



**USAID | GHANA**  
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*IMPROVING NATURAL RESOURCES MANAGEMENT  
IN THE COASTAL DISTRICTS OF WESTERN  
REGION, GHANA: Tree Planting and Farmer Managed  
Natural Regeneration*



**COASTAL SUSTAINABLE LANDSCAPES  
PROJECT**

**CSLP *AUGUST 2018***

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## 1. BACKGROUND

The Ghana Coastal Sustainable Landscapes Project (CSLP) is a United States Agency for International Development (USAID) Feed the Future initiative and a U.S. Forest Service-managed intervention being implemented in the six coastal districts<sup>1</sup> of Ghana's Western Region. The project, originally a three-year project (2013-2016) funded with USAID Climate Change monies, was extended initially for another three years through September 2019<sup>2</sup> with Feed the Future funding, based on successes achieved within the initial phase. It worked to promote low emissions development in Ghana's Western Region by strengthening community-based natural resource management and monitoring, and improving livelihoods in farming and fishing communities.

The project's second phase, under the U.S. government's Feed the Future Initiative, had a specific objective to reduce poverty and increase resiliency in the target communities through improved natural resource management, livelihood diversification, value chain development, and ecosystem conservation and restoration. The project interventions covered 43 core coastal communities with smallholder farmers and fisher folks as the main beneficiaries. In total, project actions of one sort or another had reached more than 82 communities as of early June 2018.

The interventions of the CSLP were guided by two main outcomes: (i) increased incomes from livelihood diversification and, (ii) improved environment and natural resource management. Specific activities included agroforestry and forestry best practices, short- and medium-term livelihood improvement activities (e.g. beekeeping, climate smart agricultural, CSA, vegetable production), on-farm tree planting of commercial and agroforestry species and management of greening areas / urban greeneries. Others included wetland/mangrove conservation, spatial planning, Village Savings and Loan Associations (VSLAs) and youth engagement (via formation of environmental clubs in public schools).

The CSLP used in-field consultations, targeted trainings, strategic capacity building, detailed technical assistance, and participation in institutional/policy level discussions and workshops based on field-level experience to achieve project objectives.

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<sup>1</sup> Shama, STMA, Ahanta West, Nzema East, Ellebelle and Jomoro Metropolitan/Municipal/District Assemblies (MMDAs)

<sup>2</sup> This was subsequently reduced to only two years, to September 2018, due to lack of financial resources in USAID/Ghana's budget

## 1.1 Introduction

Two key interventions namely (1) tree planting on farms and other areas and (2) Farmer Managed Natural Regeneration (FMNR<sup>3</sup>) on farms especially cocoa farms were rolled out by the CSLP from the year 2014 to 2018. The rationale of these were to help decrease rate of deforestation and degradation in the Six Coastal Districts of Western Region and also to generally enhance sustainable natural resources management in the area. In addition, they were meant to generate economic opportunities from timber and non-timber products from trees in the medium to long-term.

The succeeding parts of this report explains the methodology used for these two interventions, the results and analyses of outcomes. In addition to this report's conclusions, recommendations have been offered for subsequent follow-up by stakeholders.

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<sup>3</sup> FMNR is a practice whereby farmers deliberately retain and manage trees that have germinated in a farm or coppiced from shoots and roots on farms. The trees are managed to provide one or more benefits to the farmer and / or the farm.

## 2. METHODOLOGY

The primary methodology used for achieving the objective of restoring trees to the landscape for improved natural resources management and livelihoods was capacity building. This involved community sensitization, focus group discussions (FGD) on major landscape issues, participatory definition of problems and outlining of possible solutions and enrolment of farmers into preferred interventions. Also, there were trainings on different topics related to the objective as well as distribution of materials (seedlings) to support farmers to practice what was learnt during trainings. In the next section, these methods and approaches have been outlined.

### 2.1 Community Sensitization, Needs Assessment and Farmer Enrolment

The interventions begun with community visits during which group of farmers, through focused discussions were held to brainstorm on problems of deforestation, land degradation and their impacts on landscape dependent livelihoods. Together with the farmers the way forward was thought out and validated with other stakeholders. Information gathered served as a guide to define training needs as well as the nature of support the Project could provide.

### 2.2 Trainings

The CSLP developed curricula on seven training modules pertaining to forestry, and agroforestry practices. Trainings conducted are listed in Table 1. With the exception of training on introduction to urban forestry, over 95% of participants in all the trainings were farmers who were the main target for the relevant interventions). While introduction to urban forestry training participants were drawn from Ghana Education Service staff, traditional councils and district/municipal/metropolitan assemblies' officials.

All trainings were delivered using explanation of key topics and concepts, discussions and field hands-on exercises. The latter constituted about two-thirds of the contact person hours for each of the trainings except no. 1 and no. 7.

Active participation was observed throughout the trainings as participants asked several practical questions. Both facilitators and participants responded to questions and shared experiences that enriched learning.

Table 1: Trainings conducted and number of participants disaggregated by gender

No.	Name/Title of Training	Number of Training Participants		
		Men	Women	TOTAL
1	Environment, Ecosystems and Livelihoods	136	99	235
2	Introduction to Agroforestry and On-Farm Tree Planting	40	10	50
3	Agroforestry, Enrichment Planting and Tree/ Forest Restoration	291	83	374
4	Farmer Managed Natural Regeneration (FMNR)	220	61	281
5	Tree and Seedlings Identification for FMNR	14	0	14
6	Cocoa Shade Tree Cover Restoration	251	117	368
7	Introduction to Urban Forestry	146	36	182

### 2.3 Establishment of Local Nurseries

The CSLP supported three communities to establish and manage tree nurseries to supply about 30,000 seedlings to farmers to out-plant. The nurseries were established at Adubrim (Photo 1), Tweakor 1 and Tumentu. Siting the nurseries in three different districts facilitated easy distribution and reduced seedling mortality. Community Assistants (CAs) were selected by the farmers to manage the nurseries on their behalf. Through coaching from CSLP, CAs acquired relevant knowledge and skills to manage tree nurseries.



Photo 1: On the Left is a tree nursery established at Adubrim and on the right is group of farmers ready for lifting of the seedlings for out planting at Adubrim

### 2.4 Sourcing of Seedlings from Other Areas

In addition to the community managed nurseries, seedlings were purchased from private nurseries within the forest district to meet the high demand from farmers. Another reason for purchasing seedlings externally was the absence of specialized skills needed to successfully raise seedlings such as *Garcinia afzelli* (nsorkor), *Tieghmella*



*beckelii* (*baku*), *Guarea thompsonii* (*guarea*), etc. Most of these seedlings suffered transportation shock and some died after out planting.

## 2.5 Training Tour



Photo 2: Group photo of tour participants at an agroforestry site near Samreboi (top) and tour site near Tarkwa (bottom)

A training tour to Oda-Kotoamso Agroforestry site near Samreboi and also to Mile 9 near Tarkwa were organized for selected community champion farmers (Photo 2). This offered the “champions” a practical perspective of planting timber trees in cocoa farms and other practices such as enrichment planting. It also provided a rare opportunity to farmers to learn from other agroforestry farmers, benefits they have gained from decades of agroforestry practices.

## 2.6 Regular Monitoring and Advice

Community assistants (CAs) undertook period monitoring of on-farm tree planting and management in addition to occasional monitoring by the project specialist. During these monitoring visits farmers were advised to adopt best practices. Again the CAs

recorded the number of planted seedlings surviving and shared data with farmers and the CSLP. In the last year of the project, a complete enumeration of all trees managed on each farm was carried out and recorded. The data has been compiled in an Excel Workbook.

Tree planting and FMNR in cocoa farms were renamed as cocoa shade tree cover restoration (CSTCR) to emphasize the importance which cocoa farmers and other stakeholders had begun to attach to these interventions in relation to environmental sustainability of cocoa production systems in Ghana.



*Photo 3: Kwame Appiah Owusu, CSLP NRM Specialist (left) coaching a farmer, Paul Davani of Sendu (right) on tending individual trees during a farm monitoring visit in 2016.*

### 3. RESULTS

This section highlights key results on tree planting and agroforestry interventions. The results focus on adoption of practices to restore shade and commercial trees in cocoa farms, planting of trees off- cocoa farms, adoption of FMNR practices, planting of trees on schools compound and other public areas.

#### 3.1 Adoption of Tree Planting and Farmer Managed Natural Regeneration in Cocoa and Other Farmlands

Most tree planting and FMNR practices in communities begun in the 2015 farming season apart from in Adubrim, Ayawora, Tumentu and Asonti where they were started early on in the second rainfall season of the year 2014 (i.e. August – November).

Practical trainings offered to farmers on various technologies and practices have progressively yielded an anticipated outcome. There are even more outcome to expect as farmers increasingly demand for seedlings. Many farmers are also picking young seedlings growing near mother trees or “wildlings” to replant on their farms.

To date, 46,522 trees have been restored to the CSLP landscape through planting and management of naturally regenerated trees (Figure 1), propelled by CSLP’s capacity building on these subjects. Eighty per cent (80%) of the surviving trees were planted directly from seedlings (with 77% and 3% of this planted on farm lands and on school compounds & public spaces (as part of urban forestry initiative) respectively.

Communities with highest number of surviving trees are Navrongo and Fawoman which bound the Ankasa Resource Reserve. The data for Fawoman is abnormally high because farmers there planted more additional trees seedlings that were supplied by other institutions like COCOBOD<sup>4</sup>.

Some farmers have undertaken enrichment planting in fallow areas which can now be described as secondary forestry. Examples of farmers who are practicing enrichment planting include Nicholas Baidoo of Adusuazo, Stephen Dagbey, Gladys Atsu and Walter Cudjoe, Adzoko all of Navrongo.

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<sup>4</sup> Cocoa Board of Ghana

### Number of Surviving Trees Planted and Farmer Managed Naturally Regenerated Trees per Community and Schools in Selected Districts

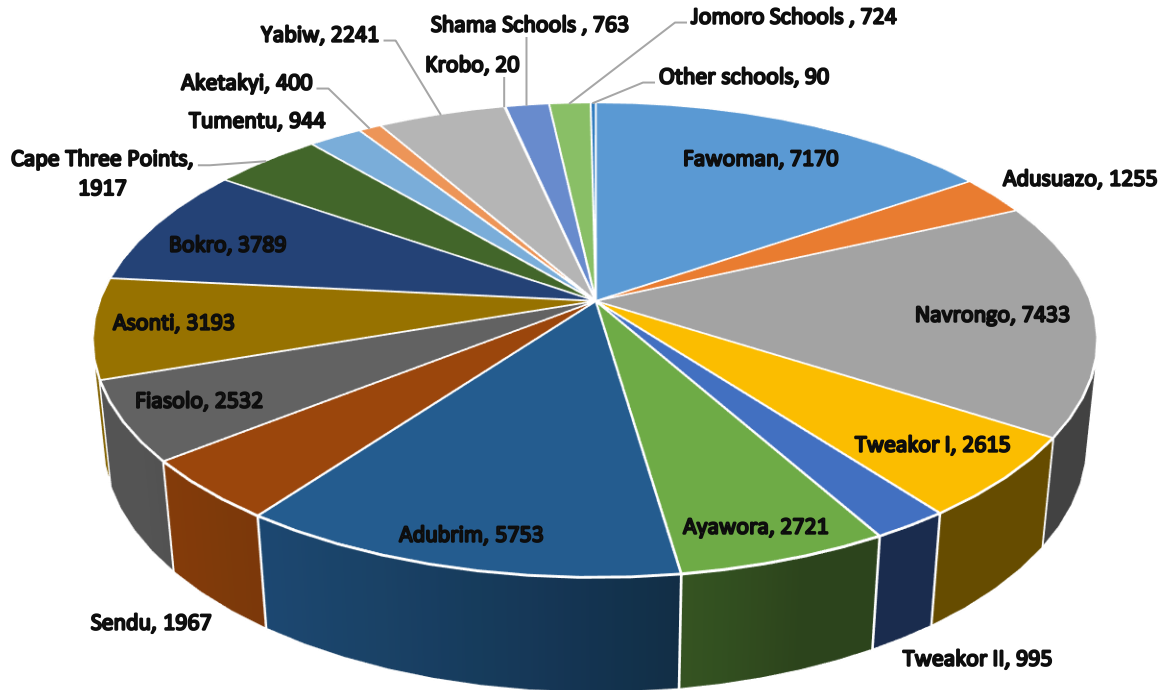


Figure 1: Number of Surviving Planted and Farmer Managed Naturally Regenerated Trees per community and schools in some districts

Data from monitoring data and seedling distribution records show average percentage survival of planted trees is 50% (Appendix 1). However, farmers in Fawoman and Yabiw obtained and planted more seedlings from other sources, of which those surviving were included in the CSLP monitoring data as it was not practical for enumerators to make a distinction between seedlings supplied by the CSLP and those by other organizations such as COCOBOD and FORIG. Therefore, excluding data from these two communities average survival will be about 45%.

It also important to note that adoption of FMNR is high with about 75% of farmers involved. An estimated 9,302 trees were nurtured within four years of the project. This comprises 3,588 *Milicia excelsa* (odum), 1004 *Terminalia superba* (ofram), 791

*Terminalia ivorensis* (*emire*), 454 *Antiaris toxicaria* (*kyenkyen*) trees. The remaining number of trees were from more than 10 different species.

The capacity building which was largely practically based has yield a positive outcome regarding change in attitude and perceptions of many farmers about trees on cocoa



Photo 4: Benjamin Addison of Asonti holding a dead stump of *prekese* tree he killed a decade ago (left) and a two-year old *prekese* tree he planted (right) at the same spot

farms. In Photo 4, Benjamin Addison recounts an error he committed about a decade ago when he killed *prekese* tree without considering the benefits it could provide to his farm and income. He stated in a conversation with CSLP staff that he is now glad that he has replanted the tree at the same place the matured one was killed. This is because he realized that when he had the big *prekese* tree decades ago the soil near it appeared healthy but he observed a decline in soil quality after killing the tree.

The concept of FMNR appeared attractive to most farmers. The practical exercise to identify common ideal trees for cocoa shade in the landscape got most participants motivated to practice this. Many were surprised to know that young saplings of some preferred timber species, e.g. *Milicia excelsa* (Odum) were common on the landscape. They have indicated that since they can now easily identify Odum, and Otie (*Pycnanthus angolensis*) they will manage as many as necessary on their farms. This enthusiasm of the trained farmers needs to be monitored to assess application of knowledge gained.

Therefore, more than two-third of farmers trained by the CSLP in communities are practicing FMNR now. Before the CSLP, less than a quarter of the farmers practiced FMNR. Increased rate of adoption has led to restoration of 9,302 trees of various species to the landscape. This is expected to increase as non-CSLP supported farmers are learning from their peers how to identify, select, retain and manage trees that have naturally regenerated on their farms. In most cases the FMNR trees appear to grow at a similar rate to those planted. For example Issah Ali of Ayawora, has witnessed this on a farm he takes care of (see Photo 5).

This practice works well with species like odum, ofram, emire, kusia, otie, kyenkyen



Photo 5: Ali of Ayawora planted *Nauclea diderrichii* or kusia on the left side photo and also has additional trees of the same species through FMNR (right)

and few others depending on farmers' preferences.

### 3.2 Restoration of plant species of conservation concern

Prior to CSLP virtually no farmer in the Coastal landscape knew it was possible to plant *Garcinia afzeli* (*nsorkor*) even though some of them used to exploit it commercially. During the community sensitization of this project, it was learnt that unsustainable harvesting of this species had led to its local extinction. Neither young nor adult trees were available to provide seeds for propagation. Meanwhile

propagation of *nsorkor* seeds is extremely difficult. *Nsorkor* is traditionally used for oral hygiene – chew stick for cleaning teeth and mouth. There is high demand for it in both rural and urban areas of Ghana. Consequently, commercialization coupled with unsustainable harvesting practices to meet market demand has decimated this non-timber forest product from the landscapes. Therefore when CSLP sensitized farmers on planted *nsorkor* especially using enrichment planting they welcomed the idea. There is now about 2,697 *nsorkor* trees at an advanced stage of growth. It is anticipated that from age five upwards, many of the trees will begin to produce seeds that can serve as propagules for increasing the population of the species either through direct planting or by animal dispersal.

Having learnt of the prospects of restoring *nsorkor* to the landscape, other farmers at Fawoman have started picking naturally regenerated seedlings of *Garcinia kola* (*tweapia*) – a relative of *nsorkor* and planting them. There is an increasing prospect for *tweapia* seeds used as bitter kola (a perfect substitute for kola nuts). With knowledge gained from FMNR trainings offered by the CSLP, farmers living close to one mother *tweapia* tree, hope to increase the population of the species on their farms. The prospects for this initiative is even more enhanced for these farmers with respect to the fact that the species is currently endangered but commercially demanded in high quantities

### 3.3 Urban forestry practices

Urban forestry was initiated in schools at Shama and Jomoro Districts after an introductory training to key stakeholders such as teachers, traditional authorities, assembly members, and local government officials. The trainings sensitized teachers and traditional councils' representatives on (i) the need to practice urban forestry and (ii) to enable training participants to initiate actions that could promote urban forestry for enhanced ecosystem services. The training covered basic concepts of urbanization as a result of human population increase, its effects on vegetative cover in and around human settlements and the need to adopt urban forestry as a tool to make urban areas resilient to impacts of climate change. One key discussion point participants keenly expressed their opinions on related to the fact that affluent suburbs in Ghanaian cities have the best vegetative cover. Most participants concluded that urban forestry should be promoted everywhere in Ghana, though they recognized the huge challenge attendant with other antagonistic factors. For example, many participants cited issues

of uncontrolled movement of livestock and the abilities of some “powerful” individuals to have their own way to destroy planted trees or vegetated public lands.



*Photo 6: Bare degraded site typical of sites where tree planting was carried out in urban areas*

Evaluation from trainings revealed that participants were ready to take further initiatives including sharing the lessons learnt with the traditional councils they represented, incorporate aspects of urban tree planting and management in schools’ extra-curricular activities.

The initiative was embraced in the Shama and Jomoro districts as well as the Sekondi-Takoradi Metropolitan Assembly. However, physical conditions of most sites

where trees were planted posed major challenges. Most grounds were bare and unprotected from livestock (Photo 6). To date, 763 and 724 tree seedlings planted the year 2016 survived at Shama and Jomoro schools respectively. These have survived in areas where the school were walled or effectively fenced to prevent stray livestock from destroying the trees, where there was strict enforcement of community regulations on livestock and to some extent, diligence of teachers and pupils in taking care of the planted trees. Indeed, some of the trees have thrived even in very difficult environment such as at New Town Primary School in Jomoro District (Photo 7)



*Photo 7: Tree planted on a bare sandy school compound at New Town in Jomoro district*





*Photo 8: Agyeza school compound before tree planting in 2016 (right) and after two years in 2018 (left)*

### 3.4 Pilot Registration of Planted and Nurtured Trees

Piloting of on farm tree registration begun at Adubrim and Ayawora. Relevant data such as types and number of trees, geospatial data and biodata of farmers were collected for this. However, the CSLP could not proceed with the registration process at the Forestry Commission (FC) office. This was because a draft form issued by the FC had not been widely agreed on by some key stakeholders. The CSLP had to halt its piloting until a final national directive has been issued which is backed by major stakeholders in on farm trees.

Prior to emergence of this challenge, the CSLP had participated in a national processes aimed at registration of on-farm planted trees. A letter from the Executive Director of Forest Service Division and attached registration form in February 2017 encouraged development organizations, private entities and NGOs.

Nonetheless, the hopes of farmers who have planted trees on their farms are high that when registration and documentation is complete they could be certain of their ownership of the trees planted.

## 4. CRITICAL ANALYSES

Successes of tree planting and FMNR interventions in communities became obvious in FY2017 and FY2018. These accomplishments have been achieved through a well thought out design of interventions which emanated from community level participatory landscapes problem identification, proposition of possible solutions and strategies, etc. which were also discussed and validated through broad stakeholder consultations. Various government agencies involved with natural resources including Forestry Commission, Department of Agriculture, Town and Country Planning, etc, participated in this validation of interventions. This has proven to be one of the vital vehicles for community acceptance of interventions. For example, farmers at Bokro were reluctant in 2014 to embrace tree planting but with encouragement of the then Nzema East Municipal director of DoFA, the farmers got convinced and therefore have practiced tree planting and FMNR since 2015.

During the implementation of these activities it become obvious from interaction with farmers that lack of knowledge on importance of specific trees and identification contributed to indiscriminate destruction of trees on farms. Some farmers had previous experiences with illegal felling of timber trees on their farms without compensation for loss crop and payment for trees they had nurtured. Others also had the bitter experience of inability to properly manage gregarious trees that are not recommended as shade tree for cocoa. To few farmers, having a trees like *prekese* which produces non-timber forest products attracts thieves to their farms and therefore killed those trees. This is exemplified by the experience learnt from Benjamin Addison of Asonti (Photo 4). However, sensitization, training and field lessons have changed their understanding and perceptions which have led to change in attitude and practices. Benjamin Addison has now planted *prekese* seedling (two years old now) at the exact site where he felled a matured *prekese* tree a decade ago for the reason stated above.

In many tree planting interventions such as that implemented by the CSLP, source of seedlings play critical role regarding success or otherwise. The project adopted two approaches owing to prevailing circumstances. Seedlings of some tree species that farmers requested were easy raise in a local nursery. Therefore, three tree nurseries were established in 2015 and 2016 to supply most of the seedlings that were requested by farmers. On the other hand, for some tree species, either specialized skills were required to nurse their seedlings or it was not easily available to get seeds to nurse. Under these circumstance, seedlings (e.g. *nsorkor*) were procured from distant sources

outside the focal districts. Observations made during the seedling distribution as well as monitoring within six months after distribution revealed more than half of the seedlings that were transported over long distances (usually exceeding 100 km) died. Conversely, seedlings that were produced locally such that they could be distributed to planting sites within few minutes to a couple of hours after lifting, had high survival rate. Hence, future tree planting schemes must prioritize local tree nurseries over external ones.

The relative high success of tree survival at Navrongo can be attributed to influence of few individual champions like Walter Cudjoe Adzoko (chief of the village), Stephen Dagbey and Mary Adoboli. The latter, is a woman highly motivated by the fact that she has witnessed successful registration<sup>5</sup> of planted trees in Navrongo. Her motivation was demonstrated in the year 2017, when she purchased 350 seedlings of *Terminalia ivorensis* (Emire) at a cost of GHS700.00 from another female farmer<sup>6</sup> at Sendu.

In order to successfully practice FMNR, set of knowledge and skills are required. These include knowledge of types of “useful” trees within the landscape or agro-ecological zone, tree identification skills, selection, spacing and tending operations such as singling, thinning, pruning, etc. This was identified at the inception stage of the project and incorporated in capacity building activities. Therefore as many farmers as were interested in this practice and were available were trained to adopt in FMNR.

Another important success factor learnt through practice is the availability of mother trees to provide seeds that can be dispersed and germinated as well as existence of adequate vegetative material such as live stumps and roots.

The above mentioned conditions are readily satisfied by *Milicia excels* (odum). It is, therefore, not surprising that *odum* is predominant tree species regarding FMNR practice. This predominance is also attributed to high quality timber that the species produce and the fact that it is traditional known to have multiple uses for roofing houses, home furniture and others. Nonetheless, few farmers mentioned that they suspect *odum* to be associated with some insects and mistletoes in cocoa farms. Therefore whilst some of these farmers avoid retaining *odum* in their farms, others

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<sup>5</sup> This registration was done in 2014/2015 by Forestry Research Institute of Ghana (FORIG) with the support of the District Forest Service Division in Tarkwa.

<sup>6</sup> The woman named Yaa Sakyiwaa after participating in training tour to Samreboi on agroforestry and realizing the availability of seed tree on her farm and demand for emire seedlings by some farmers decided to establish small scale nursery to sell for some income.

retain them since they consider the economic value to outweigh the loss of a fraction of cocoa yield due to insect activities.

Despite success of this on farm tree planting intervention, one major sustainability issue lingers on. Farmers and the CSLP also consider assurance and security of ownership of planted and nurtured trees as the most critical issue surrounding sustainability of various schemes to restore tree cover and by extension enhancement of carbon storage in farm and forest landscapes. All farmers who have planted and /or nurtured timber trees<sup>7</sup> have expressed concern about the fact that there will be huge challenges for them to register trees they have planted should this become a stringent formal requirement from the Forestry Commission.

Urban forestry practices especially tree planting in public places such as schools and streets have had mixed successes. In some community schools conditions such as fenced schools and strict local laws on stray livestock promulgated ensured successful tree planting. This has led to successful greening of Shama Senior High School, Agyeza Primary and Junior School, Bonyire schools, among others. In many other communities, however, stray livestock decimated virtually all planted trees that were otherwise, diligently watered regularly, fenced and cared for by pupils of the various schools. Despite destruction of the early planted trees by animals, some teachers with their pupils have been unrelenting in replanting and protecting trees on their school compounds. On a recent monitoring visit to New Town, the teachers have worked with school pupils to replant new trees from cuttings and wild seedlings picked from nearby mother trees. This shows a positive attitudinal change.

Another outcome worth noting regarding urban forestry in schools is that other head teachers of other community schools, e.g. Ezinlibo, have observed successful greening of Bonyire schools and therefore inquired from the CSLP how they could also green their school compound.

The above stated lessons reveals that urban forestry can be successful provided major threats to tree planting such as stray livestock browsing of planted seedlings is curbed. This might require in implementation of local bye laws that sanctions stray animal offenders.

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<sup>7</sup> Timber trees used refers to any tree that has been planted or grown for the purpose of producing timber or can be used as timber, especially those that historically or currently have used as timber.

## 5. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

Tree planting and farmer managed natural regeneration on farm lands presents a great potential for improving natural resources management, increasing tree cover to capture greenhouse gases, and offer near future income earning possibilities for farmers. However to sustainably tap this existing potential, it is necessary to involve community members and other stakeholders within the landscape to define problems, brainstorm and agree on strategies to solve the problems. Moreover, opportunities must be created to enhance the knowledge and skills of local land managers to through a bottom-up practical training.

Certainly, it is not every tree that can easily be planted in farm-fallow mosaic. But training in and promotion of adoption of farmer managed natural regeneration has provided a cost effective means of increasing number of trees in cocoa and other landscapes. It is particularly important to state that to successfully restore *odum*, FMNR practice is a must.

A retrospect on urban forestry activities points to need an expensive endeavor especially in public places unprotected from stray livestock and vandalism. Therefore unless local laws on stray animals are enforced, urban tree planting is cost-ineffective in most towns and the cities in the landscape.

The CSLP has enabled farmers within the Six Coastal Districts of Western Region, Ghana to restore trees to the landscapes. There is a very positive indication that most farmers will continue to plant trees and practice FMNR for sustainable environment and farm-based livelihoods.

### 5.2 Recommendations

On the basis of experience gained and lessons learnt through the implementation of these interventions, the following recommendations has been made:

1. The Forestry Commission should act expeditiously to facilitate easy registration of trees planted and / or nurtured on farms. This is because farmers consider registration of trees planted and nurtured (through FMNR) as the most viable means of protecting their interest in the trees. However, to make this effective and to boost the confidence of farmers an alternative to formal registration of trees (on farm lands) with the Forestry Commission would be needed.

Specifically, through the local government system, assembly members or local chiefs could set up local teams to make facilitate tree registration in communities. Records of this could be in triplicate so that the farmer retains one, one is kept at the local palace and one at the district assembly office.

2. Staff of DoFA and CHED should provide continuous technical support to farmers in their operational areas. All staff CHED in Ainyinase and Elubo and selected number of agricultural extension officers were trained as cocoa shade tree cover restoration trainers by CSLP. Therefore, the knowledge and skills already exist now for this to done. This, however, would require support from central departments that these field staff report to.
3. For traditionally important NTFPs such as prekese and nsokor, further other development organizations could take up value chain development aspect. This will be pivotal for realizing the full income and livelihood improvement prospects.
4. Future programs on tree planting must adopt training tours to undertake effective sensitization. This will enable farmers to ask practical questions and receive appropriate answers to get them unto a good start.

APPENDIX

Appendix 1: Summary data on seedlings supplied for planting and survival rate

Community	No. of Seedlings Supplied in 2014	No. of Seedlings Supplied in 2015	No. of Seedlings Supplied in 2016	TOTAL NUMBER OF SEEDLINGS SUPPLIED FOR PLANTING	TOTAL PLANTED TREES SURVIVING	% survival
Akwidai	0	250	0	250	0	0
Akatekyi	0	180	630	810	400	49.38272
Cape Three Point	0	1480	277	1757	1499	85.31588
Tumentu	206	1615	501	2322	944	40.65461
Ayawora	357	2343	2,153	4853	2011	41.43829
Fiasolo	0	1343	1,002	2345	1492	63.62473
Sendu	0	1211	824	2035	1290	63.39066
Adubrim	479	9824	5,188	15491	4853	31.32787
Aduzuaso	0	5294	1,540	6834	1174	17.17881
Fawoman*	0	2369	1,088	3457	<b>6090</b>	176.1643
Navrongo	0	5157	2,191	7348	6956	94.66522
Tweakor I	0	7087	1,171	8258	2307	27.93655
Asonti	350	4180	2,520	7050	1864	26.43972
Bokro	0	752	1723	2475	2329	94.10101
Dwomo	0	122	0	122	55	45.08197
Krobo	0	150	0	150	20	13.33333
Yabiw*	0	1402		2352	1706	72.53401
Tweakor II	0	0	1,316	1316	758	57.59878
Shama Schools	0	0	2,667	2667	763	28.60892
Jomoro Schools	0	0	1,480	1480	724	48.91892
Other Areas	0	0	1,208	1208	90	7.450331
TRACTOR	0	200	0	200	160	80
<b>Total</b>	<b>1392</b>	<b>44959</b>	<b>28429</b>	<b>74780</b>	<b>37485</b>	<b>50.12704</b>

**Note:** \* include data on surviving planted seedlings that were obtain from different sources. Hence percentage survival for Fawoman and Yabiw are outliers. Excluding these two communities would bring average survival down to 45%.