

Platform
for Agricultural
Risk Management
Managing risks
to improve farmers'
livelihoods

Tools assessment



Liberia

Study conducted by



In collaboration with



Study on a sustainable
investment plan for ARM training

Full report
April 2019





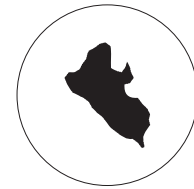
PARM
PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT

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Study on sustainable investment plan for ARM training

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Report produced on behalf of the **Platform for Agricultural Risk Management (PARM)**

by **Dr Gideon E. Onumah**
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Foreword

The **Platform for Agricultural Risk Management (PARM)**, a G7-G20 initiative hosted by the International Fund for Agricultural Development (IFAD), is a multi-donor partnership co-financed by the European Commission (EC), Agence française de Développement (Afd), Italian Government and IFAD, to support Governments and stakeholders on Agricultural Risk Management (ARM). The Platform works in strategic partnership with NEPAD / CAADP in African countries to mainstream agricultural risk management into the national agricultural policy and investment plans (www.p4arm.org). Current work supports ARM assessment and policy process in Cabo Verde, Cameroon, Ethiopia, Liberia, Niger, Senegal, Zambia and Uganda.

This feasibility study report on “Sustainable investment plan for ARM training in Liberia” was launched following discussions between PARM, the Ministry of Agriculture (MoA) and other national stakeholders. The study was conducted by the Natural Resources Institute (NRI), and the report was prepared by Dr Gideon G. Onumah. The institute and its representative take full responsibility for any errors and omissions in this report. They also wish to acknowledge the important support and contributions from the staff of the Ministry of Agriculture (MOA), including staff of the PPD and DTS. Much appreciations goes to the Hon. Minister for Agriculture, Dr. Flomo and the Assistant Minister (DRDRE), Mr A. Wesseh. The full list of MOA personnel who were consulted is included in the list of stakeholders consulted.

Special thanks to Mr George Mattiah (DAO) in facilitating meetings with farmers in the Nimba County. Also appreciated are the roles played by the following in facilitating appointments with key stakeholders: Ms Musu Flomo (MOA/PARM Focal Person), Mr Jallah Kennedy, Mr Kelvin Doesieh (GROW Liberia) and Dr Samuel Duo (University of Liberia). Final appreciations to the PARM Secretariat, especially to the Coordinator of the Capacity Development Programme, Dr Ilaria Tedesco, and Mr Massimo Giovanola (Head of the Secretariat), for the extremely valuable feedback and comments they provided in the course of producing this report.

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List of acronyms

ADAL	Agro-inputs Dealers Association of Liberia
AfDB	African Development Bank
AfT	Agenda for transformation
AHS	Department of Animal Health Services
AIDP	Agriculture Infrastructure Development Program
APHLIS	African Postharvest Losses Information System
ARM	Agriculture Risk Management
ASRP	Agricultural Sector Rehabilitation Project
CBL	Central Bank of Liberia
BRAC	Building Resources Across Communities (MFI)
CAADP	Comprehensive African Agriculture Development Programme
CAAS	Comprehensive Assessment of the Agriculture Sector
CAC	County Agriculture Coordinator
CARI	Central Agricultural Research Institute
CCC	County Community College
CDA	Cooperative Development Agency
CD4ARM	Capacity Development for Agricultural Risk Management
DAO	District Agricultural Officer
DFID	UK's Department for International Development
DRDRE	Department of Regional Development, Research and Extension
DTS	Department of Technical Services
ECOWAS	Economic Community of West African States
EPA	Environmental Protection Agency
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO's Corporate Statistical Database
FBO	Farmer Based Organizations
FDA	Forestry Development Authority
FEWS NET	Famine Early Warning Systems Network
FOs	Field Officers
GAFSP	Global Agricultural and Food Security Program
GDP	Gross Domestic Product
GOL	Government of Liberia
ICT	Information and Communications Technology
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Center
IMF	International Monetary Fund
LAC	Liberian Agriculture Company
LACRA	Liberia Agricultural Commodity Regulation Agency
LBAs	License Buying Agents
LNIC	Liberia National Investment Commission
MEAS	Modernizing Extension and Advisory Services Project
MFDP	Ministry of Finance & Development Planning
MOA	Ministry of Agriculture



MOE	Ministry of Education
NCCC	Nimba County Community College
NDRC	National Disaster Relief Commission
NGO	Non-governmental organization
PARM	Platform for Agricultural Risk Management
PPD	Policy and Planning Department
RAS	Risk Assessment Study
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WB	World Bank
WFP	World Food Programme



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Executive summary

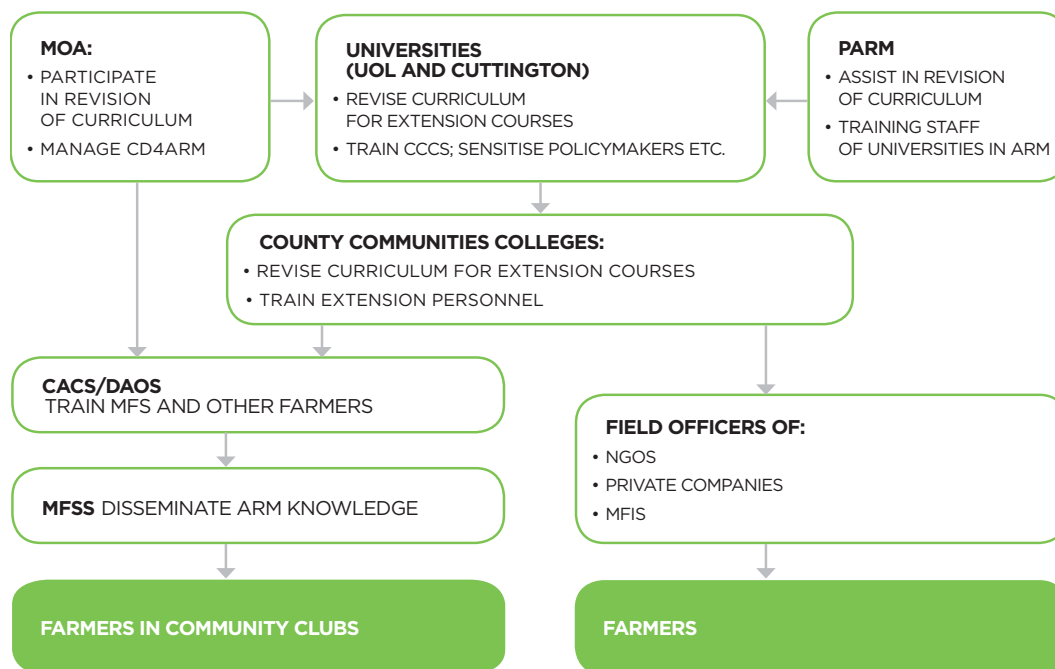
This report is for a study commissioned by the Platform for Agricultural Risk Management (PARM) to produce a sustainable investment plan to develop the capacity of smallholder farmers in Liberia to assess, prioritise and manage agricultural risks. It forms part of activities agreed between PARM and the Government of Liberia (GOL) to promote the mainstreaming of Agricultural Risk Management (ARM) into agricultural sector programmes.

Our review shows that Liberia's agriculture has very high potential, especially as it has very favourable agro-climatic conditions across the entire country. Improved sector performance will enhance food security by increasing food availability and possibly stabilising food prices. It will also boost pro-poor economic growth, increase foreign exchange earnings and employment generation. However, the prevalence of agricultural risks contribute to stymieing rapid growth and transformation in the sector. This is evident from the Risk Assessment Study (RAS) undertaken by PARM (2017).

Smallholder farmers, who are the most vulnerable to agricultural risks, need their capacity developed in order to enable them effectively utilise available ARM tools and practices. This is because, it emerged from consultations with farmers' that though their perceptions of prevalent agricultural risks are consistent with the ones prioritised under the RAS, they generally lack awareness of ARM tools available in the country, except the technology-oriented actions on which they have been trained by extension officers. They also lack skills to assess net benefits of any particular ARM tool as well as the risk implications of new farming technologies which are introduced by extension personnel.

The knowledge gap in ARM is expected to be filled through the Capacity Development for Agricultural Risk Management (CD4ARM), using personnel from both the public and non-government extension systems, as illustrated in Figure X1. This is particularly important because the public extension service is acutely short of staff. To ensure effective use of such personnel, it is important that existing extension personnel from both sectors are trained in ARM. Furthermore, the institutions which train prospective extension personnel such as the universities and the County Community Colleges (CCCs), would need to revise curriculum for the relevant courses to include ARM. Staff in the faculties responsible for such training also need to undergo training.

Figure A: Outline of training in ARM tools in Liberia



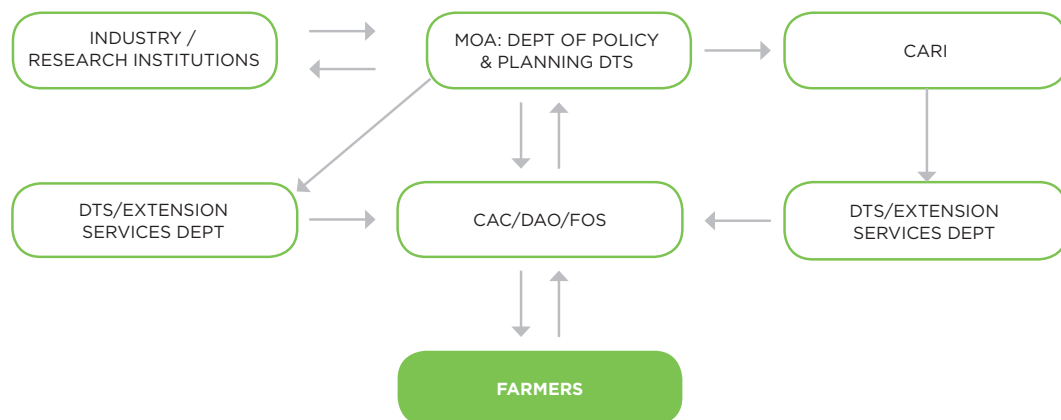
Source: authors

The key principles underpinning the proposed CD4ARM include: local ownership of the programme; adoption of multi-faceted training approach/methods; fostering a cascading effect, particularly important in the context of Liberia due to very low staffing levels in the public extension system; and ensuring programme sustainability.

To enhance the target smallholder farmers' access to appropriate ARM tools, organisations which deliver such tools, e.g. insurance companies, MFIs and private inputs and commodity trading companies have to reorient their operations in order to respond more effectively to the needs of farmers. Policymaking agencies including MOA and other Ministries as well as the CBL have to be involved in a process of generating evidence as basis for developing required ARM tools. It is anticipated that strategic investment by development partners in these initiatives will yield tangible benefits.

A crucial part of the CD4ARM, which is consistent with the holistic approach to ARM advocated under PARM, is the institutionalisation of a farmer-centred, demand-driven process of filling gaps in the supply of ARM tools to farmers. This is illustrated in Figure X2 (also as Figure 11 in Chapter 4), showing the flow of information (feedback) from farmers through the MOA to research institutions (e.g. CARI) as well as industry. The information is intended to inform the research agenda in formulating/developing ARM tools suited to the needs of farmers. However, to further ensure suitability, any innovations are required to be validated through, especially the DTS of the MOA.

Figure B: Farmer-centred process for development of ARM tools in Liberia



Source: authors

A phased approach is proposed in implementation of the CD programme. It includes a **Pre-Launch Phase** involving the following activities:

- Validation by the MOA of the report and recommendations on the feasibility of the CD programme.
- Formulation of consolidated proposal by MOA and PARM as basis for consultations with donors for technical and financial support to implement the CD4ARM and Agricultural Risk Management Early Warning System.
- Setting up coordination structures for implementation of the ARM programme.
- Initiating the revise extension training curriculum in Liberia.

Implementation will begin with a **Pilot Phase** in Year 1 of the programme. During this phase all the activities outlined in Chapter 4 will be implemented but only in 40 communities in the Nimba County. Hence, building the capacity of the NCCC is critical to implementation of actions during this phase.

From **Year 2-4** the programme will be scaled out to Bong and Lofa Counties. During Year 5, apart from implementing the main programme actions, a key activity will be an evaluation of the programme and preparation of a national programme to scale it out based on lessons which emerge.



The cost of the CD4ARM over a 5-year period is estimated at US\$4.884 million (Table 11). The bulk of this cost is attributed directly to the cost of training smallholder farmers as well as their trainers and of sensitising policymakers, providers of ARM tools and other key stakeholders. Investment in training aids including factsheets, posters, flyers etc. as well as video-documentaries and radio programmes is estimated at about US\$385,000. Three project vehicles for the focal counties, to facilitate organisation of community-level training as well as monitoring by the CACs.

The budget also includes provision for the cost of revising curricula for the universities and CCCs, which will include time inputs for resource persons engaged in the process as well as cost of holding consultative meetings between the training institutions and the MOA/MOE. That budget line also includes the two reviews of feedback from participating farmers – a very crucial investment as it is intended to generate evidence for improving the training as well as development of ARM tools.

Annual budgetary requirements is US\$ 695,090 in Year 1 when the county-level activities are only focused on the Nimba County. In Year 2, this rises to just over US\$1.12 million following scaling up to two other counties: Lofa and Bong. The costs build up to just under US\$1.5 million in Year 5 because of the anticipation of possible extension to Grand Bassa, Montserrado and Margibi Counties.

Funding of the proposed budget is expected to be mobilised by the GOL from various development partners, including the following which are implementing ongoing projects and programmes in the sector which have synergies with the CD4ARM: USAID, African Development Bank, JICA, European Union and IFAD.

In consulting donors to support the CD4ARM, it is further recommended that this programme is packaged along with the initiative aimed at developing an Information System for Agricultural Risk Management and Early Warning, which is being supported by PARM and the GOL. The two initiatives have substantial synergies and mutually reinforce each other.

1. Introduction and background

1.1. Introduction

This Report is submitted as a deliverable in the Study on a Sustainable Investment Plan for Capacity Development in Agricultural Risk Management (CD4ARM) for extension services personnel in Liberia. The study is one of the follow up activities being undertaken by the Platform for Agricultural Risk Management (PARM) and the Government of Liberia (GOL) to promote mainstreaming of ARM into agricultural sector programmes in the country, including in particular, Liberia's National Agriculture Investment Plan (NAIP). The country's NAIP has been designed under the auspices of the Comprehensive Africa Agriculture Development Programme (CAADP) of the African Union (AU) and its New Partnership for Africa's Development (NEPAD).

The other parallel study commissioned in Liberia by PARM is aimed at developing a comprehensive Agricultural Risk Information and Early Warning System involving the collection, storage and dissemination of data on weather and climate risks as well as other risks such as crop and livestock pests and diseases and price risk. The principal users of the information generated will include meso-level stakeholders in the agricultural value chain such as farmers' organizations, extension services, processors, input suppliers, financial service providers (including insurers) as well as media and community-based actors who use it to improve services for smallholder producers.

The two activities were agreed between the GOL and PARM after completion of a Risk Assessment Study (RAS) for Liberia. The RAS was conducted by PARM in collaboration with the Research Centre for the Management of Agricultural and Environmental Risks (CEIGRAM) and the main outcome was identification of the priority risks affecting the country's agriculture. The main aim of PARM's activities in the country is to help smallholder farmers to better manage agricultural risks and involves collaboration between the Platform and the GOL through the Ministry of Agriculture (MOA).

1.2. Objectives and outcomes of the study

The main objective of this study is to develop a sustainable investment plan which, when implemented, will strengthen the capacity of Liberia's agricultural extension system in order that it will build the capacity of smallholder farmers in managing agricultural risks. The CD4ARM is intended to empower smallholder farmers in Liberia, enabling them to identify, prioritise and holistically manage agricultural risks, using the best available ARM tools. Achieving this will boost agricultural productivity as well as resilience among smallholder farmers and increase their household income, thereby reducing rural poverty. This will also improve prospects of achieving the GOL's pro-poor growth and development objectives as the contribution of the sector to GDP rises. The study focuses on five main areas of investigation:

- Identification of potential partners to develop, organize and deliver ARM trainings to extension services personnel. Such partners can be national universities and/or research centres, regional or international knowledge and training centres, or international organizations.
- Development of a plan to include ARM training curriculum for both current and prospective national extension workers. The content of the curriculum is expected to be the standard PARM curriculum subject to variations based on the emerging needs of MOA.
- Creating a cascade effect from such training activities towards reaching smallholders on the national territory through trained extension service on ARM. The cascade effect has to be formalized in a way to include a strategy, plan of activities, budget, resources to train a certain number of extension service and consequently a certain number of farmers.
- Strengthening capacity of national extension service, agricultural service providers, MOA and other public bodies at large to train farmers' and farmers' organization and to analyse, mitigate and deal with agricultural risks in order to better assist rural farmers; and
- Related to the above, help in identifying gaps in the provision of ARM tools to farmers and how those gaps can be filled.



Consistent with the TOR for the study, this report includes the following:

- a. an analysis of potential partners to develop, organize and deliver ARM trainings to extension service. Potential partners county community training centres, national universities and/or research institutes, or at regional or international level, including universities, research centres and knowledge and International organizations. The legal and institutional frameworks of potential institution should be discussed to understand the possibility and the modality through which they could host an ARM training course (permanently or on demand) for current and prospective national extension workers;
- b. the creation of linkages between the aforementioned institutions and the MOA;
- c. the adjustment of the (P)ARM curriculum based on the emerging country needs, including different topics, length of the course and target groups within the extension service, emerging needs of vocational institutions, MOA or other institutions;
- d. the development of an action plan of a defined number of trainings for a defined number of extension workers and related timeline (all to be discussed with the authority/MOA);
- e. The development of a cost-benefit and sustainability analysis of such an ARM training activity within the training activities of the (current and prospective) national extension service department of MOA.

1.3. Activities undertaken

The activities undertaken during this study include the following:

- a. Recruitment of a local consultant.
- b. Assembling and review of relevant documentation and literature.
- c. Overlap with team undertaking study on Agricultural Risk Information and Early Warning System to identify areas of synergy to be reinforced in the proposed CD programme and investment plan.
- d. Consultations with key stakeholders, including MOA, training institutions, private ARM services providers, donor missions and NGOs.
- e. Visits to the field to meet farmers and extension officers as well as trainers of extension personnel in order to assess CD needs and also evaluate available facilities for the CD programme.
- f. Presentation of emerging conclusions and recommendations regarding a sustainable investment strategy to the MOA and other stakeholders for validation on 28th March 2019.

1.4. Methodology and basic definitions

1.4.1. Methodology adopted

The methodology adopted in the study includes review of reports, documentation, publications and other literature relevant to the CD4ARM for Liberia. The materials reviewed include documentation on the state of agriculture in the country and of training for extension services personnel in Liberia as well as policy, legal and regulatory documents relevant the subject matter.

A review of the institutional landscape relevant to the development and implementation of the CD4ARM in Liberia was undertaken. The key institutions focused on include those involved in training, such as universities, community colleges and research institutes in order to identify the most suitable institution(s) to play lead roles in the delivery of the CD4ARM for extension personnel linked to smallholder farmers in Liberia. The institutional review also included the MOA and its structures for disseminating essential information and knowledge to farmers at national, district and community levels. Furthermore, the policy process in the MOA was reviewed in order to understand how any formal changes in ARM curriculum can be effected and mainstreamed.

Stakeholder consultations was undertaken, including focus group interviews with smallholder farmers in the Nimba County in order to identify gaps in their capacity to assess risks and take up existing ARM tools. Two focus group discussions were organised in the Nimba County. These were rice farmers in Gbedin represented by 11 farmers, including two women and another group of farmers in Kpain (10 farmers including one woman).

It also included semi-structured interviews with policymakers, private sector actors and civil society organisations for purposes of identifying the roles of different players in the development and delivery of the CD programme. The team also consulted representatives of some international organizations such as the African Development Bank and USAID in order to explore scope for supporting the CD programme within a medium-term time frame (i.e. about 5 years).

Field visits were undertaken to training centres and project sites to learn from relevant experiences and to interact with farmers and other local stakeholders in order to obtain their insights and views on issues such as: revisions in existing curricula; and strategy for delivery of the CD.

A sustainable investment strategy for the CD has been proposed, ensuring not only wide outreach but also creating a cascading effect in the delivery of ARM training for smallholder farmers, taking into account the severe budgetary constraints facing the MOA. For purposes of investigating sustainable funding for the CD4ARM programme, the team of consultants analysed the following:

- The use of public funds for mainstreaming of ARM training activities by current and prospective extension services personnel;
- Alignment with ongoing and planned initiatives by international organizations such as AfDB, USAID and others involving delivery of extension services or capacity development targeting farmers; and
- Private sector/NGO-led initiatives to support farmers' education and related models.

The recommendations made in this report and proposed investment plan for the CD4ARM programme were validated during a meeting of key stakeholders held on 28th March 2019 at the Head Office of the MOA in Monrovia. The team of consultants were assisted by Mrs Musu B. Flomo (the PARM Focal Point at the MOA) and Mr Jallah Kennedy (a local consultant who was involved in the Liberia RAS). The team also received valuable support from the PARM team.

1.4.2. Definition of capacity development

The approach and methodology adopted in the study is underpinned by our definition of capacity development in the context of ARM. We borrow from similar definitions by various development agencies and define CD in ARM as a process through which individuals, organizations and communities obtain, strengthen and/or optimise their abilities, skills, understandings, attitudes, relationships, behaviours, motivations, resources and conditions which enable them to manage agricultural risks and achieve their investment or development objectives over time¹.

This definition implies that CD is not just about transferring, sharing or disseminating skills, knowledge/information for solving problems facing individuals, organizations and societies. As stressed in a World Bank report by Otoo et al. (2009)², the definition also stresses the importance of ensuring the availability of resources as well as efficient and effective means by which individuals, organizations and societies can pursue their development goals.

Noting that CD is about transformations which empower individuals, organisations and societies to pursue development objectives, UNDP (2009) emphasises that it goes beyond training, which must be seen as part of a comprehensive programme to equip target players to deploy available means and technologies (or tools). The tools utilised, in this context to manage agricultural risks, should be suited to individuals or organisations and there should be in-built incentives to encourage uptake.

¹ The definition borrows in particular from what is adopted by the Canadian International Development Agency (CIDA) "Capacity Development: why, what and how", CIDA's Capacity Development Occasional Series.

² Otoo S., N. Agapitova and J. Behrens (2009) "The Capacity Development Results Framework: A strategic and results-oriented approach to learning for capacity development", The World Bank Institute, Learning for Development, Washington, 2009.



In the context of Liberia, CD is to be perceived as encompassing the following three levels as identified in a primer by the UNDP³:

- **At the individual level:** focusing on equipping in particular smallholder farmers with the skills, experiences and knowledge to manage the agricultural risks to which they are vulnerable. The requisite skills, experiences and knowledge are to be acquired through formal training and/or education as well as informally, through observing what their peers and others do and hands-on practice of specific actions to manage agricultural risks.
- **At the organizational level:** ensuring that organisations responsible for developing the capacity of target farmers institute programmes, internal structures, policies and procedures which enable frontline staff to perform required functions effectively.
- **The enabling environment:** requiring creating and maintaining a framework in which organizations responsible for capacity development and their staff have the means to function, including maintaining supportive policy framework for developing ARM tools and fostering access by smallholder farmers to them through enabling laws, rules, policies, power relations and social norms.

In addition to the above, the UNDP (2009) stresses that capacity development has to be locally-driven, in particular, ensuring active involvement of local resource persons. These considerations are taken into account in identifying and proposing specific actions to meet the capacity development needs of target players including smallholder farmers.

1.4.3. Definition of agricultural risks and distinction from challenges

Our definition of agricultural risks is the same as what is adopted by PARM, which is based on the ISO (2009) definition of risks as the effect of uncertain events (potential situation or scenario) involving exposure to danger or loss of something of value. Hence, a risk can typically impede the achievement of the objectives of individuals or organisations. Specifically, PARM (2014) defines agricultural risks as involving potential loss or damage in agricultural production, farm household income, or access to food. Examples of the range of agricultural risks which farmers in Liberia face are illustrated in Figure 1.

Agricultural risks may be categorised as idiosyncratic, meaning the risks usually affect only individual farms or farmers. Example include illness in family as well as plant pests and animal diseases which occur only on individual farms but do not affect an entire community. The risks which are described as covariate risks are those which affect many farmers simultaneously. Their effects may sometimes occur across whole counties or even nationwide. Examples include droughts, floods and erratic rainfall as well as volatility in output prices.

Agricultural risks, as defined above, differ from challenges and constraints in the sector in that though the latter are important limiting factors they cannot be described as risks mainly because they exist and are known and their effects can be anticipated with certainty. Examples of these include lack of good physical infrastructure such as roads, storage facilities and processing facilities. We emphasise that the focus of this feasibility study is not to address (known) challenges and constraints in the sector but rather on the capacity to manage risks.

³ UNDP (2009) "UNDP Capacity Development Primer", UNDP, New York, October 2009:

Figure 1. Types of agricultural risks in Liberia



Source: PARM (2017a)

1.4.4. Definition of agricultural risk management

Though risks usually imply damage or loss, it is also acknowledged that they often drive innovations in agricultural value chains and/or encourage good entrepreneurship due to the possibility of obtaining higher returns (Anton 2015). In this context, we define Agricultural Risk Management (ARM) as a process involving anticipating potentially loss-causing events and planning solutions in advance in order to limit negative consequences. This entails assessing risks; taking decisions on tools to use to manage the risks; and monitoring/evaluating the effectiveness of tools and strategies adopted. PARM (2018) notes that risk assessment encompasses the following:

- Frequency/probability of occurrence: the likelihood of experiencing any natural or human hazard at a location/region at a particular time;
- The elements at risk: identifying the elements which would be affected by the hazard if it occurs; and
- Severity or potential expected losses from a hazard to a specific element at risk.

1.5. Structure of rest of the report

Chapter 2 of this report describes the country context for the proposed CD4ARM. It includes discussion of the importance of agriculture in Liberia, in terms of its contribution to economic growth, poverty reduction, foreign exchange generation and job creation. The discussions also include a summary of the identified agricultural risks which impact negatively on the performance of the sector as well as hamper its growth and transformation. Finally, the chapter also summarises information on available ARM tools in the country.

The focus of discussions in Chapter 3 is on assessment of the capacity development needs of key stakeholders as well as identification of gaps in ARM tools needed by smallholder farmers in managing the priority risks to which they are exposed.

In Chapter 4 the main plan for the CD4ARM is outlined, including defining the generic approach in the design and implementation of the proposed programme. Also outlined are specific activities to be implemented in developing the capacity of different stakeholders and the sources of information for various training programmes.

Phasing of the implementation plan as well as proposals regarding funding and management of the CD4ARM are set out in Chapter 5.



2. CD4ARM in Liberia: the country context

2.1. Introduction

Liberia is a low-income, agriculture-dependent West African country (Figure 2), which posted impressive economic performance between 2007 and 2013. According to World Bank data, the country's GDP per capita was estimated at US\$ 694.32 in 2017⁴. This is well below levels for most of its West African neighbours as well less than have the average for Sub-Saharan Africa (which in 2017 stood at US\$1,573.61). The country's per capita income in 2017 was only marginally above that of Burkina Faso (US\$ 642.04) but much higher than that of Senegal (US\$ 499.53), another nation which is still recovery from years of civil strife.

Figure 2. Map of Liberia



Source: UNDP/NEPAD 2013

Data cited by Hettinger and James (2014) from the African Development Bank (AfDB) shows that annual GDP growth rates posted during the period 2007 – 2013 exceeded those in the rest of West Africa and most African countries. The average growth rate was over 6.5% and peaked at 8.3% in 2013. Inflation also remained low, well below the double digits in many African countries. In 2012 inflation was 6.8%, dropping to 5.3% in 2013. Hettinger and James (ibid) noted that the country achieved high growth during the period due in part to favorable world prices for its main export commodities. It also has to be noted that the economy was recovering from a rather low base after shrinking significantly during the “war period”⁵.

4 Source: <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=LR-BI-CF-MW&view=chart>

5 Source: GROW Liberia (2015).

The economy stuttered from 2014/2015 following the Ebola crisis, which resulted in decreased economic activity and consequent reduction in government revenue, even though the GOL had to spend considerable resources combating the crisis with donor support. A dip foreign direct investment (FDI) following the Ebola crisis as well as fall in the global prices for some of Liberia's commodity exports also contributed to the slump in economic performance between 2014 and 2016⁶.

As shown in Table 1, the economy has bounced back, recovering from negative growth (about -1.6% in 2016) to about 2.5% in 2017. Sustaining economic growth at the pre-Ebola rates depends very much on the performance of the agriculture sector, which accounts for 34% of GDP, employs about 70% of the labour force and is the leading generator of foreign exchange. The rest of this chapter, therefore, focuses on the state of the sector and the challenges which impacts on its performance, including especially agricultural risks.

Table 1: Liberia's selected economic and social indicators (2017)

Indicator	Percent
GDP growth	2.5
Inflation	12.4
Population below poverty level	57.0
Composition of GDP by sector:	
Agriculture	34.0
Industry	13.8
Services	52.2
Share of labour force:	
Agriculture	70.0
Industry	8.0
Services	22.0

Source: AfDB and World Factbook (CIA, 2017).

2.2. Liberia's agriculture

Liberia is a coastal West African country (Figure 1), which is endowed with favourable agro-climatic conditions. It has a unimodal rainfall pattern, with the rainy (or wet) season from May to October, followed by a dry season from November to April. In general, the annual rainfall averages from 3,810 mm to 4,320 mm along the coast and decreases to about 1,778mm in inland areas. The greatest amount of rainfall (5,200 mm) occurs at Cape Mount and diminishes inland to about 1,800 mm on the central plateau. Mean annual temperatures range between 18°C in the northern highlands to 27°C along the coast, but never exceed 37°C nor fall below 12°C. The average humidity in the coastal belt is between 82% during the rainy season and around 76% during the dry season, though it can drop about 30% during the harmattan season when dry, dust-laden winds blow from the Sahara from December to March.

As noted by Holt et al. (2011) Liberia's rainfall patterns and agro-ecology across the various counties do not exhibit the level of regional variability found in other West African countries. The country has a predominant forest-based farming system suited to production of tree crops such as rubber, oil palm, and cocoa; cereals (especially rice and maize); root crops (in particular cassava) and a range of vegetables. The lead agricultural producing counties are Bong, Nimba and Lofa.

Crops account for about 85% of total agricultural production. Large-scale commercial farming is concentrated in major export-oriented tree crops such as rubber and oil palm.

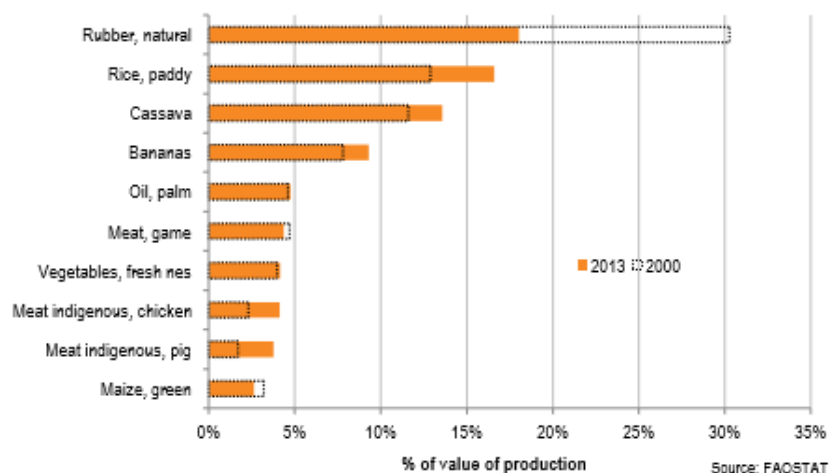
⁶ Source: African Economic Outlook: Liberia (2014).

Other export crops such as cocoa and coffee, as well as food crops are predominantly produced by smallholder farmers. Marine fishing is a source of protein for the population and aquaculture is only recently emerging as an industry that hopes to attract medium-scale investors. The poultry industry is yet to recover to pre-war levels, resulting in significant importation of eggs and other poultry products. As shown in Figure 2 rubber, rice and cassava are the largest subsectors in agriculture in terms of value of output.

Rubber is by far the most important export crop in Liberia. According to Balance of Payments (BOP) data reported by the Central Bank of Liberia (CBL), rubber accounted for an average of 35% of export revenues generated between 2000 and 2017. A single exporter, Firestone, which also runs rubber plantations, accounts for about 80% of the foreign exchange proceeds from rubber exports. Growth in rubber export revenues has, however, been negative. The average growth rate of about -14% per annum. Export revenues from cocoa fared better, with average annual growth of about 15%. Crude palm oil exports also rose significantly but, as was the case for cocoa, export earnings over the period were rather erratic. The two crops combined also account for less than 5% of the value of total merchandise exports. Hence, between 2000 to 2017, the rubber subsector dragged down merchandise exports resulting in an overall growth rate of 8.3% per annum.

Rice and cassava are the main staple food crops in Liberia. Smallholder farmers dominate production of these food crops, relying mainly on traditional, low-input farming technology and practices. For instance, due to the availability of arable land, farmers tend to engage in shifting cultivation – moving to new, more fertile plots rather than adopt practices which ensure maintenance of soil health and fertility. Indeed, the practice of shifting cultivation as well as charcoal production may be contributing to deforestation with adverse micro-climate effects.

Figure 3. Value of most important agricultural products in Liberia (2000/2013)

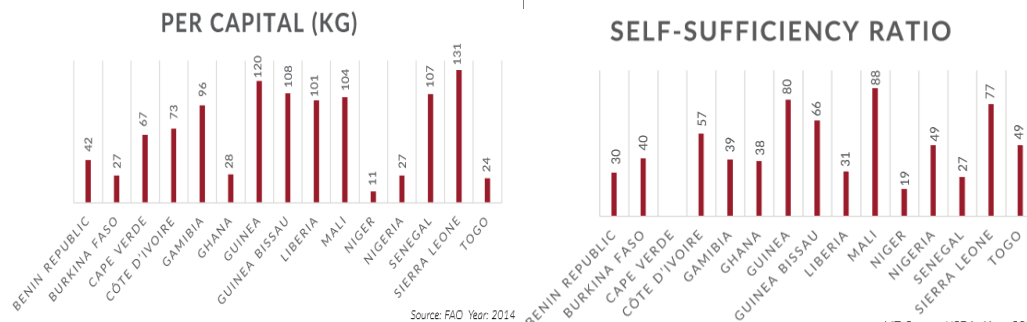


Source: PARM (2016)

Despite the favourable agro-climate, yields tend to be quite low for smallholder farmers. In particular for rice, average yield obtained by smallholder farmers is about 0.8 tonnes per hectare compared to average yields in West Africa of about 1.6 tonnes per hectare⁷. As a result of low productivity in the rice subsector and relatively high per capita consumption rate, the country is highly dependent on rice imports, as depicted in Figure 3 below. In terms of per capita consumption, Liberia ranks third in West Africa, topped only by Guinea and Sierra Leone (Figure 3). However, self-sufficiency in rice production – *measured in terms of total domestic production as a ratio of domestic consumption* – is a rather low 31% compared to 80% in Guinea and 77% in Sierra Leone. The country also imports significant volumes of food. Indeed, CBL statistics indicate that the value of food imports represent an average of 19% of total merchandise imports⁸. It peaked at 25% in 2013. Food imports include dairy products, eggs and vegetable oils all of which the country has the potential to produce.

7 Saito K., Dieng I., Toure A., Somado E. A., and Wopereis M.C (2014) "Rice yield growth analysis for 24 African countries over 1960–2012", *Global Food Security*, Vol. 5. No. 10.

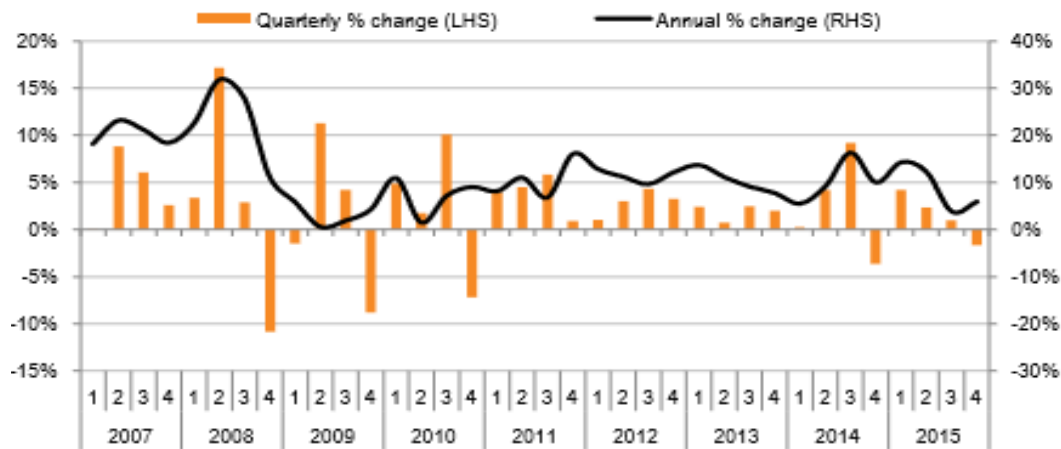
8 Source: BOP data published by the Central Bank of Liberia (2018).

Figure 4. Per capita rice consumption and self-sufficiency ratios in West Africa

Source: NEPAD (<https://www.nepad.org/file-download/download/public/115418>)

2.2.1. Food security implications of dependency on food imports

On one hand, the slow growth in export revenues, due in part to under-performance of agricultural export crops such as rubber, constraints capacity for food imports, leading potentially to domestic supply challenges with inflationary implications. On the other hand, the country's dependence on rice imports, for instance, contributes to transmission of global food price shocks into the domestic market, driving up inflationary pressures in the economy. This is depicted in Figure 5, which shows the highest increase in inflation occurring in 2008, largely because of rising cost of imported rice and other food products on the global markets.

Figure 5. Quarterly/annual change in consumer price index in Liberia (2007-2015)

Source: PARM (2016)

Tsiboe et al. (2016) confirmed the transmission of global food price shocks into the Liberia rice market. Their evidence is consistent with evidence on such effects in food markets in developing countries (Cachia 2014; and Bekkers et al. 2013). These authors further add that the time lag between spikes in food prices in global markets and the transmission effects in domestic markets in developing countries is much shorter than is the case for most developed economies.

The implication of the above conclusions is that governments in Liberia and other developing countries often have a shorter response period than in developed economies. Alper et al. (2016) noted further that the required governments' response to such shocks often impose severe strain on public finances. Tsimpo and Wodon (2008) also add that price hikes in the domestic market tends to impact significantly on the incidence of poverty in both



rural and urban areas. Noteworthy, however, is the observation by some authors that in African and other developing countries which are more reliant on domestic supply of food, the impact of the global price shocks, including that of 2007/08, is significantly less severe (Dorward 2012; and Minot 2010).

To mitigate the risk of civil unrest triggered by food price hikes, especially for rice in the domestic market, the GOL supports maintenance of strategic rice reserves of about 700,000 tonnes (USAID 2016). This is in collaboration with private importers, implying that the reserves are mainly from stockpiles of imported rice. There is, therefore, little or no scope for using local procurement of paddy rice from domestic producers for the reserves as a means to bolster local production. This is despite the fact that sustained increase in domestic production represents an effective means to reduce the country's dependence on food imports and vulnerability to the food insecurity risks as briefly discussed above. To achieve this goal, the risks which are prevalent in agriculture in Liberia are summarised in the next subsection need to be addressed.

2.3. Agricultural risks and impact in Liberia

The Risk Assessment Study (RAS) commissioned by PARM (2017) identified the most critical risks affecting players in agricultural value chains in Liberia. The RAS applied a methodology involving four key elements summarised below:

- Quantitative and/or qualitative assessment of the frequency of occurrence of different agricultural risks; as well as the severity of their impact on year-to-year basis and in a worst scenario for the different agriculture risks.
- The main constraints which increase the impact of the identified agricultural risks and the vulnerability of farmers to such risks.
- Review of literature, reports, studies and other grey (unpublished documentation from NGOs, development partners and government).
- Consultations with various stakeholders, including interviews with experts, farmers and their representatives (during field visits) and by e-mail or teleconference.

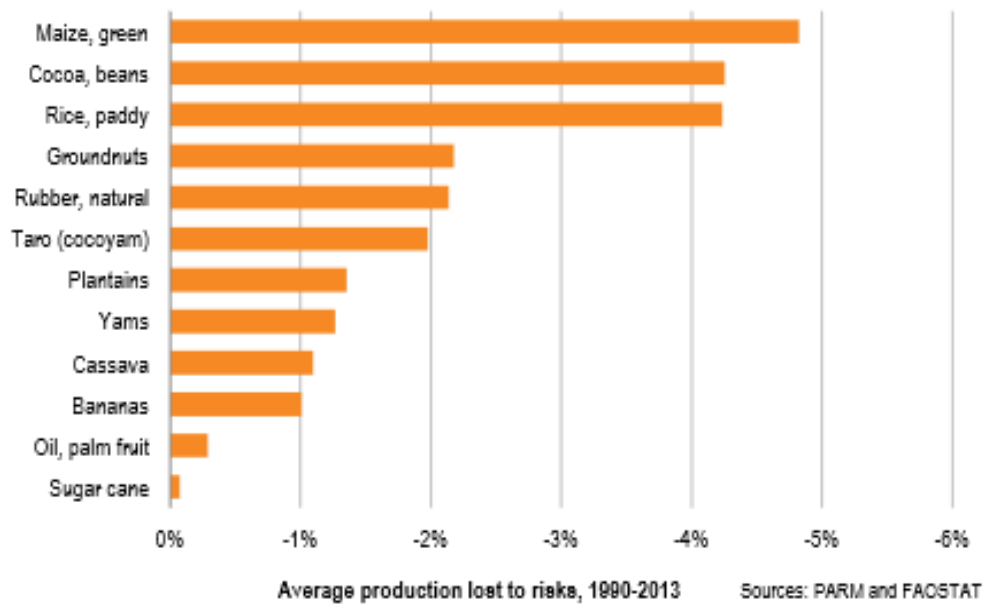
Based on these and using a defined scoring methodology, the agricultural risks in Liberia were prioritised as summarised in Table 2. All subsectors in agriculture are affected by the identified risks, with attributable annual losses ranging between 2% and 4% of output per subsector (based on data from 1990 to 2013). However, as shown in Figure 5, the estimated losses arising from these risks are highest for crops such as maize, rice and cocoa. Climate change is also impacting on especially crop production. For instance, rice yields are predicted to decline by up to 21% if farmers do not adopt required adaptation measures (Pepjin et al. 2017).

Table 2 : Prioritisation of agricultural risks in Liberia

Risk	Severity	Frequency	Worst scenario	Score
High precipitation (Floods)	Very High	High	Very High	4.60
Postharvest losses	High	Very High	High	4.35
Crop pest and diseases	High	Medium	Very High	3.85
Livestock pest and diseases	Medium	Very High	Medium	3.65
Price risk	High	Low	Very High	3.37
Policy risks	Medium	Medium	Medium	3.00
Inputs counterfeit	Medium	Low	Medium	2.59
Windstorm	Low	Medium	Low	2.34

Source: PARM (2017)

Figure 6. Average annual output losses attributable to risks in Liberia (1990-2013)



Source: PARM (2016)

Output market risks include uncertain access, especially to remunerative formal market segments including supermarkets (e.g. for vegetables). Price volatility is another output market risk identified in the RAS (PARM 2017). According to the RAS (PARM *ibid.*), export crops such as rubber, coffee, cocoa and oil palm are the most vulnerable to price volatility. Furthermore, inconsistency in the enforcement of commodity standards (for quality and quantity), especially in the domestic trade in export commodities, the most notable being cocoa creates opacity in the trade which undermines the development of structured transactions. As a result postharvest crop handling is compromised leading to loss of quality premiums which tends to impact negatively on producer incentives (GROW Liberia 2015).

One of the effects of the prevalence of agricultural risks in the country is the limited supply of formal finance to smallholder farmers and other players in agricultural value chains. De-risking is critical in unblocking supply of finance to farmers on a sustainable basis⁹.

⁹ Onumah G. (2016) "Increasing supply of agricultural finance through risk sharing mechanisms and other forms of alternative collateral", Presentation at 4th AFRACA Central Banks Forum, Labadi Beach Hotel, Accra, Ghana, 13-14 October 2016.

2.4. Available agricultural risk management (ARM) tools and gaps in Liberia:

Table 3 contains a list of ARM tools identified in the RAS as available in Liberia (PARM 2017). It is apparent from the consultations with the farmers that most of them are unable to use these tools due to lack of awareness. It is also apparent from experiences in other African and developing countries that the list is not exhaustive in terms of what can be provided in Liberia.

Table 3: Agricultural risk management (ARM) tools in Liberia

Ranking	Risk	Risk management option
1	Rain (Floods)	Watershed management (improvement of roads and drainage) Information system and early warning;
2	Postharvest losses	Improvement of infrastructure (roads, storage, warehouse) Extension services (Adequate information and training farmers)
3	Crop pest and diseases	Extension services (training in plant health management) Diagnostic laboratories for analysis of plants Increasing input availability and use (pesticides) Information system and early warning
4	Livestock pest and diseases/human health	Improvement of Veterinary services, implementation of an epidemiology unit and diagnostic laboratories for animal health Information system to improve preparedness and early warning Reinforce the implementation of WASH
5	Price risk	Market information and early warning systems Strategic food reserves Market Liberalization and standards regulation (LACRA)
6	Policy risk	Strengthening the institutional framework Security of land rights
7	Inputs counterfeit	Strengthening the agro-input market and distribution chain Extension services (Adequate information and training farmers)
8	Windstorm	Information system and early warning

Source: PARM (2017).

2.5. Concluding remarks

The discussions in this chapter confirm that Liberia's agriculture has very high potential, especially as it has very favourable agro-climatic conditions across the entire country. Improved sector performance will enhance food security by increasing food availability and possibly stabilising food prices. It will also boost pro-poor economic growth, increase foreign exchange earnings and employment generation. However, the prevalence of agricultural risks contribute to stymieing rapid growth and transformation in the sector. Smallholder farmers, who are the most vulnerable to such risks, need their capacity developed in order to enable them effectively utilise available ARM tools and practices. This need is to be met through the proposed CD4ARM programme which is fleshed out in the next three chapters.

3. Capacity Development needs and gaps in ARM

3.1. Introduction

In the preceding chapter it was shown on the basis of evidence from the RAS in Liberia by PARM (2017) that agricultural risks lead to losses by farm households and impede the overall growth and transformation of the sector. This chapter discusses the proposed CD4ARM, setting out the objectives and identifying the capacity development needs of the key stakeholders. Also assessed are gaps in the provision of ARM tools which, especially smallholder farmers, can use to manage agricultural risks.

3.1.1. Objectives of CD4ARM

The primary objective of the CD4ARM in Liberia is to empower smallholder farmers to identify, prioritise and holistically manage agricultural risks using best available agricultural risk management (ARM) tools. This objective is expected to contribute to the goal of increasing output and productivity among smallholder farmers in Liberia and, by that raising household income and boosting their resilience through enhancing their capacity to manage agricultural risks in a holistic manner.

CD for smallholder farmers will involve transfer of requisite skills, experiences and knowledge, enabling them to identify and prioritise agricultural risks as well as identify and evaluate the most effective ARM tools to deploy in managing the risks they face. However, consistent with our definition of CD, the process will not be restricted to formal training by trained trainers but also include undertaking activities which foster acquisition of knowledge and skills hands-on practice and observations.

Furthermore, the CD4ARM programme will include building the capacity of relevant organisations, especially those responsible for training trainers or farmers to enable them perform effectively. It is also anticipated that the CD4ARM will, through a process of generating farmer feedback, contribute either directly or indirectly to the creation and maintenance of enabling policies and regulations for ARM tools. This objective is to be achieved through the broader goal of mainstreaming ARM in sector policies and initiatives.

3.1.2. Target stakeholders

The ultimate target stakeholders for the CD4ARM are smallholder farmers, which includes Ideal or Model farmers (MFs). Due to acute staffing and other constraints, detailed in Section 3.5.1, the public extension and advisory system in the country is unable to reach smallholder farmers. To ensure that they can benefit from the CD4ARM we propose a plan of action, the details of which are discussed in Chapter 4, that equips available public extension personnel (mainly the DAOs and CACs) to train MFs and some other farmers who can disseminate the information obtained to other farmers through Farmers Clubs in their communities.

The MFs have farm sizes which range between that of the average holdings for smallholder farmers (estimated by MOA at 1.5 hectares or less) and medium-scale farmers (with holdings of 3-5 hectares). They are often better-educated and better-endowed in terms of landholdings and capital than the average smallholder farmer. They also tend to be keen participants in various training programmes as well as projects initiated by donors, NGOs and government. As a result, they are usually early adopters of new farming technologies and innovations in agricultural practices. In the design of the CD4ARM, specific attention will be paid to how these characteristics of MFs can be taken advantage of to benefit other smallholder farmers.



Other categories of individuals to be targeted under the CD4ARM include the following:

- a. Agricultural extension personnel in the public service as well as field extension and advisory agents employed by NGOs working with smallholder farmers and donor-funded agricultural projects.
- b. Trainers who will provide training for other stakeholders, including staff of selected universities and of selected County Community Colleges (CCCs).
- c. Policymakers, especially from the Ministries of Agriculture and Trade as well as the relevant Senate Committee on Agriculture.
- d. Technical staff of donor missions as well as NGOs supporting initiatives in agriculture.
- e. Private companies targeting smallholder farmers such as inputs distributors and major buyers of agricultural commodities e.g. cocoa and rubber.
- f. Technical staff of providers of ARM tools including from banks, insurance companies and providers of various agricultural services.

3.2. Assessing the CD needs of smallholder farmers

Assessment of farmers CD needs was undertaken through semi-structured focus group discussions focusing on their perceptions on prevalent agricultural risks as well as available ARM tools which they use or are familiar with. The discussions were held with two groups of farmers in Nimba County¹⁰: in Gbedin (mainly rice farmers) and Kpain (producing a range of crops including cocoa, rice and vegetables). The District Agricultural Officer (DAO) facilitated the two meetings.

3.2.1: Farmers risk perceptions consistent with evidence in RAS

It emerged from the focus group discussions that farmers' perceptions of risks were consistent with the prioritisation generated through the more robust objective analysis undertaken during the RAS. According to the two groups of farmers the main agricultural risks to which they are vulnerable include the following:

- **Weather risks** such as flooding, erratic rainfall (including delayed onset of rains, dry spells during the gestation of crops and which affect yield, and late rains during the harvest which can hamper field drying of crops and therefore cause significant postharvest losses, especially as the quality of the harvested crop deteriorates quickly);
- **Crop and livestock diseases and pests**, the severity of which is partly attributable to limited access to plant health services as well as veterinary services;
- **Market risks** including in particular limited access to output markets leading to the collapse of prices, especially for highly perishable vegetables. In cocoa marketing the farmers cited lack of transparency in enforcement of quality standards as well as in pricing, often discouraging them from drying beans properly, hence missing out on quality premium. It also affects local cocoa buying companies which are willing to offer quality-benchmarked prices because their competitors quote similar prices for substandard beans but compensate by "cheating on weight through using adjusted scales"¹¹.
- **Policy risks** illustrated by cases such as lack of consultation with farmers when existing regulations and byelaws are to be enforced resulting in losses to farmers. A particularly poignant case was that of enforcement of regulations regarding housing cattle in urban communities in the Nimba county. This was reportedly done without sufficient consultation or notice to farmers, who were compelled to house their animals in structures with insufficient security. One farmer reported loss of virtually his whole herd as a result of this actions. It was also reported by some rice farmers that they were not consulted in the design of an irrigation scheme in their community, resulting in engineering design flaws which could have been avoided if the designers had taken advantage of their local knowledge. They were then suffering from the effects of poorly constructed irrigation canals, a situation which government intends to remedy but at some cost.

¹⁰ Nimba County is one of the focal counties for the CD4ARM, selected for reasons outlined in Section 4.2.

¹¹ Pers. comm with farmers at Kpain in Nimba County on 8th March 2019.

3.2.2: Farmers lack awareness of/access to effective ARM tools

Despite the coincidence of farmers perceptions with prioritised risks, there was little evidence of their awareness of the identified ARM tools, except technology-oriented advice provided by extension officers, with whom they reportedly had little interactions. In general, rather than talk about tools they can use on their own to manage risks, they usually made reference to the need for “government to come to their aid”. From follow up discussions it emerged that this apparent reliance on government actually reflected their “helplessness in a situation in which they lacked a means to manage on their own”. The implication is that they can potentially become more reliant on themselves if effectively armed with the ARM tools to address the identified agricultural risks.

3.2.3: Identified CD needs of smallholder farmers

From the field interactions it is evident that farmers, including MFs, require capacity development in the following areas:

- Understanding the basics of assessing and prioritising agricultural risks and their impact on household wellbeing, including assessing impact on enterprise profitability and/or household income;
- Information on available ARM tools and how they can be effectively utilised;
- How to assess the utility of an available ARM tool relatively to a traditional risk minimisation or coping strategy. This requires that information is provided on the cost and related benefits from using any new tools;
- Due to relatively high levels of illiteracy among smallholder farmers it is important that any form of knowledge transfer involves the use of the local language and illustrations which make it easier to understand what is being taught; and
- Institutionalisation of feedback systems which allows farmers' experience to influence the development and dissemination of new farm technologies and practices, including ARM tools which may be promoted.

3.3. CD needs of trainers of smallholder farmers

It is expected that the frontline personnel who will be involved in directly in CD for smallholder farmers are field staff of organisations which provide extension and advisory services to farmers. These include extension officers in the public service, who are employed by the MOA – they generally have a basic Bachelors Degree in Agricultural Extension and, on the average, have over 10 years experience in the service. Extension/advisory service providers in the non-government sector include those employed by donor-funded projects in agriculture, NGOs working with farmers, private companies transacting with farmers (including agro-dealers selling agricultural inputs). In general these extension agents have similar qualifications as those in the public sector and they also lack generic capacity to train farmers in ARM.

3.3.1. CD needs of public extension personnel

The CD needs of government extension/advisory agents were identified through consultations with senior personnel of the MOA, in particular in the Extension Services Department as well as the Department for Technical Services (DTS). Further evidence was also obtained through interactions with field staff of the MOA. It is quite evident that the government extension and advisory staff face constraints such as transport and other logistics to deliver required services.

Very evident, however, is the fact that even if they are adequately equipped, they lack basic capacity to train farmers in ARM. This is largely because their training, prior to being employed, does not include ARM – the existing courses in extension training by the universities and CCCs does not include ARM. Furthermore, ARM is not covered in refresher training for field extension officers, as the focus of such training is on transfer of knowledge on new farm technologies and/or farming practices.



To fill this gap for purposes of implementation of the CD4ARM, government extension officers in the field, including the CACs, DAOs and Field Technical Officers will require ARM capacity development in the following areas:

- Basics in risk identification, assessment and prioritisation, including appropriate methodologies which they have to apply as well as those which they have to train farmers to apply.
- Knowledge of available ARM tools in the country and how they can be accessed and utilised by smallholder farmers.
- Basics in cost/benefit analysis to enable the extension personnel assess and to train farmers to assess net benefits from adopting specific ARM tools as well as other innovations in farming technology and practices.
- Effective communication of ARM tools to farmers, where an objective assessment of the tools rather than promotional messages which stress optimistic outcomes only. It is partly for this purpose, and also to ensure that gaps in the supply of ARM tools are progressively filled, that in Section 4.7 we propose institutionalisation of a process to develop tools which meet the needs of farmers.

3.3.2. CD needs of extension/advisory personnel in non-government sector

To assess the CD needs of extension/advisory agents in the non-government sector, consultations were held with donor-funded projects such as GROW Liberia, private companies in the agricultural value chains (e.g. Wienco Liberia) and with technical advisors at some donor missions in the country. It emerged from these consultations that extension agents in this category tend to be better equipped in terms of transport logistics to visit farmers. They may also be equipped with Factsheets detailing advisory information to be provided. Despite this they also lack awareness of agricultural risks and ARM for similar reasons as those identified in the case of the government extension officers. For instance, the Factsheets they use focus mainly on agronomic practices and may include information of how to manage crop diseases and pests. However a holistic approach to ARM is missing.

For the above reasons, we conclude that the CD needs of extension agents in the non-government sector are broadly the same as those in government (identified in Section 3.2.1).

3.3.3. CD needs of staff of extension training institutions

Universities such as the University of Liberia (UOL) and Cuttington University (CU) offer courses in agricultural extension, including bachelors and postgraduate degrees. The County Community Colleges (CCCs) also offer courses in extension with Diploma and Associate Degrees being awarded. It however emerged from consultations with senior staff of the UOL and Nimba County Community College (NCCC) that the curriculum for these courses do not include much on ARM.

UOL is already in the process of revising its curriculum for courses in agricultural extension and therefore has an opportunity to incorporate ARM. NCCC is also establishing an Entrepreneurship Centre, which will modules on business management, value chain analysis and feasibility analysis for all its students. Management of the NCCC intend to incorporate ARM in the modules to be offered by the Entrepreneurship Centre, which will be available to students taking courses in agricultural extension, who can be absorbed into the national extension system.

Training of the staff of the universities and CCCs in ARM is considered essential in equipping them for delivery of the ARM modules/components in their course. Their CD needs in this regard include the following:

- Basics in risk identification, assessment and prioritisation;
- Knowledge on available ARM tools in the country and how they can be accessed and utilised by smallholder farmers; and
- Effective communication of ARM tools to farmers, where an objective assessment of the tools rather than promotional messages which stress optimistic outcomes only.

3.4. CD needs of other key stakeholders

Other stakeholders targeted are policymakers in general, including in particular senior technocrats at the MOA. The training will address capacity gaps in the following areas:

- Making clear distinction between risks and challenges in the sector, as the approach adopted to address these differ.
- Broaden their awareness of ARM tools beyond technology-based tools (e.g. promoting drought-resistant plant varieties and irrigation) to include an understanding of how tools such as insurance and innovative output marketing systems can benefit farmers.
- How to incorporate ARM in the planning process and in the design and implementation of various interventions in the sector.

Technocrats in NGOs and those engaged on various donor-funded interventions in the sector can benefit from similar training in order to fill similar capacity gaps. Also to be targeted are officials of agencies, including those in the private sector, which provide ARM tools including for example insurance companies and financial institutions. These providers often focus on providing tools which address specific risks in agricultural value chains. They often do not take a holistic perspective in terms of risk management, leading to suboptimal outcomes which then discourages uptake by smallholder farmers.

3.5. Review of CD needs in organisations linked to CD4ARM

The key organisations reviewed are those which are engaged in provision of extension and advisory services – both public and non-government – as well as those involved in actions which impact on the supply of ARM tools and/or capacity development for uptake of such tools by smallholder farmers. These are discussed in this section.

3.5.1. Pluralistic agricultural extension system in Liberia.

Liberia has a pluralistic agricultural extension system including service provision by the public sector under the MOA as well as non-government agencies (discussed in Section 3.5.2). The public extension system is run by the MOA, the organisational structure of which is depicted in Figure 6 below. The Department of Regional Development, Research, and Extension (DRDRE) at the MOA is directly responsible for the provision of extension services to farmers through a decentralized structure consisting of County Agricultural Coordinators (CACs) who run offices in the 15 counties in the country. Below these are District Agricultural Officers (DAOs) and Field Technical (FTs). The FTs are expected to be the frontline field staff who directly interact with and transfer requisite knowledge and skills to farmers. However, staffing at this level is extremely low, as illustrated in Box 1, which captures staffing levels for public extension personnel in the Nimba County in March 2019 (when the consultants visited).

Box 1: Staffing in Public Agricultural Extension System in the Nimba County (March 2019)

Nimba County has six (6) statutory districts, including Sanniquellie, the County capital. However, it has in all 10 agricultural districts. As is the case in all the 15 counties in the country, Nimba has a CAC at post. It also has 4 (four) DAOs at post instead of the required 10 (one for each agricultural district). Each agricultural district is expected to have 2 (two) Field Technicians (FTs) but currently none is at post in Nimba County, implying a shortfall of 26 extension personnel in the County. Reports from MOA officials indicate that the situation is very similar in all the counties.

Source: Consultations with MOA officials in Monrovia and in Nimba County in March 2019.



A consequence of the above is a ratio of extension personnel to farmers, estimated to be between 1:3,500 and 1:5,000 compared to 1:1,500 in Ghana (Duo and Bruening 2007) and about 1:600 in Ethiopia (PARM 2018¹²). This is due to severe budgetary constraints facing the MOA and there is indication that it (funding problem) is likely to ease in the near term.

A notable feature of the public sector extension service is its focus on technology-driven increase in agricultural productivity and output by farmers. The Central Agricultural Research Institute (CARI) therefore plays a key role in the generation of evidence-based extension and advisory information for farmers. Its capacity in terms of staffing and research facilities, which was decimated during the war years, is reported to be recovering as a result of recent investment by GOL and donors. However, officials of the MOA indicated that the bulk of the investment has been in the form of newly recruited staff, refurbishment of offices and acquisition of office and laboratory equipment. Funding for reaserch is, therefore, limited.

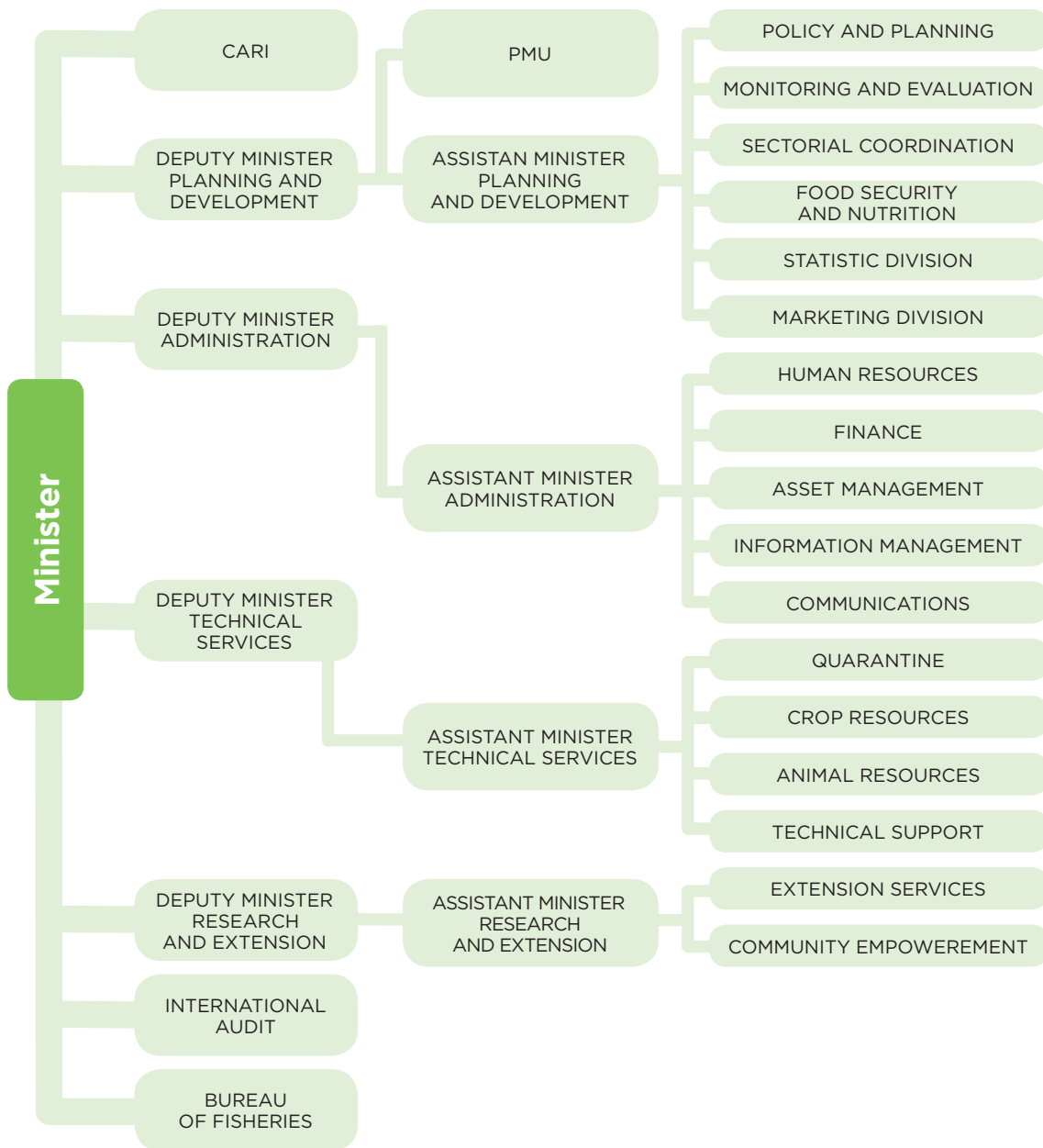
During the pre-war period, the process of framing extension information involved CARI channelling research outcomes through the Department of Technical Services (DTS) of the MOA. The DTS was required to validate the results through field trials on demonstration plots. Participating farmers were expected to observe yield increase but also assess palatability and consumer acceptance (e.g. of new crop varieties). This is no longer working, partly because of weak coordination between MOA and CARI and lack of resources for the field trials.

The CD needs of the key resource persons in the public extension system were identified in Sections 3.3 and 3.4. In addition, the following issues have emerged as critical in implementing the proposed CD4ARM:

- a. Staffing levels: though this is noted as a major challenge, there were no indications about resolution of the underlying budgetary constraints. For this reason, the proposed CD4ARM takes this challenge into account in recommending the way forward. In particular, it recommends adoption of measures which lead to cascading the effects of actions taken beyond a narrow band of target smallholder farmers. The details of the cascading approach are outlined in Chapter 4.
- b. It is important to strengthen inter-departmental coordination in the MOA, especially involving the departments which are engaged in the generation and/or dissemination of extension information. The key departments include DRDRE, DTS, Food Security and Nutrition and Policy and Planning. It is also crucial that coordination between the MOA and CARI is strengthened, not only in vaildating and disseminating technology-based extension advice but also in setting the research agenda.
- c. Institutionalising a feedback system involving farmers is an important component of the CD4ARM. It will entail generating evidence from field testing new technologies, including making it possible to identify associated agricultural risks and ARM tools to be adopted in addressing them. Furthermore, as indicated above, such a process will feed into a demand-driven agricultural research agenda whilst ensuring that sector policies are also aligned to the needs of farmers.

12 Draft Feasibility Report on CD4ARM in Ethiopia.

Figure 7. Organization Chart of MOA, Liberia



Source: PARM (2017)

3.5.2. Delivery of agricultural extension by non-government agencies

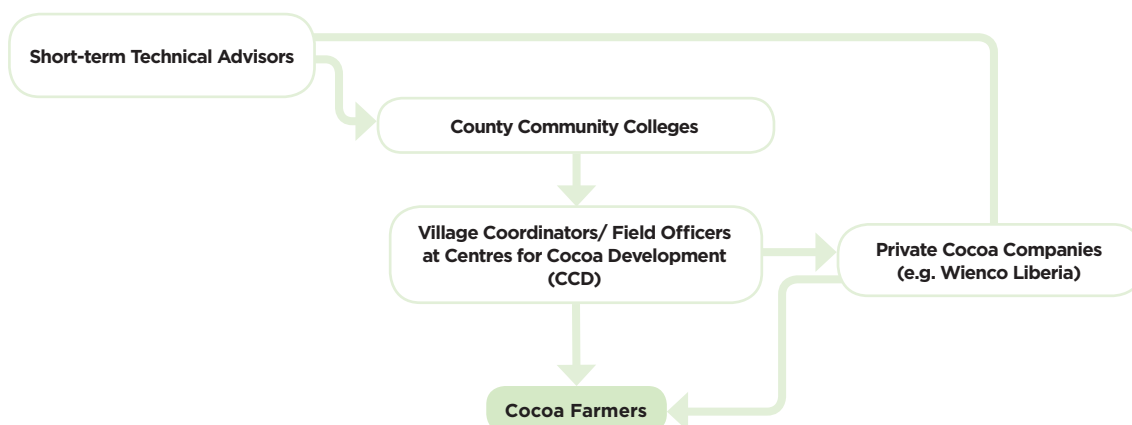
Non-government agencies involved in the provision of agricultural extension services in Liberia include the NGOs listed in Table 4. This list, which is not exhaustive, does not include significant investments by donors (e.g. the EU, France and Germany) in agriculture and related sectors. Those investments are reported in Box 3 (Section 5.3).

Table 4: NGOs, donors and cooperatives providing extension services in Liberia

No	Entry	Status	Involvement
1	Solidaridad	International NGO	Improving Tree Crop value chains
2	Cultivation of New Frontiers in Agriculture (CNFA – supported by USAID)	International NGO	Value Chain
3	ACDIVOCA (supported by USAID)	International NGO	Tree Crops Value Chain
4	US African Development Foundation (USADF)	International NGO	Capacity building
5	FAO/MOA/Farmers	Donor	Farmer Field Schools and CD in postharvest extension.
6	WFP/MOA/MOE	Donor	Capacity building
7	IFAD/MOA	Donor	Capacity building in tree crops
8	Community Help Agriculture Programme (CHAP)	International NGO	Promoting rice industry
9	Logan and Logan	National NGO	Promoting rice industry
10	CWAP	National NGO	Promoting tree crops
11	ARS-Inc	Local NGO	Food security
12	MPARD-Inc	Local NGO	Food security
13	Association of Evangelicals of Liberia	Local NGO	Food security
15	Tarpeleseh	Cooperative	Cocoa Value Chain
16	Dokodan	Cooperative	Rice Value Chain
17	Girl promoter	Local NGO	Cassava Value Chain

Source: Authors from consultations with various stakeholders.

Some private companies are also involved in provision extension services to farmers. An example is Wienco Liberia Ltd. Which combines extension services to cocoa farmers to its core business of selling inputs to the farmers and buying cocoa beans which it exports. Originally, Wienco provided extension advice through its Field Officers, who also act as agents in buying cocoa beans from the farmers. Solidaridad, an international civil society organisation is collaborating with GROW Liberia¹³ and private cocoa marketing companies to transform the cocoa subsector.

Figure 8. Private sector agricultural extension in Liberia

Source: Authors from consultations with key stakeholders (March 2019)

¹³ GROW Liberia is funded by the Swedish International Development Agency (SIDA) to support the development of the following value chains: tree crops (rubber, cocoa and oil palm) as well as vegetables.

The extension and advisory system which is being promoted in the subsector builds on a model developed by GROW and is illustrated above (Figure 7). The process involves recruiting subject matter specialists (the Short-term Technical Advisors), mainly agronomists to produce manuals with advice on actions to be taken by farmers at different stages in the crop cycle. The manuals are used for training trainers in CCCs, who in turn train Field Officers of the cocoa companies as well as Village Coordinators (who can be described essentially as Lead or Model farmers). Factsheets developed by the Technical Advisors are also used by the Village Coordinators and Field Officers to train farmers.

Similar models exist for rubber and vegetables, the latter involving the following:

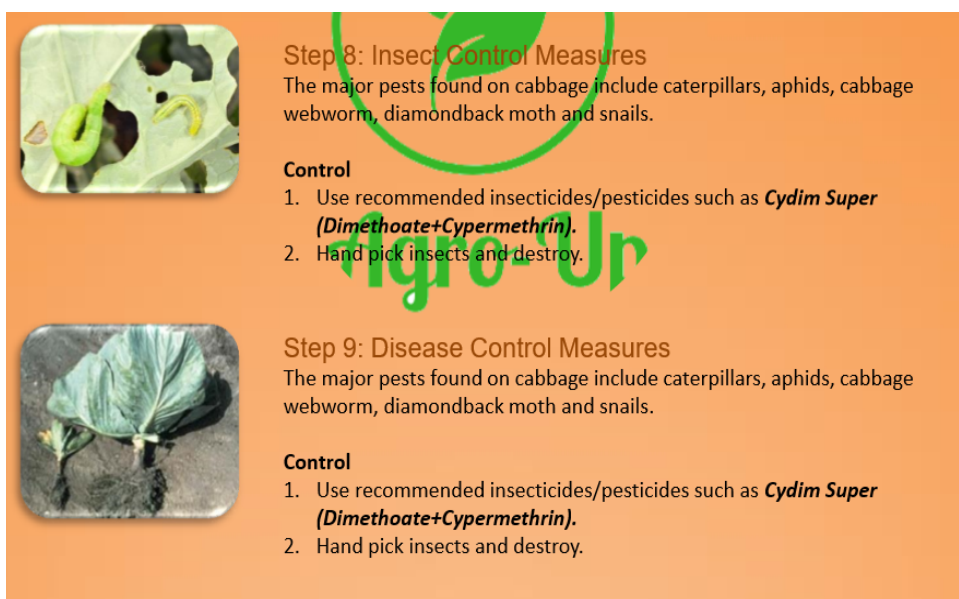
GROW Liberia develops training manual (involving a local Business Development Service Provider and an international agronomist).

- Manual used by local trainers in training agro-dealers and their shop assistants in basic record keeping, financial management and marketing and branding techniques as well as good agricultural practices (GAP) including proper use of farm inputs.
- Also trained are Lead/Model farmers (MFs) – mainly in relevant GAP. They in turn train other farmers using available Factsheets. The MF are remunerated for their role through a commission-based system from the agro-dealer (depending on how many farmers they are able to mobilise to buy inputs from the agro-dealer).

It is apparent from a review of the Factsheets or Production Guides used for training farmers that insufficient attention is paid to agricultural risks. Out of a 10-point training agenda for Cabbage Production, only two risks are discussed (Figure 8). These are insect and disease control. Other risks such as output marketing uncertainty and severe producer price collapse are neither identified nor appropriate mitigation advice provided. This gap needs to be filled.

Other important issues which need to be addressed include lack of quality-control over the extension advice provided. Some anecdotes from field consultations suggest that there have been a few occasions where outcomes from application of advice provided have either been negative or suboptimal. What is uncertain is whether this happens because inputs distributors are involved in dissemination of advice on application. MOA officials consulted stressed the need for DTS and DRDRE to validate any advice disseminated to farmers and also monitor delivery. This process will also ensure harmonisation of extension and advisory information provided by both the public and non-government sectors.

Figure 9. GROW Liberia Cabbage Production Guide



Source: GROW Liberia



3.5.3. Enabling trainers in agricultural extension

In the discussions in Section 3.3.3, we identified the CD needs of staff in the universities and CCCs, who lecture in courses in agricultural extension. There are, however, predicated on the assumption that ARM will be included in the agricultural extension courses they offer. An opportunity exists to incorporate ARM in UOL's curriculum as a revision process has been initiated and is yet to be completed¹⁴. Similarly, NCCC has an opportunity to incorporate ARM in courses offered to potential extension personnel. According to Senior Management staff of the College, It is soon to launch an Entrepreneurship Centre which will train all its students in business management and related courses. The Management of NCCC therefore plans to include ARM in the curriculum of its Entrepreneurship Centre.

It was observed that, in both institutions, the MOA was not involved in the development or revision of curriculum for training extension personnel, though it is expected to absorb most of the graduates. There is also no evidence that farmers' needs formed the basis for the revisions being proposed. There was general consensus, especially among technocrats and policymakers, that the MOA and the Ministry of Education (MOE) need to be involved in such a process. The role of the MOA is to ensure that training of prospective extension personnel is consistent with the identified needs of farmers, whilst the MOE will see to compliance of any changes with any national accreditation standards.

3.6. Catalysing provision of ARM tools accessible to smallholder farmers

PARM stresses a holistic approach to ARM, meaning that the CD4ARM is not simply about transfer of knowledge to smallholder farmers. It also requires fostering the creation and maintenance of an environment in which ARM tools are made available for managing the range of agricultural risks depicted in Figure 2 (Section 1.4.3). A brief review of available ARM tools shows gaps which need to be filled.

For instance, farmers can benefit from transfer of knowledge on climate smart agricultural practices in managing the effects of weather risks¹⁵. Also available are technologies and agronomic practices which farmers can adopt to manage crop pests and diseases. Currently, these are being disseminated mainly by the non-government extension system due to challenges facing the public agricultural extension system (as noted in Section 3.5.1). Lack of coordination and effective quality control over the non-government system has created concerns about the quality of the extension/advisory information being provided.

Resource constraints have limited investment in infrastructure such as irrigation facilities which are known to boost output, especially of rice, in the country. The situation is similar with regards to investment in rural roads as well as postharvest handling, storage and processing facilities. It is for this reason that the GOL has prioritised investment in infrastructure along with its prioritisation of the development of agriculture. However, it was noted in the course of this study, that sometimes benefits to farmers from infrastructure investment are suboptimal because they are not effectively linked to other ARM tools. For instance, as observed in Gbedin, farmers using irrigation facilities for rice production also have access to a modern rice mill but there is no structured commodity marketing system which will enable them to manage uncertainty regarding access to remunerative markets as well as price volatility.

A structured commodity trading system can create an opportunity for farmers to supply locally-produced rice into the GOL's Strategic Grain Reserve (SGR). This will allow the GOL to buy quality grains from smallholder producers, thereby expanding their access to formal markets whilst offering a lever by which downside price risks can be moderated. Governments in Tanzania and Zambia as well as the World Food Programme (WFP), have successfully engaged in using such systems for local procurement of grains for purposes of maintaining reserves and/or relief food distribution. However, this opportunity is not being exploited in Liberia.

¹⁴ A faculty member at the UOL, who is leading the process of revising the curriculum (Dr Samuel Duo), has been involved in this study and confirmed this opportunity.

¹⁵ A rich source of information on this is FAO (2013) "Climate-smart agriculture sourcebook", FAO, Rome, 2013.



Unlike many African countries, including Burkina Faso in the sub-region, Liberia's insurance industry does not offer agricultural insurance products. This was confirmed during consultations with the CBL, which has oversight of the industry, and the four leading insurance companies in the country¹⁶. This limits the potential to improve access to finance, for instance, by bundling insurance with credit as has been successfully piloted in Zambia involving the national farmers organisation (Zambia National Farmers Union (ZNFU), a private insurance company and a commercial bank¹⁷.

During discussions with, especially rice farmers in Gbedin in Nimba County, it emerged that lack of consultations led to some design flaws which has impacted negatively on their irrigation system and is proving costly to remedy. Involving farmers has proved pivotal in the development of ARM tools which are suited to their needs. For example, the national farmers organisation in Burkina Faso – the Confederation Paysanne du Fado (CPF) – has become a major player in consultative forums set up by the government to promote ARM tools in the country. This is based on the experience they gained in leading pilots in Warrantage and crop insurance under the FARMAF Project.

3.7. Conclusions on capacity development needs of stakeholders

The discussions in this chapter have shown that farmers' perceptions of prevalent agricultural risks are consistent with the ones prioritised under the RAS. However, it is evident that they lack awareness of ARM tools available in the country, except the technology-oriented actions on which they have been trained by extension officers. They also lack skills to assess net benefits of any particular ARM tool as well as the risk implications of new farming technologies which are introduced by extension personnel.

The knowledge gap can be filled through CD4ARM using personnel from both the public and non-government extension systems. This is particularly important because the public extension service is acutely short of staff. To ensure effective use of such personnel, it is important that existing extension personnel from both sectors are trained in ARM. Furthermore, the institutions which train prospective extension personnel such as the universities and the CCCs, would need to revise curriculum for the relevant courses to include ARM. Staff in the faculties responsible for such training also need to undergo training.

In Section 4.7 we propose a process through which ARM tools, appropriate to the needs of farmers, will be developed on a sustainable basis and with the involvement of farmers, research institutions such as CARI, private ARM tools providers and policymakers.

¹⁶ The leading insurance companies in Liberia are: Insurance Company of Africa (ICA), Activa International Insurance, Accident & Casualty Insurance Company, Inc. (ACICO) and Mutual Benefit Insurance Company.

¹⁷ Piloted under a EU-funded Farm Risk Management for Africa (FARMAF) Project from 2011 to 2016. The outcome is available in a final project report submitted to the EU.

4. Action plan for proposed CD4ARM programme

4.1. Introduction

The CD4ARM programme we propose in this chapter reflects the needs identified for key stakeholders in the preceding chapter. In this chapter we outline the main focal areas in which implementation of the programme will occur; the basic principles underpinning its design; and the key elements of the programmes proposed for target stakeholders.

4.2. Focal counties targeted

There is potential for the CD4ARM programme to be rolled out to farmers throughout the country. However, the focus of the proposed programme will specifically be Bong, Lofa and Nimba Counties. These counties, along with Grand Bassa, Montserrado and Margibi (shown in Figure 9) constitute the development corridor selected by GOL for strategic investment by the public sector. The GOL is also making efforts to attract private investors into the six counties, which collectively are home to 79% of the country's population, 68% of the farming population and 69% of the poor. Officials of the MOA also describe the three focal counties under this programme as the “bread basket” of Liberia.

Figure 10. Map of Liberia showing major agricultural counties



Source: PARM (2017)

At the county level, the main target stakeholders will be smallholder farmers, including Ideal or Model Farmers (MFs) who will be trained not only for the purpose of building their own capacity in ARM but also to be part of the pool of resource persons for training other smallholder farmers. Other resource persons who are expected to be involved in the training of farmers include CACs and DAOs from the MOA as well as others such as Field Officers of NGOs and private companies involved in inputs and output marketing in subsectors such as cocoa and rubber. Also to be trained as trainers are agro-dealers servicing farmers in the focal counties and the CAPs of BRAC.

4.3. Principles underpinning CD4ARM

The design and implementation of the CD4ARM are based on four key principles discussed in this section.

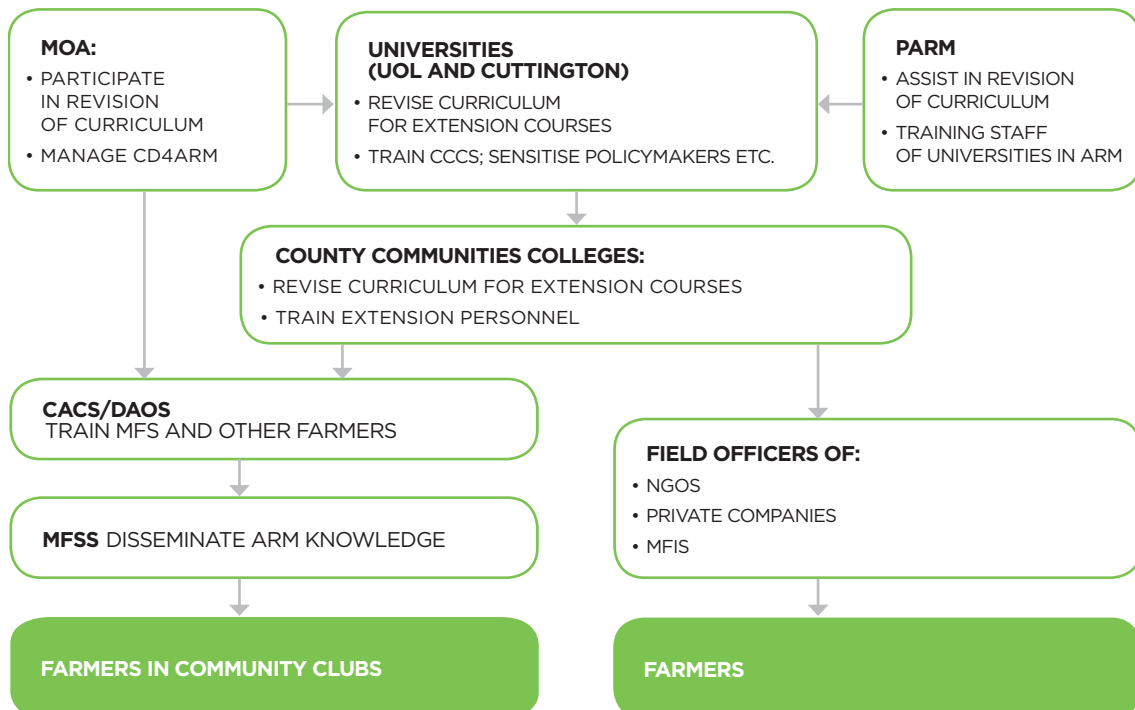
4.3.1. Local ownership of CD programme

Notwithstanding the fact that the programme has emerged through the PARM process and also that the support of development partners is required, it is expected to be owned by GOL and embedded in its sector growth and development strategy as well as the country's broader human capital development strategy. As such the MOA and local tertiary education institutions (e.g. UOL and CCCs) are to be involved in its design and implementation. Resource persons from within the counties, including those from both the public and non-government extension and advisory services systems are to be engaged. Furthermore, it is anticipated that feedback from farmers will be incorporated in the programme to ensure fitness to the identified needs of farmers.

4.3.2. Adoption of multi-faceted training methods

Training of farmers, in particular, will involve two key methods. One is a **Trainer-directed delivery** of a planned curriculum – which will be based on revised curriculum at universities and CCCs incorporating ARM. Training materials which will be used include customised versions of PARM/FAO materials on ARM as well as relevant cases on ARM tools from Liberia and other African countries. The other method is the **Discovery-based approach to learning** – which encourages trainees to form own views, whilst being assisted in the process with illustrated flyers/factsheets, video documentaries (including YouTube type videos), field visits and experience sharing involving other farmers. The delivery of the programme is illustrated in Figure 10, showing that both public and non-government extension/advisory systems will be involved in developing the capacity of farmers in ARM.

Figure 11. Outline of training ARM tools in Liberia



Source: Authors



For the public extension system, MFs will be the key targets to be trained by CACs and DAOs. The MFs will, in turn, be equipped to share/disseminate ARM knowledge skills with other farmers in community-level Farmers Clubs. The FOs of private companies, NGOs and MFIs will be trained by the CCCs along with DAOs/CACs. The FOs will then train the farmers who are clients of their organisations.

4.3.3. Cascading programme effects critical to success

It was acknowledged in Section 3.5.1 that Liberia's public extension system is severely under-staffed. Whilst public extension personnel will be key resource persons in the CD4ARM programme, especially in the training of farmers, other measures are proposed which will ensure that its benefits are cascaded well beyond farmers they will be able to reach in the three focal counties. The specific strategies proposed to achieve this include the following:

- Revision of extension training curriculum in universities and CCCs is expected to increase the pool of resource persons with understanding of ARM who can be absorbed into the extension service when, for example, the public sector has the resources to recruit field staff;
- Model (or Ideal) farmers (MFs) will be trained to assist extension officers in training their peers and in conduct training at community levels;
- Field officers working on various agricultural projects managed by NGOs and/or initiated by various development partners are also to be trained as trainers of the farmers with whom they interact;
- Private agro-dealers as well as field officers of private companies involved in inputs and output marketing will also be trained to enhance the quality of extension and advisory services they offer to farmers; and
- Audiovisual dissemination via local radio stations and videos uploaded on whatsapp will make it possible for MFs from within and outside of the target focal areas to disseminate ARM information to farmers in other counties. For instance, in Nimba County alone, there are eight radio stations (Table 5) which can broadcast specially packaged ARM programmes.

Table 5: List of Radio Stations in Nimba County

	Radio station	Location
1	Radio Nimba	Sanniquellie
2	Radio Sehway	Sanniquellie
3	Radio Gehgama	Ganta
4	Radio Gompa	Ganta
5	Radio Saclepea	Saclepea
6	True FM	Saclepea
7	Radio Karn	Karnplay
8	Radio Tapita	Tapita

Source: Authors from consultation with DAO in Ganta

4.3.4. Programme sustainability

One of the key objectives of the CD4ARM is ensure its sustainability. This is to be achieved through the following:

- a. The ARM training programmes are to be embedded into programmes at various levels. For example, training of farmers will be run as a regular extension programme, whilst non-government agencies (e.g. agro-dealers, field officers of NGOs, donor-funded projects and private inputs/commodity trading companies) will be enabled to incorporate ARM in their regular extension/advisory services.
- b. The use of local resource persons wherever possible, including CACs and DOAs from the MOA as well as the other non-government agencies mentioned above.
- c. Aligning CD4ARM with other programmes by GOL and donor/NGO initiatives, which are discussed in Chapter 5. This will ensure that funding for the CD4ARM originate from allied programmes.

4.4. CD programme for smallholder farmers

4.4.1. Types and learning outcomes of training for farmers

Training for farmers will take two forms: one involving a mix of smallholder farmers and MFs; and another where MFs are the main resource persons for training other farmers in the community. The main learning outcomes for both programmes will include the following:

- a. Acquiring and applying knowledge and skills to assess and prioritise agricultural risks, including those associated with new production technology and/or farming practices;
- b. Acquiring and applying knowledge of available ARMs as well as capacity to assess their suitability and net financial benefits from their adoption;
- c. Being empowered to offer relevant feedback on agricultural risks as well as available ARM tools; and
- d. Being empowered to share experience from utilising ARM with other farmers as well as.

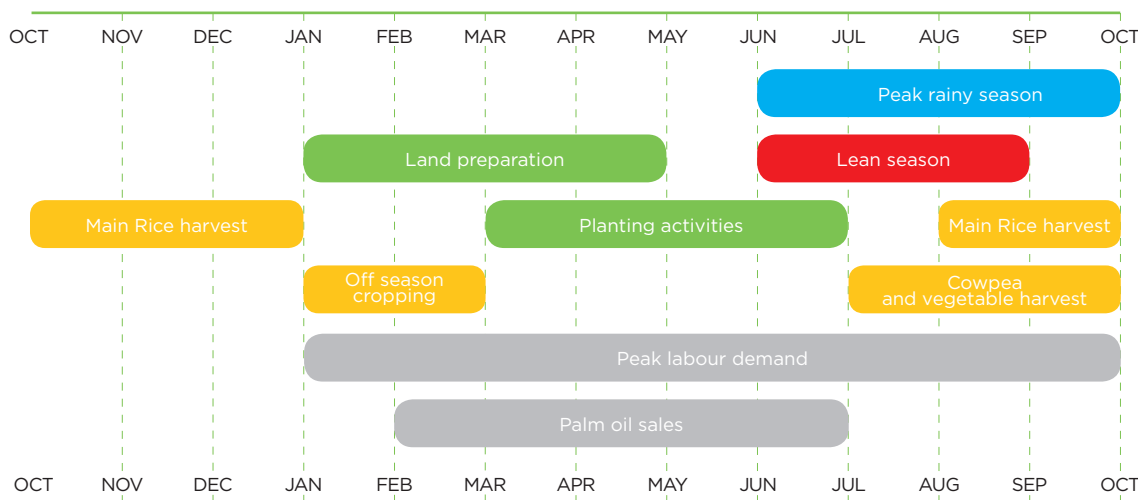
It is proposed that two training sessions are organised for the target group of farmers. The first training session will focus on the following issues: pre-planting preparations (including acquisition of quality inputs etc.), as well as agronomic and plant health practices to be adopted during the gestation of the crop. The second session will focus mainly on harvesting, postharvest handling and output marketing issues. The agricultural risks which are prevalent at these stages are summarised in Table 6. The calendar for the training programmes have to be aligned to the crop calendar in the country, depicted in Figure 11. Hence, it is proposed that the Pre-planting training programme is scheduled for January-March, whilst the Pre-harvest session is scheduled for June-August.

Table 6: Community-level ARM training sessions for farmers in Liberia

Period	Pre-planting	Pre-harvest	
Focal issues	Inputs use, including e.g. new crop varieties	Disease/pest management	Harvesting, postharvest handling and marketing
ARM issues to emphasise	Pre-harvest risks e.g. weather risks, inputs quality variability, access to finance and related risks. Planning output marketing and assessing available ARMs.	Cost/benefit analysis of available ARMs to manage crop and livestock diseases and pests.	Minimising harvesting and postharvest losses – assessing the options; reviewing/implementing marketing strategies.



Figure 12. Liberia's crop calendar



Source: Liberia's Food Security Report 2015.

It is further proposed that the Pre-planting training sessions which, will include training in Good Agricultural Practices (GAP) and ARM will be covered in one day. This is to ensure that the ARM training is embedded in general extension training, an approach which is cost-effective and will minimise time investment by the farmers. Similarly, Pre-harvest training sessions will be scheduled for 1 day.

4.4.2. Logistics of training farmers

The general training for farmers will target 50 farmers and will occur in towns with the following facilities:

- Town or School Halls which can accommodate 50 persons;
- Available of electricity to power video/DVD players and/or powerpoint projectors;
- Proximity to guesthouse/catering facility to provide refreshments for participants.

A list of suitable towns in various districts in the Nimba County is provided in Table 7.

Table 7: Districts and towns in Nimba County, Liberia

Districts	Sanniquellie Mah	Gbehlay Geh	Zoe-geh	Tappita	Saclepa Mah	YARWINMENSONNOH
1	Sanniquellie	Karnplay	Bahn	Tappita	Saclepea	Mehnlah
2	Gbapa	Garplay	Beeplay	Graie	Karwee	Zehkepa
3	Yekepa	Kpeiplay	Bayleglay	Toweh Town	Kpein	Blamie
4	Lugbehyee	Gbei-Vonwea	Payee	Zuatuo	Bunadin	Gleleyeezorpea
5	Gbalayee	Beo-Yoolar	Gbololay	Gbolodialah	Gbankoryee	Kwindin
6	Borsonnoer	Gborplay	Buutuo	Zuolay	Flumpa	Karryee
7	Mao	Bleemi Play	Nyor Display	Louplay	Kpatuo	Kpowin
8	Tiayee	Senlay	Dinplay	Zoatuo	Garwonpa	Ganwee
9	Boe	Vayenglay	Belewalay	Zenyongen	Nyao	Zanzayee (...)



(...) Districts	Sanniquellie Mah	Gbehlay Geh	Zoe-geh	Tappita	Saclepa Mah	YARWINMENSONNOH
10	Zuluyee	Zoigowee	Glalay	Ven Town	Fleedin	
11	Gbedin	Gbeh-Yohnlay			Kpeinkpoa	
12	Gompa	Duoplay				
13	Neigbein	Logoatuo				

Source: Authors from consultations with DAO.

It is expected that in Years 1 and 2 of the CD, training in Nimba and the other two Counties will occur in the districts which have DAOs in place. Ten (10) towns per district will be selected for the one-day training sessions per season (pre-planting or pre-harvest). For each training session, there will be 50 farmers as participants, out of which at least 15 or 30% should be women. It is further expected that 10 of the participating farmers from each town will be MFs (Model or Ideal farmers. This is because of the role they are expected to play in cascading the effects of the CD programme (discussed below).

The training sessions will include:

- Presentations based on illustrated factsheets, posters, flyers, brochures and video/You-Tube documentaries. These will be complemented by:
- Experience-sharing by peers (other farmers) and study (field) visits where possible and necessary to enrich farmers' experience.

The main resource persons for training of farmers will be trained DAOs. They will be assisted by specially trained MFs (at least 2 per district). The role of the CACs will be to assist in training sessions, where needed but more importantly to manage delivery of planned programmes including ensuring availability of required logistics. The CACs will also monitor delivery of programmes, providing oversight in terms of quality control (ensuring that standard materials are used for the training and delivery is according to the training provided to the resource persons).

4.4.3. Cascading CD through MF-led Farmers Clubs in communities

The training programme outlined above is targeted to reach at least 2,000 farmers in each of the focal counties – i.e. 6,000 farmers. However, this can be scaled up significantly if MFs become the fulcrum of community-level training. It is proposed that each of the 10 MFs trained during events organised at the major town centres will form a Farmers Club (FCs) with 15 members. These clubs may be affiliated to existing cooperatives or farmers associations in order to avoid duplication. The MFs will then be required to disseminate ARM-based extension information to members of the FC.

The MF will be assisted in the community-level dissemination with training aids/materials including illustrated factsheets, posters, flyers, brochures and video/You-tube documentaries, disseminated via mobile phones. They will also be able to organise their members to tune in to, and subsequently discuss, broadcasts by the local radio stations focusing on ARM-related extension messages.

The DAOs will coordinate and provide oversight for such training events. They will also be required to facilitate feedback from members of the FCs and either respond to issues raised or channel such queries to appropriate persons/organisations for response.

The expectation is that within each catchment area of the main towns selected for training, the MFs in total will reach an additional 6,000 farmers, implying in total 8,000 farmers reached per county 24,000 in the three focal counties. This multiplier effect allows the few extension officers at post, mainly the DAOs, to reach a much wider network of farmers than is physically possible, especially when account is taken of the transport and logistic constraints they face. During the field consultations it emerged that most of the public extension personnel lack basic facilities such as motor bikes and even those with the bikes lack funds for fuel.



Outreach to 8,000 farmers per county equates to an extension personnel to farmer ratio of about 1:1,600. This is in contrast with the estimated ratio of 1:3,500 – 5,000. In actual fact, based on current estimates of the national and active farmer populations (about 4.8 million and 1.2 million respectively) as well as actual number of public extension personnel at post (using Nimba County as an example), the extension officer to farmer ratio appears closer to 1:16,000 which makes effective delivery of extension services almost an impossible task.

4.4.4. Involving others in cascading CD for farmers

NGOs working with smallholder farmers are expected to complement delivery of ARM-linked extension by the public sector in Liberia. In Table 4 (Section 3.5.2) a list of such NGOs is provided. In addition, the network of cooperatives in the country as well as private agricultural inputs and output marketing companies provide extension services and can participate in the CD4ARM. Similarly, the CAPs of BRAC Liberia as well as similar structures created by MFIs, can participate in dissemination of ARM to their clients, enabling them to better manage risks. This will enable the MFIs to lower loan default risk.

A target of 100 field officers of these organisations are expected to be trained under the CD4ARM. With each of them training a target of 100 farmers involved in the production of a range of crops, the expectation is that they will directly reach about 10,000 farmers per year and a total of over 50,000 farmers nationwide over the 5-year duration of the programme¹⁸.

The involvement of these actors will not require setting up new training programmes. The key difference will be incorporating ARM in the extension and advisory services they already provide and developing the ARM capacity of their field staff as required (consistent with their training needs discussed in Section 3.5.2).

4.5. Training of trainers

4.5.1. Training frontline trainers of smallholder farmers

The main frontline trainers of smallholder farmers, including the MFs who are expected to train their peers through the formation of community-based Farmers Clubs, will consist of the following:

- DAOs and CACs as well as selected MFs (who as proposed above will assist DAOs in training smallholder farmers). The training will cover a period of 5 days and will be undertaken by CCCs such as the NCCC.
- Other resource persons expected to be involved in the training of farmers are the Field Officers of Cooperatives, NGOs, private companies trading agricultural inputs and commodities and field staff of MFIs such as BRAC. These will all be trained by the CCCs.

4.5.2. Training staff of training institutions

To equip staff of the universities and CCCs as trainers in CD4ARM, it is proposed that they undergo one week training with resource persons drawn mainly from the PARM Secretariat as well as other international resource persons, including faculty members of universities in Africa which have participated in the delivery of CD4ARM (e.g. from Ethiopia and Uganda). The training should be conducted locally for the following reasons: cost-effectiveness, enabling participation by sufficient numbers of staff, and the use of local examples during the training. This training is expected to be complemented by online training programmes in agricultural risk management jointly developed by the FAO, PARM and NEPAD.

¹⁸ This is a rather conservative estimate as reports indicate that ACDI-VOCA alone, for example, currently reaches farmers numbering more than 10,000.

4.5.3. Sensitising policymakers and other development actors in the sector

Sensitisation of policymakers and other development actors is considered crucial in ensuring sustained development of holistic ARM tools suited to the needs of farmers in Liberia. The sensitisation events will mainly include 1-2 day workshops, which will be organised, for example, by the University of Liberia. Resource persons shall be drawn from the universities as well as industry experts from providers of ARM tools. Where necessary resource persons from PARM and other African countries may be invited to provide insights on specific ARM tools.

Participants from the following organisations will be targeted: MOA and other Ministries (e.g. Finance and Trade; the CBL (especially the departments responsible for insurance and MFIs); Senate Committee(s) responsible for agriculture as well as oversight of organisations providing ARM tools; and donor missions involved in agriculture or donor-funded projects in the sector.

4.6. Preparation of training aids and materials

4.6.1. Revision of extension training curriculum in training institutions

Revision of training curriculum in the universities and CCCs is crucial in achieving the goals of the CD4ARM. Though UOL has already initiated a revision process and NCCC expressed a willingness to do the same, it is important to ensure that the process is inclusive. The process can also benefit from relevant experience in countries such as Uganda and Ethiopia, where the CD4ARM has been piloted. For this reason, we propose the following:

- The MOA and the Ministry of Education (MOE) constitute a Committee with the task of revising existing curriculum for extension training. A key objective for the Committee will be to ensure that extension training at all levels in Liberia include ARM as well as basic assess of net returns on new agricultural technologies and practices which farmers are encouraged to adopt.
- The role of the MOA will be to any new curriculum is consistent with the skills required of extension personnel in the sector, whilst that of the MOE will be to ensure compliance with relevant academic standards and protocols for accreditation in the country.
- The PARM Secretariat can share similar curriculum developed by other countries and offer advice on specific changes which can be considered by the Committee.
- Considering that UOL has already initiated a review of its curriculum, it is anticipated that the work of the Committee can be fast-tracked for completion within six months.

4.6.2. Preparation for regular training sessions

As noted above, training of farmers in ARM will involve the use of multiple media including video documentaries, illustrative posters and flyers as the main means for knowledge transfer to the farmers. It is recommended that the materials used are updated on a regular basis. This is to ensure that the training sessions are consistent with identified needs of farmers and to sustain the interest of participating farmers. Table 8 below provides a guide on scheduling of the preparation of materials for the training sessions, the time table for the delivery of which is expected to correspond to the seasonal crop calendar in Liberia.

Strategically, it is proposed that during each of the training sessions, participants evaluation is conducted along which will be questions on their experience with the incidence of various risks, including those anticipated in the next planting or marketing season. This offers a cost-effective means to collect data on incidence of agricultural risks, which will form the basis for preparation of materials for training as well as inform policy interventions, including actions to promote ARM tools.

**Table 8:** Scheduling of preparations for farmers' training in ARM

Training Session	Data/information collection	Preparation of materials	Training event
Pre-planting training	July-September (during pre-harvest training)	October-November	January-March
Pre-harvest training	January-March (during pre-planting training)	March-May	June-August

Source: Authors

Table 9: Sources of information for preparation of training materials

Agricultural risks	Risk management options	Sources of information
Floods	Watershed management	CARI/DTS
	Early warning	Early Warning System
Erratic rainfall	Early maturing crop varieties	CARI/DTS
	Insurance	Insurance industry
Drought	Early warning	Early Warning System
	Insurance	Insurance industry
	Drought crop varieties	CARI/DTS
Crop pests and diseases	Early warning	Early Warning System
	Disease resistant crop varieties	CARI/DTS
	Access to pesticides/other inputs	DTS/agro-dealers
Livestock pests and diseases	Early warning	Early Warning System
	Disease resistant livestock breeds	CARI/DTS
	Access to veterinary services	DTS
Inputs quality risk	Early warning	Early Warning System
	Access to reliable agro-dealers	DTS/agro-dealers
Market access/Price risks	Access to market information	Early Warning System
	Access to structured marketing systems	

Source: PARM (2017) and Authors

The PARM Secretariat has substantial information which can be customised for farmers in Liberia. A library of training resources is available online and can be utilised/customised for the CD4ARM in Liberia¹⁹. <http://p4arm.org/document-type/learning-resources/>

There are also materials produced by various organisations, including Factsheets produced by GROW Liberia, which can be used in the preparation of training materials for farmers. It is expected that the main source of technology-based information will be CARI. However, as stressed in this report, information from CARI needs to be validated by DTS before dissemination to farmers. Other sources of information for various components of the ARM training include the Agricultural Risk Management Early Warning System being developed as part of the PARM/GOL collaboration as well as others identified in Table 9.

It is evident from Table 9 that in developing the capacity of farmers to manage all the identified agricultural risks in Liberia, there is the need for early warning. It is for this reason that it is proposed that the two initiatives are implemented together.

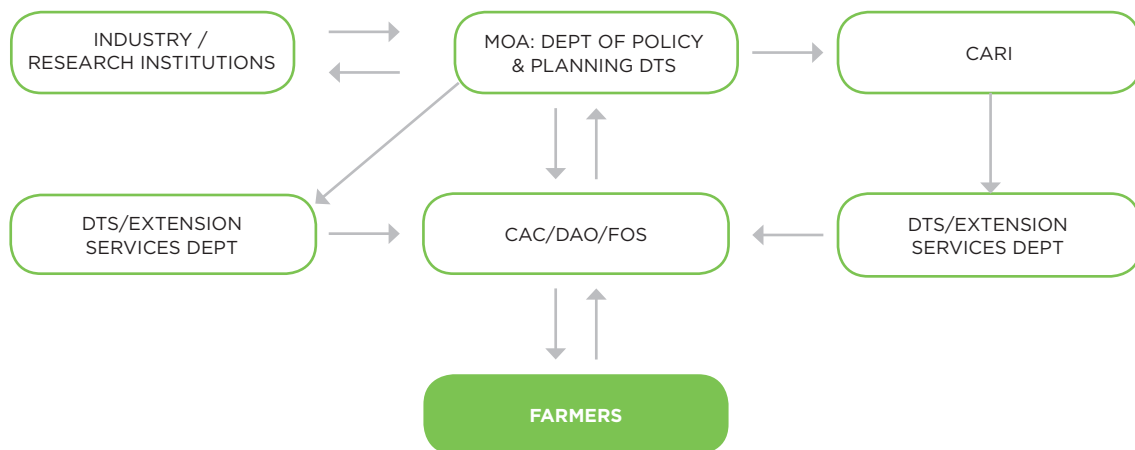
¹⁹ Link to ARM Training Resource materials: <http://p4arm.org/library/>

4.7. Institutionalising sustained development of ARM tools in Liberia

The holistic approach to ARM advocated under PARM requires a continuous process of improving suitability and access to existing ARM tools as well as developing new tools to fill gaps in supply (as noted in Section 3.6). Such a process will also demonstrate responsiveness to the needs of farmers, an issue which was apparent during consultations with farmers in the field. To meet this requirement we propose a farmer-centred, demand-driven process of filling gaps in the supply of ARM tools to farmers.

As illustrated in Figure 12, this process will involve the use of participants evaluation from training programmes, especially for farmer, not only to assess the programmes but to provide rich data and information on needed improvements in the supply of ARM tools. It is anticipated that literate MFs will self-complete evaluation/feedback forms, whilst those who are not literate will be assisted by peers to complete such forms. The information required will include perceptions of risks faced during the season and/or anticipated during the next season as well as views on the available ARM tools.

Figure 13. Farmer-centred process for development of ARM tools in Liberia



Source: Authors

Feedback from farmers, channelled through the CACs, DAOs and/or FOs of non-government extension/advisory organisations will be passed onto and analysed by the Policy and Planning Department (PPD) of the MOA. Following that:

- The PPD will forward identified needs which require technological interventions to CARI, which will incorporate such needs in their research agenda.
- Results from research by CARI will be field tested in collaboration with the DTS.
- After validation of the research outcomes, DTS will collaborate with the Extension Services Department to formulate appropriate extension and advisory messages, which is feedback to the farmers.



In cases where industry-based organisations such as insurance companies, MFIs and private companies engaged in structured marketing systems are well-positioned to offer market-based ARM solutions, the PPD will consult such organisations on developing ARM tools which respond to the identified needs of farmers. The collaboration will also include:

- Validation of proposed ARM tools;
- Discussions regarding enabling policy and regulatory framework, involving other government institutions including the Ministry of Finance and CBL; and
- Where feasibility has been demonstrated, facilitating dissemination to farmers but in a manner which allows for them (farmers) to assess what is being offered.

It is anticipated that the GOL and development partners will, in this process, focus mainly on mobilising funds to support/sustain the feedback as well as ARM development process. Furthermore, it is expected that by mainstreaming ARM into sector policies, GOL will create and maintain an enabling policy and regulatory framework in which the ARM tools will thrive. The support of donors is also seen not only in terms of technical and financial assistance for the process described above but also in ensuring that ARM is mainstreamed in the design and implementation of all donor-funded projects in the sector.

5. Phasing, funding and management of proposed CD4ARM

5.1. Introduction

A phased approach is proposed in implementation of the CD programme, which will initially run for five years. In this chapter we outline the phases as well as funding and management of the programme.

5.2. Outline of main implementation phases of the CD4ARM

5.2.1. Pre-launch Phase

The main activities to be undertaken during this phase includes the following:

- a. Validation by the MOA of the report and recommendations on the feasibility of the CD programme.
- b. Formulation of consolidated proposal by MOA and PARM as basis for consultations with donors for technical and financial support to implement the CD4ARM and Agricultural Risk Management Early Warning System.
- c. Setting up coordination structures for implementation of the ARM programme.
- d. Initiating the revision of extension training curriculum in Liberia.

5.2.2. Implementation Phase

Implementation will begin with a Pilot Phase in Year 1 of the programme. During this phase all the activities outlined in Chapter 4 will be implemented but only in 40 communities in the Nimba County. Hence, building the capacity of the NCCC is critical to implementation of actions during this phase.

From Year 2-4 the programme will be scaled out to Bong and Lofa Counties. During Year 5, apart from implementing the main programme actions, a key activity will be an evaluation of the programme and preparation of a national programme to scale it out based on lessons which emerge.

5.3. Funding CD in ARM programme

5.3.1: Programme budget

The cost of the CD4ARM over a 5-year period is estimated at US\$4.884 million (Table 11). The bulk of this cost is attributed directly to the cost of training smallholder farmers as well as their trainers and of sensitising policymakers, providers of ARM tools and other key stakeholders. Investment in training aids including factsheets, posters, flyers etc. as well as video-documentaries and radio programmes is estimated at about US\$385,000. Three project vehicles for the focal counties, to facilitate organisation of community-level training as well as monitoring by the CACs.

The budget also includes provision for the cost of revising curricula for the universities and CCCs, which will include time inputs for resource persons engaged in the process as well as cost of holding consultative meetings between the training institutions and the MOA/MOE. That budget line also includes the two reviews of feedback from participating farmers – a very crucial investment as it is intended to generate evidence for improving the training as well as development of ARM tools.

**Table 10:** Budget estimates for CD4ARM for Liberia

Training costs:	
Smallholder farmers	2,425,300.00
CACs, DAOs and FOs	658,800.00
Staff of universities and CCCs	165,700.00
Policymakers, ARM providers & others	125,000.00
Sub-total	3,374,800.00
Equipment and other costs:	
Training aids	385,000.00
Equipment costs	250,000.00
Revision of curriculum/reviews	150,000.00
Technical Assistance	225,000.00
Project vehicles for monitoring (3)	135,000.00
Other admin/recurrent costs	125,000.00
Project Coordination cost	120,000.00
Contingency	119,200.00
Sub-total	1,509,200.00
Total budget	4,884,000.00

Table 11: Annual budget estimates for CD4ARM for Liberia

Budget Item	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Training costs						
Smallholder farmers	151,560	454,680	454,680	454,680	909,700	2,425,300
CACs, DAOs and FOs	98,800	230,580	98,830	98,830	131,760	658,800
Staff of universities and CCCs	82,850	33,150	16,570	16,570	16,830	165,700
Policymakers, ARM providers & others	25,000	25,000	25,000	25,000	25,000	125,000
Sub-total	358,250	743,410	595,080	595,080	1,083,290	3,374,800
Other costs:						
Training aids	24,000	72,000	72,000	72,000	145,000	385,000
Equipment costs	50,000	100,000	-	-	100,000	250,000
Revision of curriculum/reviews	100,000	-	-	-	50,000	150,000
Technical Assistance	45,000	45,000	45,000	45,000	45,000	225,000
Project vehicles for monitoring (3)	45,000	90,000	-	-	-	135,000
Other admin/recurrent costs	25,000	25,000	25,000	25,000	25,000	125,000
Project Coordination cost	24,000	24,000	24,000	24,000	24,000	120,000
Contingency	23,840	23,840	23,840	23,840	23,530	119,200
Sub-total	336,840	379,840	189,840	189,840	412,840	1,509,200
Total	695,090	1,123,250	784,920	784,920	1,495,820	4,884,000

As shown in Table 11, the annual budgetary requirements rise from US\$ 695,090 in Year 1, when the focus of county-level activities is only focused in Nimba County. In Year 2 this rises to just over US\$1.12 million following scaling up to two other counties: Lofa and Bong. The costs build up to just under US\$1.5 million in Year 5 because of the anticipation of possible extension to Grand Bassa, Montserrado and Margibi Counties.

Funding of the proposed budget is expected to be mobilised by the GOL from various development partners. The case for doing so is based in part on the fact that the programme is expected to make an important contribution in achieving the objectives for the sector, which is prioritised. It is also justified on the basis of the synergies between the programme and other interventions in the sector which are being implemented by GOL and other development partners.

5.3.2. Synergies of ARM with other sector-related actions

The objectives of the proposed CD4ARM for Liberia are well-aligned to and can indeed contribute to achievement of several policy initiatives and programmes by the GOL as illustrated below in Box 2. During consultations with officials of the MOA, it was mentioned that the President has prioritised agriculture in achieving the Government's pro-poor economic growth objectives.

The prioritisation was also confirmed during discussions with some representatives of donor missions. They stressed that support for any initiatives in the country have to be based on the priorities of the GOL. They added that the CD4ARM fits into the broad investment priorities agreed between GOL and donors, which are agriculture and infrastructure.

Box 2: GOL policy initiatives and programmes aligned to CD4ARM

The Liberia Agricultural Sector Investment Plan (LASIP II) for 2018 – 2022 – which is intended to build on the objectives of LASIP I, including to develop priority agricultural value chains through private sector investments, promotion of innovative financing solutions and an export-driven industrial policy as well as ensuring a supportive business enabling environment. NEPAD supported implementation of LASIP I by producing an Investment Opportunities Brief (NEPAD 2013) and targeted investment of over US\$ 32 billion in Liberia's agriculture. However, a recent review of LASIP I by Hendricks (2018) stresses the need to address lingering rural poverty, food insecurity and malnutrition. Empowering smallholder farmers to better manage agricultural risks will help address these challenges noted by Hendricks (ibid). In addition, it will also contribute to the creation of an overall conducive investment environment in agricultural sector, as tools will be institutionalised by which actors in agricultural value chains can manage risks.

LASIP is complemented by the Liberia Agricultural Transformation Agenda (LATA), which aims to improve economic resilience among Liberians through inclusive growth. GOL aims to achieve this through encouraging private investment in priority agricultural value chains including: oil palm, rubber, cocoa, fisheries, rice, cassava, horticulture and poultry/livestock.

The Agenda for Transformation (AFT), a medium term development strategy formulated by GOL to promote inclusive growth by 2030, and which prioritises agriculture because it is the largest source of employment as well as food for its people. Planned AFT actions include improving access to information on demand and supply of agricultural products; fostering access to knowledge on sustainable agriculture practices; and promoting linkages between smallholder farmers and formal domestic and international markets in order to increase agricultural productivity.

Source: Authors

There are also a number of ongoing projects and programmes which are being funded by various donors and/or implemented by local and international NGOs. Some of these are noted in Box 3 and include multilateral support provided to the GOL under the CAADP framework. Strengthening synergies between these programmes and the CD4ARM will ensure that ARM is mainstreamed into them.

It is further argued that, donor funding for the CD4ARM will enable farmers to be better informed about risks and ARM tools, thereby ensuring that they contribute in an informed manner in consultations regarding the design and implementation of projects and programmes implemented in the sector. The expected effect will be



improved outcomes of the actions which are funded by various donors. It is on the basis of these considerations that we propose that GOL specifically consults with development practitioners who are active in the sector to seek technical and financial support to implement the CD4ARM.

Box 3: Initiatives by donors/NGOs in Liberia which are aligned to CD4ARM

As noted above, NEPAD is supporting the agenda for agricultural transformation in Liberia within the context of CAADP. NEPAD is also actively engaged in the PARM process so the synergies within parallel programmes can be strengthened.

The European Union provides budgetary support for the GOL under the “Moving Liberia Forward Programme”, which runs from 2018 to 2020. It offers scope for promoting policy reforms and can provide a channel for supporting efforts to mainstream ARM in Liberia’s agricultural policy.

The French Government is funding a specific project which aims to boost youth employment and entrepreneurship. This is aligned to possible training in entrepreneurship by the NCCC, which is expected to participate in the CD4ARM. In addition, the French Government is supporting initiatives to strengthen capacity of civil society organisations, the private sector and local development finance institutions.

The German Government is funding initiatives in health, energy and transport, which even if not directly in agriculture, will benefit actors in the agricultural value chains.

USAID funded the Modernisation of Extension and Advisory Services Project (MEAS), which run from 2010 to 2016 with the aim of reaching farmers with impactful extension services; advancing partnerships and collaboration; sharing knowledge and leveraging support for extension. The programme is reported to have increased the prominence of extension on the international agricultural development and food security agenda. Liberia was one of the countries which benefited from MEAS and is again part of a new initiative, Developing Local Extension Capacity (DLEC). It is a five-year project funded by USAID and implemented by the International Food Policy Research Institute (IFPRI), CARE International the Global Forum for Rural Advisory Services (GFRAS) and multiple resource partners.

Feed the Future – a US-funded initiative – is among others, supporting the training of District Agricultural Officers (DAOs) who, for now, are the closest contact persons in the delivery of public sector extension services to smallholder farmers. USAID is supporting the Livelihood Improvement for Farming Enterprises (LIFE) which is being implemented by ACDI/VOCA, whilst IFAD is funding the Smallholder Tree Crop Revitalization Project in Lofa County and the World Bank is funding implementation of a similar project in Nimba County.

The African Development Bank (AfDB) supports investments in areas prioritised by the GOL and is currently focusing on investments in physical infrastructure and agriculture as the two top priority areas agreed with the Government.

The Japan International Cooperation Agency (JICA) has made strategic investments in the rice value chain in support of smallholder producers, whilst the Swedish International Development Cooperation Agency (SIDA), through its support for GROW Liberia is supporting actions to improve the performance of priority value chains including cocoa, rubber and vegetables. Similarly, the Dutch Government, through its support for the Liberia Netherlands Business and Culture Council (LNBBCC), is investing in promoting a more conducive business climate in Liberia, including for investments in agriculture. (...)

(...)

The European Union is also funding the EU-Liberia Agriculture Programme (EULAP), a 5-year project which aims to improve the productivity, resilience and sustainability of nutrition-sensitive agricultural practices at the level of smallholder farmers and vulnerable households in Liberia’s North-Western and South-Eastern coastal regions.

Source: Authors

It is further argued, as noted in Section 4.7 that there is significant synergy between the CD4ARM and the other PARM-supported initiative to develop and Informaiton System for ARM and Early Warning. For this reason we propose that the two initiatives are implemented together and submissions for donor support packaged as a single project with two strongly linked components.

5.4. Management of the CD programme

The CD programme is being led by the PARM Secretariat but it is expected that with the adoption and management of the proposal will be localised. For this reason, we propose that a Coordinator is appointed, who will be stationed at the Extension Department of the MOA and be responsible for implementation of the CD programme. The reports produced by the Coordinator shall be submitted to the Deputy Minister Responsible for Research and Extension Services.

Considering that the CD programme is multi-sectoral, it is proposed that a senior/experienced person is appointed to the position. It is further suggested that the Coordinator reports regularly to a Coordinating Committee with representation from the MOA, Ministry of Education, CARI etc.

5.4.1. Monitoring and evaluation of CD programme

The project logframe (in Table 12) details activities and outcomes which are targeted for the CD programme. One of the first tasks of the Project Coordinator should be to benchmark these per quarter. The quarterly reports submitted to the Coordinating Committee and thereafter to the Deputy Minister Responsible for Research and Extension Services and the PARM Secretariat. This will make it possible to monitor progress in terms of actions implemented and results achieved.

Table 12: Logical Framework for Capacity Development (CD) Programme in Agricultural Risk Management (ARM)

Item	Indicator of achievement	Means of verification	Assumptions/ risks
Overall goal			
Smallholder farmers' productivity, household income and resilience boosted in Ethiopia through enhancing their capacity to manage agricultural risks in a holistic manner.	Within five years, over 10% of smallholder farmers in three focal regions empowered to effectively manage agricultural risks in a holistic manner, gaining 10-15% rise in productivity and at least 10% rise in annual farm household income.	<ul style="list-style-type: none"> - National agricultural statistics. - National household surveys - Reports from ARM providers - Programme baseline, monitoring and evaluation reports 	<ul style="list-style-type: none"> - Government of Liberia endorses CD Feasibility Report and Action Plan - Co-financing by Govt and donors secured - ARM tools accessible to farmers.
Objectives/purpose of CD Programme			
Smallholder farmers empowered to identify, prioritise and holistically manage agricultural risks using best available agricultural risk management (ARM) tools.	At least 125,000 smallholder farmers have their capacity developed within 5 years and can effectively utilise best available ARM tools.	<ul style="list-style-type: none"> - National agricultural statistics - Reports from ARM providers 	<ul style="list-style-type: none"> - Active participation by training institutions - Sustained commitment from MOA and other government agencies - Active participation by trainees at all levels.
Expected results (within five years)			
Sustainable capacity development plan, reflecting national context and priorities, adopted and implemented.	<ul style="list-style-type: none"> - Stakeholders consulted; CD plan adopted and funding secured. - Management structure for CD plan implementation instituted. - Plan implemented/monitored. 	<ul style="list-style-type: none"> - Project reports - Reports by: CAC and MOA (PPD). 	<ul style="list-style-type: none"> - Government of Liberia remains committed to implementation of CD Action Plan - Co-financing by Govt and donors sustained - ARM tools accessible to farmers and improved as necessary. - Active participation by trainees at all levels. (...)



(...) Item	Indicator of achievement	Means of verification	Assumptions/ risks
Smallholder farmers equipped with skills and knowledge to identify and prioritise agricultural risks as well as take-up best ARM tools available.	Over 125,000 smallholder farmers trained.	- Same as above.	
Materials/training aids made available for training farmers and other stakeholders.	Materials/training aids available to train trainers at different levels.	- Same as above.	
Pool of trained ARM trainers available to provide training at various levels.	Pool of trainers trained consisting of: staff of universities and CCC	- Same as above.	
Effective feedback system instituted to improve ARM tools and delivery of agricultural extension information.	Views of over 1,000 trained trainers and over 125,000 smallholder farmers fed back to policymakers and ARM providers.	- Same as above.	
Activity headings	Detailed activities		
5. Sustainable CD plan adopted/ implemented	- Feasibility of CD programme assessed, including consulting key stakeholders and making relevant recommendations		
	- Feasibility Report endorsed by government and funding committed by donors for 5-year period.		
	- Programme Coordinator installed; and Coordination Committee instituted and tasked with implementation and reporting.		
6. Materials/training aids made available	- Reviewing and customising generic CD material on risk assessment and prioritisation produced by PARM to reflect national context in Liberia.		
	- Synthesising information on available ARM tools in Liberia		
	Translating above materials into Amharic		
7. Training of trainers	- Producing training aids including flyers, posters, videos etc.		
	- Training staff of universities and CCCs		
8. Developing capacity of smallholder farmers	- Training of other trainers by CCCs: including CACs, DAOs, Field officers of Cooperatives, MFIs, private companies in inputs trade and output marketing and Model Farmers		
	- Delivery of training programmes for smallholder farmers by DAOs and trained Model Farmers		
	- Community-based Training/Experience Sharing by Model Farmers in Farmers Clubs		
9. Institutionalising feedback/ evaluation system	- Training evaluation forms developed for training at all levels		
	- Sharing feedback on ARMs and agricultural risks from farmers and trainers with relevant policymakers and ARM providers.		
	- Undertaking baseline surveys in target communities		
	- Carrying out programme evaluation in Year 5 – to provide evidence basis for scaling up at national level		



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PARM
PLATFORM FOR
AGRICULTURAL RISK
MANAGEMENT



Liberia



Annexes

A.1. Terms of reference for Experts in Extension Service and training

Study on a sustainable investment plan for ARM training in Liberia

The Platform for Agricultural Risk Management (PARM) is a multi-donor facility signed on December 2013 between the European Commission (EC), the French Development Agency (AFD), the Italian Development Cooperation (DGCS), German Cooperation (BMZ/KfW) and IFAD in strategic partnership with the New Partnership for Africa's Development (NEPAD) Programme and other development partners to make risk management an integral part of policy planning and implementation in the agricultural sector.

The PARM process follows five phases in each country: setting up of activities, risk assessment, policy dialogue, follow-up and implementation. The core of the process begins with the risk assessment to define the problem before the potential solutions that will subsequently emerge in terms of risk management tools. As a result of the risk assessment study and discussion with stakeholders, main ARM priorities are identified, including capacity building support to improve local stakeholders' awareness and knowledge on ARM, as well as capacity to manage and conduct appropriate institutional reforms and mainstream ARM in countries.

1. Background

The goal of the overall process of PARM in Liberia is to ensure the integration of ARM conceptual and operational tools (including the capacity development) into the National Agriculture Investment Plan (NAIP), designed under the auspices of the African Union and NEPAD's Comprehensive Africa Agriculture Development Programme (CAADP).

The Risk Assessment Study (RAS) for Liberia conducted by PARM in collaboration with the Research Centre for the Management of Agricultural and Environmental Risks (CEIGRAM), indicates that the major risks affecting the country's agriculture are: 1) high precipitation (floods); 2) post-harvest losses; 3) crop pest and diseases; 4) livestock pest and diseases; 5) price risk; and 6) political risk. Against these risks, CEIGRAM has highlighted some vital solutions - with potential to inform some initial key areas where PARM can support the Government of Liberia in undertaking their corresponding Feasibility Studies (FSs). Given the results of the RAS, and the risks identified through the study, PARM in collaboration with the Ministry of Agriculture (MoA) has agreed to concentrate on two tools for the Feasibility Studies in order to provide concrete solutions to manage some of the identified agricultural risks in Liberia. These are related to: (i) Agricultural Risk Information and Early Warning System, and (ii) Strengthening capacities to assess and manage agricultural risks of the extension services of the Ministry of Agriculture. This terms of reference refers only to Strengthening capacities to assess and manage agricultural risks of the extension services of the Ministry of Agriculture.

1.1. Agricultural risk context in Liberia

Risk refers to the possibility that an adverse development will occur that negatively affects the performance of farms or the larger agricultural supply chain. A risk event refers to such a development when it actually occurs.

A proper understanding of the risks faced by the agricultural sector and effective strategies to manage those risks is vital to creating a diversified and resilient economy for sustained growth and economic transformation. The RAS conducted by PARM in collaboration with CEIGRAM provides a rigorous analysis of the production, marketing, and enabling environment risks faced by Liberia's agricultural sector and prioritizes solutions to manage the risks.

Agricultural risk in Liberia, can be usefully divided into weather, production and biological & environmental risks.



1.1.1. Weather Risks

Flood: the most frequent weather disasters in Liberia are floods (40% of the events) and wind storms or harmatans (13%). Flooding is the main problem in the lowland areas of the country. In these areas, rivers are threatening the dwellings and livelihood of the population during the rainy season. In addition, sea erosion by the coastline is a risk and it also destroys houses and buildings. Both floods and sea erosion are causing periodical displacement of people in the disaster prone areas, and the consequences are often worse than it should be due to the fragility of infrastructure. This could explain the number of events in transport accidents (20% of the events).

1.1.2 Production

Post-harvest losses: postharvest losses reduce the self-sufficiency of food or reduce the agricultural production to be sold and thus lead to farm income losses. The deficit of storage facilities and roads provoke important post-harvest losses and make difficult the access to market and prevent to the farmers to take advantage of selling the production some months after the harvest at higher prices.

1.1.3. Biological & Environmental

Pests and diseases: the pests and diseases that affect rice (either in production or storage) are critical in Liberia. The major problem resulting in significant decrease of rice yields is the high incidence of pests mainly, grass cutters (ground-hogs) and birds throughout the country. These pests' attacks have intensified following the end of war and resumption of farming activities in rural areas.

Exposure to the consequences of these and other risks can be effectively limited through risk management systems tailored to the conditions prevailing in a country's agricultural sector.

1.2. Identification of potential tools to manage the risks

The risk assessment report of PARM conducted by CEIGRAM in 2017, proposed a list of solutions developed from stakeholder interviews, focus group discussions, and published literature on Liberia's agricultural sector. The proposed strategies are a combination of risk-mitigation, risk-transfer, and risk-coping instruments. For risks that are frequent but with limited impacts, the best approach proposed by CEIGRAM is to try to mitigate them. Two areas of risk management to warrant priority, with significant potential for synergizing actions undertaken across them, are highlighted by the RAS:

- Strengthening early warning systems to detect threats to food security.
- Strengthening capacities to assess and manage agricultural risks of the extension services at Ministry of Agriculture.

PARM aims to build on its experience and mandate in the continent and the intention to find complementarities with ongoing initiatives and the Governmental priorities, rather than duplicating existing actions. Based on the RAS report, the PARM team, in consultation with a pool of experts, identified two areas that seek to address a wide variety of risks: i) Timely access to information for farmers on weather, pest and diseases and price through the establishment of an integrated Information and Early Warning System in Liberia i) Strengthening capacities to assess and manage agricultural risks of the extension services at Ministry of Agriculture.

A Capacity Development Seminar on Agriculture Risk Management has been organized by PARM and held in Monrovia on 20-21 April 2017 in partnership with the Ministry of Agriculture (MOA). The seminar started PARM activities in the country that continued with the elaboration of the country risk assessment. Along with the main agricultural risks identified by the recent Liberia Risk Assessment Study (PARM, 2017) that include floods, post-harvest losses and crop pest and diseases, one of main findings of the study concerns the role of country policy and institutional environment for risk management. It has been found weak, mainly limited due to the lack of general technical capacity and budgetary constraints. The lack of capacity translates also into a limited role played by the extension service in assessing risks and provide solutions to farmers, and in the lack of reliable data, statistics and information for enhancing technical analysis.

The present feasibility study aims to investigate how to improve national stakeholders' awareness and capacities, in particular of the extension service of the Ministry of Agriculture, to manage agricultural risks improving the ownership of the initiatives related to agricultural risk management and to transit from a culture of coping with disasters towards a smart management of agricultural risks in a holistic way. Overall, the goal is to make ARM an integral component mainstreamed into national agricultural policy.

2. Objective of the study: A sustainable investment plan for ARM training in Liberia

The objective of this study is to develop a sustainable investment plan to incorporate and mainstream ARM capacity development activities and trainings into the national agricultural policy and investment plan targeting Liberian extension service.

The study should be focused on five main areas of investigation:

- Identification of potential partners to develop, organize and deliver ARM trainings to extension service. Such partners can be national universities and/or research centres, regional or international knowledge and training centres, or International organizations;
- Development of a plan and methodology on how to include the ARM training curriculum of both current and prospective national extension workers. The content of the curriculum is expected to be the standard PARM curriculum subject to variation based on the emerging needs of MOA;
- Creating a cascade effect from such training activities towards reaching smallholders on the national territory through trained extension service on ARM. The cascade effect has to be formalized in a way to include a strategy, plan of activities, budget, resources to train a certain number of extension service and consequently a certain number of farmers;
- Strengthening capacity of national extension service, agricultural service providers, MOA and other public bodies at large to train farmers' and farmers' organization and to analyse, mitigate and deal with agricultural risks in order to better assist rural farmers;
- Help in the identification of needs to support extension services within extension service directorate.

A positive spill over effect of the study is also the increasing partnership at country and potentially regional level that can be built.



3. Scope of the study

PART A. Analysis

To reach the study objective, the consultant(s) will first carry out an investigation that includes the following:

- a. an analysis of potential partners to develop, organize and deliver ARM trainings to extension service. Potential partners can be found among local vocational and training centres, national universities and/or research institutes, or at regional or international level, including universities, research centres and knowledge and International organizations. The legal and institutional frameworks of potential institution should be discussed to understand the possibility and the modality through which they could host an ARM training course (permanently or on demand) for current and prospective national extension workers;
- b. the creation of linkages between the aforementioned institutions and the MoA;
- c. the adjustment of the (P)ARM curriculum based on the emerging country needs, including different topics, length of the course and target groups within the extension service, emerging needs of vocational institutions, MOA or other institutions;
- d. the carrying out of an action plan of a defined number of trainings for a defined number of extension workers and related timeline (all to be discussed with the authority/MOA);
- e. the development of a cost-benefit and sustainability analysis of such an ARM training activity within the training activities of the (current and prospective) national extension service department of MOA.

This analytical part is required to provide a sound basis for the feasibility assessment in Part B of this study. In detail, the main elements are:

a. An analysis of the legal and institutional framework

The consultant(s) will examine the characteristics of the potential different institution in charge of the training (among local vocational and training centres, national universities and/or research institutes, or at regional or international level, including universities, research centres and knowledge and International organizations) to understand which are the most suitable institution(s) to permanently or on demand host an ARM training course for current and prospective national extension workers.

The consultant(s) will, among other tasks analyse:

- key characteristics of suitable institutions, including the linkages with other training activities established by MOA and linked to ARM;
- relationships and bottlenecks between extension service directorate and training institutions to mainstream ARM trainings and practices;
- the bureaucratic and legal steps to include the ARM curriculum (draft elaborated by PARM) in the programme of such training and vocational institutions;
- how to mainstream ARM training into MOA policy and investment plan for extension service;
- geographical scope/coverage of such ARM training in order for the trainees to reach smallholders over the national territory;
- the cascade effects of the ARM training that will flow from extension service to smallholders, including a strategy, plan of activities, budget, resources, etc., to train a predetermined number of extension service (to be discussed with the authority/MOA) and, consequently, a certain number of farmers.

This part of the analysis could benefit from past experiences of including a new curriculum into training programmes of vocational institutions led by MOA and other government supported measures to reinforce technical skills of the national extension service. The experience with farmer field schools (FFS) by FAO or other similar initiatives (if they exist in Liberia), including the current outreach of such programmes and the resources required to increase outreach, could also help this part of the analysis.

b. Creating links between the aforementioned institutions and the academic institution

The consultant(s) will elaborate the plan to transfer ARM knowledge and practices from the potential institution(s) in charge of the pilot ARM training course to the suitable institution(s) considering:

- specific elements of the training and their transferability;
- identification of reference persons (or champions) for each counterpart to ensure institutional dialogue.

The consultant(s) will also facilitate the possible adjustments of the ARM curriculum elaborated by the academic institutions and timeline delivery based on emerging needs of vocational institutions and MOA.

c. Adjusting the ARM curriculum delivered during the pilot training

The consultant(s) will ensure the transfer of the (P)ARM curriculum from the local, regional or international institution in charge to deliver the pilot ARM activity. The curriculum could be modified for example due to, but not limited to, the following occurrences:

- Different target groups within the extension service (to be discussed with the authority/MOA);
- Emerging needs from MOA and other public bodies;
- Emerging ARM tools for Liberia

d. Carrying out an action plan for training and related cascade effects

The consultant(s), in close collaboration with the authority/MOA, will design an action plan to create a cascade effect (i.e. from extension workers to farmers) that include:

- number of trainings foreseen per year/per semester;
- number of extension workers trained per courses, per year/per semester, etc.;
- number of farmers or other extension workers to be reached by first-trained extension workers;
- timeframe of the initiative.

e. Cost-benefit and sustainability analysis of the ARM training activity

The consultant(s) will focus on the following topics:

- investigation of costs, benefits and financial sustainability, including the use of public and private funds - even proposing suitable initiatives - for the mainstreaming of ARM training activities in the training programme of current and perspective extension service;
- investigation of costs, benefits and financial sustainability for the trainees to reach smallholders over the national territory;
- The ongoing and planned initiatives by International organizations (including IFAD, FAO, etc.) and others using the FFS approach.
- Private sector-led initiative to support farmers' education and related models.



PART B. Feasibility Study

Based on their analysis the consultant(s) will develop an investment strategy that will focus on the following elements:

- **The inclusion of ARM training course into the training programme for current and prospective extension workers.** Based on the cost-benefit and financial sustainability analysis of the various models currently operating in Liberia and in the region/continent at large (farmer field schools, etc.) the consultant(s) will develop a strategy on how to include an ARM training course into the training programme for current and prospective extension service under the supervision of MOA and to reach the national coverage of the extension service at different level;
- **Improved capacity to transfer ARM knowledge to smallholders.** Based on the analysis of the current institutional capacity of MOA and other relevant stakeholders, the consultant(s) will develop a capacity development plan with a focus on the skills required to implement the ARM training at smallholder level;
- **Developed inter- and intra-coordination between MOA and other institutions** on how to share skills and knowledge related to different ARM tools.

3.3. Output of the overall study

Overall, the expected output is a strategy on how to include of ARM training course into the training programme of vocational institutions for current and prospective extension service. The strategy will be composed by;

1. A **narrative** that describes how to include the ARM training into the training programme of current and prospective extension service, including the institution in charge of the training (linking Part B to point a, b of Part A);
2. An **action plan** of how to reach the national coverage of the extension service at different level and related cascade effect that reach farmers, including procedures, partners, resources, etc. (linking Part B to point b, c, d of Part A);
3. A **log frame** of the initiative (linking Part B to point c, d of Part A);
4. A **comprehensive investment plan** (minimum 5 years) of such initiative with a detailed budget (linking Part B to point d, e of Part A);
5. **Monitoring and evaluation proposal** for such initiative (linking Part B to point d of Part A);
6. **Recommendation and way forward** (linking Part B to point a, b c, d, e of Part A).

4. Methodology

The consultant will review existing experiences on including training activities in vocational schools for the extension service in Liberia and in the African context, and conduct interviews with stakeholders involved in such tasks. Close cooperation with the ARM focal point of MOA, and PARM country officer is required. The consultant will propose a list of interview partners from institutions of the public and private sector, research, development partners and present it to PARM as part of their proposal.

The consultant(s) will also analyse relevant legal and regulatory texts and documents in connection with the topic of the study. They will review projects and experiences related to similar projects, in particular on-going projects from International Organizations (IFAD, FAO, WFP, WB) or NGOs operating in Liberia. Consultants will travel to Liberia for the purpose of the study if she/he is not based locally. The research will include field visits to training centres, projects and/or initiatives to incorporate farmers and local stakeholders in the analysis.

The consultants will use cost-benefit methodologies to analyse the different options and develop the investment strategy. The proposed strategy will be documented with the appropriate accounting and estimation of the flow of costs and benefits.



After finalization of the first draft the consultant(s) will organize a feedback workshop/calls with relevant Liberian stakeholders where results are presented and feedback from relevant stakeholders will be collected. The feedback will be incorporated in the final report.

The overall responsibility for the study lies with PARM Technical Specialist, Massimo Giovanola (m.giovanola@ifad.org), and PARM Capacity Development Specialist, Ilaria Tedesco (i.tedesco@ifad.org). During the study phase the consultants' work will be monitored by Ilaria Tedesco. The consultant(s) will discuss with PARM for a kick-off meeting (in person or via Skype/phone call) and twice thereafter: (i) at the time of submission of the interim report and (ii) later at the time of submission of the final report.

The consultant(s) will be responsible to come up with creative ways to analyse the issue.

5. Timeframe

The consultant(s) will carry out this assignment starting from November, 2018.

The total working days for the consultant are 60 days, based on the following indicative timetable:

Reading and analysis of documentation, reports etc. in preparation of the field mission and related plan	5 days
Data collection / information, meetings with stakeholders	25 days
Preparation of the technical report and investment plan (formats to be validated by PARM)	20 days
Technical meeting with stakeholders (MoA, PARM, etc) for finalization-validation of the report	3 days
Integration of inputs and finalization of the study report	7 days

The activities to be carried out are the following:

- Identification and collection of reports, policies, studies, etc. related to training activities in vocation schools for national extension service;
- Identification of interview partners for country mission of international expert and arranging the meeting schedule;
- Contributing to the analytical part of the study;
- Contributing to developing the investment plan and drafting of report;
- Contributing to the final draft of the report



6. Deliverables

Signature of the contract	01 November 2018
Preparation and sharing of the report (draft)	10 December 2018
Meeting with technical partners and integration of inputs in the report	12 December 2018
Elaboration of the final report for validation by MoA	07 January 2019
Presentation of results at the feedback workshop (or meeting) in Monrovia TBC	23 January 2019

7. Qualifications

The assignment will be carried out by an international expert with skills in training implementation and knowledge of Liberian institutional context.

The following requirements are desirable:

- at least 10 years of experience
- expertise in conducting cost-benefit, sustainability, and feasibility assessments
- expertise in designing training that involves public institutions. The experience involving also private actors will be a bonus.
- expertise in ARM in developing countries
- expertise in assessing knowledge gaps and capacity building needs of extension service.

8. List of indicative references (to be provided by PARM)

PARM (2017). Risk Assessment Study Liberia

PARM (2017). Agricultural Risk Management Capacity Development Seminar (CD1). Monrovia, 20-21 April 2017

PARM (2018). Managing risk at farm level. Manual. Platform for Agricultural Risk Management, Rome

PARM (2018). Managing risk at farm level. Handbook. Platform for Agricultural Risk Management, Rome

PARM (2018). Managing risk at farm level. Guidelines. Platform for Agricultural Risk Management, Rome

PARM (2018). Agricultural Risk Assessment and Management for Food Security in Development Countries. Platform for Agricultural Risk Management, Rome



PARM
PLATFORM FOR
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