sup> Some important additional policy issues include: the current risk for REDD+ project developers without official national recognition and assurance that project-level carbon gains will be fully compensated in any future national REDD+ program; and the need to decide whether carbon credits will be treated as a security or a commodity, partly in view of the fiscal implications (Dr. Mike Packer, personal communication).

- In the case of charcoal, the lack of a biomass energy policy of the Ministry of Energy, which is more focused on electricity (a participant mentioned that only 6% of Ghana's energy is from electricity, the rest being biomass and LPG)
- Current lack of capacity of District Assemblies, which could potentially incorporate REDD type actions in their Natural Resource Plans;
- Lack of engagement of District Assemblies and TAs, noting that both are legally empowered to develop and enforce by-laws around sustainable and legal natural resource extraction.

**Table 5: Discussion of Legal and Institutional Gaps Analysis**

Project Type Situation	Legal Analysis	Institutional Analysis / Policy Constraints	Key Research or Information Needs
Forest Reserves in High Forest Zone (mainly Production Forest Reserves)	<p>Currently, FRs are managed by the government in trust for communities, as represented by TAs which hold the allodial title. But some FRs are full of cocoa, one has the District capital; it will be necessary to consider 'who owns what' (customary right to use land over a period) and land distribution before FRs were created; the due process was not always followed in the reservation process. Also, there are some land tenure issues around absentee landlords and caretaker farmers, but it should be possible to sort these out; the law has not addressed carbon property rights and more pressure should be put on the state to do so, possibly via the Supreme Court; carbon property rights legislation should include below-ground carbon since that (?) may come in later; GoG could decide to decouple carbon rights from tree 'ownership'; it may not be vital in a post-Kyoto regime to have clear carbon property rights as long as the legitimate tree 'owners' or managers can be rewarded.</p>	<p>Lack of political will for policy reforms and law enforcement, e.g., political interference -- messages come saying 'stop it' during law enforcement campaigns; weak capacity of state institutions, and lack of institutions on the ground in many areas; weak capacity and political will of District Assemblies (DAs); chieftaincies (TAs) are insufficiently involved; lack of accountability and transparency; weak inter-sectoral coordination and conflicting policies (especially around cocoa in forest reserves); weak benefit-sharing arrangements. Also a range of policy failures are driving unsustainable/illegal logging, (e.g., see impact assessment of the VPA, Mayers et al, 2008). All these problems increase risks and transaction costs.</p>	<p>Clarification needed of the Minister of Lands and Natural Resources right to abrogate Timber Utilization Contracts (TUCs) in favor of carbon; research appropriate benefit-sharing mechanisms, for example, a comprehensive analysis of rights and responsibilities is needed to provide a rational basis for allocating benefits; clarification of the definitions of 'admitted farms' and 'admitted towns' is needed in Forest Reserves; what would be the consequences of separating carbon property rights and tree tenure, including in term of who would carry the risk</p>

<p>Off-reserve areas in high forest zone including around the creation of CREMAs and/or Dedicated Forests</p>	<p>In off-reserve areas there are multiple user rights over the same piece of land; farmers can do what they like with trees EXCEPT sell timber. CREMAs and/or Dedicated Forests (DFs) could increase incentives for tree managers. CREMAs will be shaped by the Wildlife Bill currently before Cabinet - this could potentially be recalled to consider how to make CREMAs more compatible with REDD; in CREMAs, naturally occurring trees remain under state 'management', but it is easier to develop agreements with increased rights to farmers/landholders, e.g., proper compensation for logging damage, right to refuse felling permission (1994 Measures), etc.; if CREMAs are established where there are existing timber concessions, a contract would have to be developed so that the two can co-exist; with CREMAs, the area does not have to have wildlife, but areas with higher wildlife potential are prioritised. DFs have been mainly sacred groves, but can also be community woodlots; they are being promoted as 'reform aspirations' under the VPA, and are a 'trigger' in the VPA - the policy and legal reforms required by the VPA could therefore provide a push for DFs, which are more tree-oriented than CREMAs.</p>	<p>Same (as for FR areas) issues of inter-institutional coordination and communication (given that the causes of deforestation and degradation are inter-sectoral).</p> <p>The Forestry Commission would facilitate and enforce agreements in CREMAs (the FC can and should collaborate with NGOs). But NGOs are of rather variable quality and may bring their own agendas, e.g., rules that prioritize livelihoods over biodiversity or vice versa. A difference between CREMAs and DFs is that in DFs the communities have to develop a forest management plan, which the FC should monitor and enforce.</p>	<p>Key questions included: What are the key differences between CREMAs and DFs? What would be the rights (inc. tree tenure or carbon property rights) and responsibilities in each? (e.g., the right to refuse permission to concessionaires). How should benefit sharing arrangements be promoted and monitored? For DFs, the proposed Dedicated Forests Act warrants analysis as does the GTZ "FORUM Project" which undertook considerable work DF; the need to clarify current legislative processes around DFs and CREMAs, and the current status of discussions about DF in the VPA negotiations.</p>
<p>Off-reserve areas in Transition and Savanna zones</p>	<p>In order to develop positive incentives, there is a need to look at all the laws impinging on land use, ownership, tenure, etc. There are some complex land tenure issues around the lease of land for charcoal woodlots.</p>	<p>Coordination &amp; communication issues between the Ministry of Energy and other Ministries was noted as a problem; also that there is a weak or non-existent policy on biomass or woodfuel energy. DAs are supposed to have a Natural Resource Plan as part of their District Plans - this could be based on REDD+ activities. The need to recognize and organize migrant (professional) charcoal making groups was also noted.</p>	<p>Key research topics included whether CREMAs or DFs would be more appropriate for riverine woodlands; the scope for sub-national REDD+ approaches in the Natural Resource Plans of DAs; the need for more work on the charcoal value chain; and the need to examine the potential for introducing a differential tax system to promote sustainable charcoal, as developed in Niger in the 1990s.</p>

## 8. Conclusions and Recommendations

The methods and process presented here provide a means for developing a strategic and balanced portfolio of REDD projects and are an important first step for the Katoomba Incubator in Ghana (or other countries). It is the first step in a project screening process; the next step would be to undertake a similar (but not identical) analysis of likely project sites for each high-potential project type; a third step is to make pre-feasibility assessment visits to high-potential projects; and the fourth step is to undertake a full feasibility analysis prior to developing a Project Design Document.

The ROSE process identified eight high-potential REDD project types, two in each of the four main forest ecosystems. These responded to the main deforestation and degradation (DD) drivers: in the high forest areas, these were tree crops, especially cocoa in Western Region, food crops (including during the establishment stage of cocoa) and logging, while wildfire was important in drier semi-deciduous areas; in the transition zone, wildfire and charcoal were the main DD drivers, and in the savanna woodlands farming and charcoal/fuelwood were the main drivers.

The eight selected project types faced significant challenges, for example, high opportunity costs in high forest areas associated with cocoa, oil palm, and logging, much of it illegal; a range of associated forest governance problems; and perhaps most seriously the lack of economic incentives for farmers and landowners to be interested in managing or conserving naturally occurring trees due to current tree tenure regime. On cocoa farms in off-reserve timber concession areas, there are strong perverse incentives around the retention of timber trees.

The workshop also identified a range of potential REDD policy and project responses and undertook a brainstorm of the main legal, policy, and institutional constraints. Based on the above, the ROSE expert workshop came to the following main conclusions and recommendations:

- The fundamental requirements of REDD+ are improved forest governance; clarification of carbon property rights while ensuring positive incentives for landowners and farmers; clarification and good governance in benefit-sharing arrangements; an integrated and inter-sectoral land-use policy framework; and strong inter-sectoral coordination;
- A key REDD action, including in the more degraded high forest reserves, is to increase productivity and income of *existing* cocoa farms so that these farmers have less need to abandon them for a new forest area, although this policy should be complemented by measures to improve livelihood and income options in the source areas of migrant farmers;
- Outside forest reserves, the main potential rests with the development of CREMAs or Dedicated Forests involving increased farmer or landowner management rights over trees – conversely, there is little hope for REDD in off-reserve areas assuming continuation of the current tree tenure and institutional arrangements;
- CREMAs would also facilitate the establishment of equitable intra-community benefit-sharing mechanisms;

- The need to enhance the role of district assemblies and traditional authorities in REDD+;
- The importance of improved wildfire control in drier areas and the potential for innovative approaches like grazing corridors in the savanna and transitional zones; and,
- The need for a more integrated energy policy incorporating biomass energy.

The discussions were however sanguine about the level of political will for tackling the policy and governance drivers of forest degradation. For a deeper analysis of the legal issues, the reader is directed to the companion Ghana ROSE paper (Katoomba Incubator, 2010) which reports on the second part of the REDD process – the in-country research and analysis of legal, policy, and institutional issues.



## References

- Amanor, K.S. , and Brown, D. (2006). Informing the Policy Process: Decentralization and Environmental Democracy in Ghana. Overseas Development Institute and University of Ghana Report to the DFID Natural Resource Systems Programme. HTSPE: Hemel Hempstead.
- Katoomba Incubator (2010). REDD Opportunities Scoping Exercise: Implications of the Legal and Policy Framework for Tree and Forest Carbon In Ghana. Forest Trends: Washington, DC.
- Hall, J. B., and M. D. Swaine (1981). Distribution and Ecology of Vascular plants in a Tropical Rain Forest: Forest Vegetation in Ghana. Dr. W. Junk Publishers: Boston.
- Mayers, J., Birikorang, G., Danso, E., Nketiah, K. & Richards, M. (2008). Assessing the Potential Impacts of a Voluntary Partnership Agreement in Ghana with the EC on Forest Governance. Final Report. International Institute for the Environment and Development: London.
- Richards, M., and Asare, A. (1999). Economic Incentives for Cocoa Farmers to Tend Timber Trees in Southern Ghana. Overseas Development Institute: London, UK.
- Wade, A.S.I., et al. (2010). Management strategies for maximizing carbon storage and tree species diversity in cocoa-growing landscapes. *Agric. Ecosyst. Environ.* (2010), doi:10.1016/j.agee.2010.06.007.

## **Annex 1: Participants at the ROSE Expert Meeting**

The participants of the ROSE Expert Workshop held at the Crystal Palm Hotel, Accra, on the 1<sup>st</sup> and 2<sup>nd</sup> of July 2009 were:

- Andrew Agyare, Wildlife Division, Forestry Commission
- Baaba Amoah, Land Resources Centre, University of Ghana
- Kingsley Amoako, Ministry of Food and Agriculture
- Alex Asare, Resource Management Support Centre, Forestry Commission
- Richard Asare, Sustainable Tree Crops Program, International Institute for Tropical Agriculture
- Ulrich Bang, CARE International
- Gene Birikorang, Consultant
- Saadia Bobtoya, NCRC (observer)
- David Kpelle, Consultant to Forestry Commission
- Hannah Murray, Forest Trends (study coordinator)
- Sam Nketiah, Tropenbos (Member of REDD Steering Committee)
- Eugene Offon-Gyamfi, Ghana Cocoa Board (COCOBOD)
- James Ohemeng, NCRC
- Yaw Osafo, Lawyer
- Joseph Osei, Consultant
- Saeed Abdul Razak, Civic Response/Forest Watch
- Michael Richards, Forest Trends (study coordinator)
- Jenipher Seanedzu, NCRC (Observer)
- Victoria Wiafe, the IDL Group

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## Annex 2: Complete Scoring of 21 Potential REDD+ Project Types

Forest Type	Tenure	DD driver	Total score	Carbon content	Size/Aggreg.	Threat / Addit'y	Opport. Cost	Land Tenure	Tree tenure	Leakage Risk	Likely Permanence
<b>High Forest - Wet Evergreen</b>	Production FRs	1. Logging	32	3	3	2	1	3	3	1	2
		2. Tree/food crops	38	3	3	3	1	1	3	1	2
	Off-Reserve	1. Tree/food crops	32	3	3	3	1	3	1	1	1
		2. Logging	33	3	3	3	2	3	1	1	1
	Off-Reserve DFs/ CREMAs	Tree/food crops/logging	41	3	3	3	1	3	3	1	3
<b>High Forest - Moist Semi-Deciduous</b>	Production/Protected FRs	1. Logging	32	3	3	2	1	3	3	1	2
		2. Wildfire	39	3	3	3	3	3	3	1	2
	Off-reserve	1. Tree/food crops	32	3	3	3	1	3	1	1	1
		2. Logging	33	3	3	3	2	3	1	1	1
	Off-Reserve DFs/ CREMAs	1. Tree/food crops/logging	40	3	1	3	3	3	3	3	3
<b>Uplands</b>	Protection FRs	Logging	38	3	1	3	3	3	3	1	3
<b>Transition Zone</b>	Production FRs	1. Wildfire	37	2	3	3	3	3	3	3	1
		2. Logging	32	2	3	2	2	3	3	1	1
	Protection FRs	1. Wildfire	37	2	3	3	3	3	3	3	1
		2. Illegal logging	32	2	3	2	2	3	3	1	1
	Off-reserve	1. Wildfire	39	2	3	3	3	3	3	3	1
		2. Charcoal/fuelwood	37	2	3	3	1	3	3	1	3
<b>Guinea Savanna – Riverine</b>	Off-Reserve	1. Farming/charcoal	38	2.5	3	3	1	3	3	2	2
		2. Wildfire & grazing	40	2.5	3	3	3	3	3	2	2
		3. Chainsawing	38	2.5	3	3	1	3	3	2	2
<b>Guinea savanna other</b>	Off-Reserve	Farming/charcoal/ firewood	37	1.5	3	3	2	3	3	3	2

<i>Forest type</i>	<i>Tenure</i>	<i>DD driver</i>	<i>Total score</i>	<i>Replicability</i>	<i>Adaptability - emerging markets</i>	<i>Level of state interest</i>	<i>Community benefits</i>	<i>Compatible with other livelihoods</i>	<i>Biodiversity co-benefits</i>	<i>Bundling potential</i>
<b>High forest - wet evergreen</b>	Production FRs	1. Logging	32	2	1	3	1	1	3	3
		2. Tree/food crops	38	3	3	3	3	3	3	3
	Off-Reserve	1. Tree/food crops	32	3	3	1	3	3	1	2
		2. Logging	33	3	3	1	3	3	1	2
	Off-Reserve DFs/CREMAs	Tree/food crops/logging	41	3	3	3	3	3	3	3
<b>High forest - moist semi-deciduous</b>	Production/Protection Forest Reserves	1. Logging	32	2	1	3	1	1	3	3
		2. Wildfire	39	3	1	3	3	3	3	2
	Off-reserve	1. Tree/food crops	32	3	3	1	3	3	1	2
		2. Logging	33	3	3	1	3	3	1	2
	Off-Reserve DFs/CREMAs	Tree/food crops/ logging	40	2	3	1	3	3	3	3
<b>Uplands</b>	Protection FRs	Logging	38	1	3	3	2	3	3	3
<b>Transition zone</b>	Production FRs	1. Wildfire	37	3	1	2	3	3	2	2
		2. Logging	32	3	1	2	2	3	2	2
	Protection FRs	1. Wildfire	37	3	1	2	3	3	2	2
		2. Logging	32	3	1	2	2	3	2	2
	Off-reserve	1. Wildfire	39	3	3	2	3	3	2	2
		2. Charcoal/fuelwood	37	3	2	3	3	3	2	2
<b>Guinea savanna - riverine</b>	Off-Reserve	1. Farming/charcoal	38	3	1	2	3	3	3	3
		2. Wildfire & grazing	40	3	1	2	3	3	3	3
		3. Chainsawing	38	3	1	2	3	3	3	3
<b>Guinea savanna other</b>	Off-Reserve	Farming/charcoal/ firewood	37	3	1	2	3	3	2	2



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