Platform
for Agricultural
Risk Management

Managing risks
to improve farmers'
livelihoods

PARM
PLATFORM FOR AGRICULTURAL RISK MANAGEMENT

Liberia Final Report

Holistic approach to risk management: new opportunities for investment in agriculture.

September 2019

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Liberia

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Rapport Final

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Foreword

The Platform for Agricultural Risk Management (PARM), is an outcome initiative of the G8-G20 discussions on agricultural growth and food security. It was officially launched in December 2013 as a multi-donor partnership between the European Commission (EC), French Development Agency (AFD), Italian Agency for Development Cooperation (AICS) and hosted by the International Fund for Agricultural development (IFAD). The German Federal Ministry for Economic Cooperation and Development (BMZ) through KfW Development Bank also contributes to ARM investments through a strategic partnership with NEPAD. PARM aims to generate, facilitate and increase access to and exchange of knowledge to make agricultural risk management (ARM) an integral part of policy planning and investment for food and agricultural sector of developing countries. PARM's activities focus on eight sub-Sahara African countries – Cabo Verde, Cameroon, Ethiopia, Liberia, Niger, Senegal, Uganda and Zambia.

PARM process in Liberia officially started in May 2016, allowing partners to commit to supporting various activities to facilitate the integration of ARM into Liberia Agriculture Sector Investment Program (LASIP II). Activities implemented through the joint process in Liberia, include, launching a risk assessment, delivering capacity development seminar, finalizing two feasibility studies on ARM tools and engaging with partners in a high-level agricultural committee meeting.

This report presents the main outcomes of this joint process. The report is structured into 4 sections: (i) summary of the main achievements, the process timeline and the expectation moving forward on ARM in Liberia; (ii) outcomes from the country-level risk assessment and prioritization; (iii) outcomes from the feasibility studies on ARM tools for investment; and (iv) capacity development and knowledge-sharing on ARM in Liberia. The report provides an executive summary of the main reports, which full studies and background reports are available on PARM Library .

The Liberia MoA largely contributed to the implementation of all the studies supported by PARM and has been the leading partner of all the activities of the joint process. IFAD, NEPAD, and many other development partners, stakeholders, experts and institutions also supported the process in different moments and aspects, of which their contributions are recognized in the related documents.

Contents

List of abbreviations and acronyms

ACC	Agriculture Coordination Committee
ACDI/VOCA	Agricultural Cooperative Development International/ Volunteers in Overseas Cooperative Assistance
AfDB	African Development Bank
ARM	Agricultural Risk Management
CAADP	Comprehensive Africa Agriculture Development Programme
CACs	Community Agricultural Colleges
CCCs	County Community Colleges
CD	Capacity Development
CD4ARM	Capacity Development for Agricultural Risk Management
CEIGRAM	Research Centre for the Management of Agricultural and Environmental Risks
COSOP	Country Strategic Opportunities Programme
EU	European Union
FAO	United Nations' Food and Agriculture Organisation
GDP	Gross Domestic Product
GOL	Government of Liberia
IFAD	International Fund for Agricultural Development
ITU	Telecommunication Union
JICA	Japan International Cooperation Agency
LACRA	Liberia Agriculture Commodity Regulatory Agency
LASIP	Liberia Agriculture Sector Investment Program
LISGIS	Liberian Institute of Statistics and Geographic Information System
LISGIS	Liberian Institute of Statistics and Geographic Information System
MoA	Ministry of Agriculture
NEPAD	Africa Union's New Partnership for Africa Development
PARM	Platform for Agricultural Risk Management
PPR	Pest des Petit Ruminants
RAS	Risk Assessment Studies
ToR	Terms of Reference
USAID	United States Agency for International Development

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AGRICULTURAL RISK
MANAGEMENT

1. Overview

Main achievements in Liberia

Liberia is an agriculture-dependent country on the Guinea coast of West Africa. The country boosted an impressive economic performance throughout 2007 and its succeeding years until the unfortunate outbreak of Ebola in 2014/15. During the boom years, the country recorded one of the highest economic growth in Africa, with an average growth rate at 6.5% in 2007, which impressively rose to 8.3% in 2013. Inflation also remained lower (at 6.8% in 2012) and even dropped to 5.3% in 2013. Liberia's economic boost was partly attributable to the favourable world market price for its agro-exports, notably rubber, cocoa, rice and cassava. However, the outbreak of Ebola in 2014 shrunk agricultural activities and outputs, leading to a slump in rubber production from 120,000 in 2007 to 75,000 in 2014. Rice also recorded a drop from 295,000 to 237,000, and Cassava from 530,000 to 518,000 during the same period. The overall consequence was a decreased economic growth and reduction in government's revenue. In addition to Ebola, it also became obvious that the changing global climate conditions and the dip in global prices for agro-commodities also contributed to failing agricultural sector in the year 2014/15.

The antecedents of Liberia's slumped agricultural sector productivity led to the anxious call for efforts to manage agricultural sector risks in all forms. PARM Secretariat received an official commitment from the Government of Liberia, in May 2016, under the leadership of the Ministry of Agriculture (MoA), to discuss opportunities for agricultural risk management (ARM) mainstreaming into strategic development policies, plans and budget. The discussion kicked-off PARM process in Liberia, followed by the implementation of many other ARM activities from 2016 to June 2019. The PARM process is a participatory policy engagement process on ARM, which comprise of three main phases: (i) a risk assessment phase focuses on identification, assessment and prioritisation of risks, together with an analysis of risk management gaps within holistic lens; (ii) a tools assessment phase where the feasibility of identified/agreed management tools is analysed, and specific action plans for investment are proposed; and (iii) the implementation phase consists of integrating specific ARM components, including the identified ARM tools into national policy and investment plans of governments and partners.

PARM's participatory engagement process is marked with three key activities: 1) Stakeholders' validation workshop that is held after the risk assessment studies and feasibility studies to validate findings; 2) Capacity development seminar to increase knowledge on ARM for identified stakeholder groups; and; 3) a High-level Policy Dialogue/Dissemination Workshop to officially end the PARM process and solicit financial, technical and institutional support for investment in ARM tools. Key stakeholder groups attracted and engaged with throughout the PARM process include government agencies (of agriculture, finance and others), international development agencies, non-governmental agencies, academic and research institutes, farmers' organisations and the private sector bodies.

The activities delivered in the course of the PARM participatory engagement process in Liberia led to: 1) Bringing ARM to the core of development and agricultural policies; 2) Assessing agricultural risks in Liberia: bringing evidence to improve risk perception; 3) Increasing awareness, strengthening capacities and enhancing partnerships on ARM; 4) Investing in priority tools for better agricultural risk management; and 5) Engaging with the Government, local institutions and development partners.

1. Bringing ARM to the core of development and agricultural policies

The first achievement of PARM has been raising the awareness on the importance to manage agricultural risks, having a more accurate perception of the relative occurrences, severity and impacts of these risks. The key message is that investing in ARM is the only way to boost innovations and enhance growth in the agricultural sector for development in Liberia. As a result, the Government of Liberia, with the support of PARM under the CAADP framework and in consultation with the other relevant stakeholders in Liberia committed to integrate PARM analysis and ARM tools into its Liberia Agriculture Sector Investment Program (LASIP II). This achievement on ARM was a milestone that was followed by further discussion during the high-level Liberia Agricultural Coordination Committee meeting in March 2019.

2. Assessing agricultural risks in Liberia: bringing evidence to improve risk perception

In Liberia like many other African countries, stakeholders mainly have perceptive knowledge of risks facing the agricultural sector. Such ideas about risks is good but not enough, because, an objective knowledge is required to provide evidence to support policy direction for investment in agriculture. During the PARM process in Liberia, an agricultural risk assessment study (RAS) was conducted to identify, assess and prioritise agricultural risks. Stakeholders also converged in a national stakeholders' validation workshop to validate the RAS findings, which reveal evidence of the key risks in Liberia's agricultural sector. The top six risks that were brought to attention 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

The RAS also ranked risks according to the main production sub-sectors, and regional context of the country to give a better direction on the sub-sectors or regions that need priority action. For instance, the RAS proved precipitation is a high risk for cassava and livestock sub-sectors, but medium risks for rice and some cash crops. Similarly, post-harvest losses are very high in cassava and rice, with high potential negative impact on food security.

In terms of regional context, the RAS brought to evidence that flood is very high in the Southern part of Liberia due to the combined intensity of precipitations and very bad drainage systems. In addition, the risk of wind storm is very low or low in across Liberia except in the Northcentral part where the topography is very hilly. The risk of post-harvest losses is very different across regions – it is low in Montserrado, medium in North Western, high in North Central and South Central and very high in South Western. Farther from Monrovia, risks of post-harvest losses increase as the access to road network and storage facilities are poor or limited outside of the city.

An executive summary of the PARM RAS in Liberia is available under the section 2 of this Liberia Country Final Report.

Table 1: Agricultural risks assessment and prioritization in Liberia.

Risk	Severity	Frequency	Worst scenario	Score
High precipitation (Floods)	Very high	Very high	Very high	4.60
Postharvest losses	Very high	Very high	Very high	4.35
Crop pest and diseases	Very high	Medium	Very high	3.85
Livestock pest and diseases	Medium	Very high	Medium	3.65
Price risk	Very 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 (2018) Agricultural risk assessment study (RAS) in Liberia

3. Increasing awareness, strengthening capacities and enhancing partnerships on ARM

From its early stage, a priority for PARM in Liberia has been to contribute to strengthening capacities on ARM by creating opportunities for stakeholders to increase their knowledge on holistic approach to ARM, which consist of risk identification, assessment and prioritisation, risk management tools identification, tools implementation, and monitoring and evaluation. The holistic approach to ARM is an innovative way of thinking about risks in ways that enable stakeholders to generate opportunities out of risk events. PARM collaborated with the MoA to organise a **Capacity Development (CD1) Seminar** in April 2017 to raise awareness and created capacities to manage risks in a holistic manner. The seminar was widely attended by about 40 stakeholders from government agencies, and farmers' organisations, academic and research, internationals development agencies and the private sector.

Following the demands and willingness of the stakeholders to learn more about ARM, PARM also delivered a technical presentation on sustainable investment plan for ARM training in Liberia during Liberia's high-level Agricultural Coordination Committee (ACC) meeting in March 2019. The meeting was another great avenue where PARM strategically discussed with stakeholder on partnership opportunities for increasing capacities on ARM at the farm level though extension service.

A brief concept note of PARM CD in Liberia is available under the section 4 of this Liberia Country Final Report.

4. Investing in priority tools for better agricultural risk management

The risk assessment and prioritization phase in Liberia was followed by a **national stakeholders' validation workshop** in June 2017 where two priority ARM tools for investment were identified: 1) 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; and 2) sustainable investment plan for ARM training in Liberia.

PARM and its country partners led a feasibility study into these two ARM tools, the outcomes of which yielded two proposals for priority investment in ARM:

i. A 3-year investment plan for an integrated information system on ARM in Liberia that 1) relies on fast and cheap data collection through a network of field staff, and data processing by sectorial experts; 2) disseminates useful information within 48 hours of data collection, and via mail WhatsApp groups, text messages and radio broadcasts; and 3) focuses on a limited number of staple crops, rice and cassava and income generating crops like palm oil, plantain, rubber and cocoa.

   A total amount of 1,276,240 USD is estimated for the 3-year period, and a yearly cost of 52,080 USD to be funded under partnership framework among key stakeholders. The exit strategies to fund the system sustainably includes a paid information service on mobile phone, support from government budget, sponsorship from private sector and a levy on agricultural imports or exports. The proposal builds on a multi-divisional implementation approach where a six-member ARM Information System Team is drawn from across the various units of the MoA consisting of 4 Agricultural Risk Analysts, 1 ARM Coordinator and 1 Communication/Dissemination Officer. Also, a steering committee to monitor the investment consist of officials from the MoA's Department of Planning & Development, Division of Extension and Advisory and Division of Crop Protection, Ministry of Commerce and the Liberian Institute of Statistics and Geographic Information System (LISGIS).

ii. A proposed 5-year capacity development for agricultural risk management (CD4ARM) training programme of US$4.884 million that will be built on local-ownership through multi-faceted training methods that foster cascading effects and ensure sustainability. A crucial part of the proposal is that it is consistent with the holistic approach to ARM. An annual budgetary requirement of US$ 695,090 in Year 1 but will rise to US$1.12 million in Year 2 following scaling up from Nimba County to two other counties: Lofa and Bong. The investment funding is expected to be mobilised by the GOL from various development partners, including the following agencies who are currently implementing ongoing projects and programmes that have synergies with the CD4ARM: USAID, African Development Bank, JICA, European Union and IFAD. An important feature of the proposed programme is that it is packaged along with the initiative aimed at developing an Information System for Agricultural Risk Management, which is being supported by PARM and the GOL.

The executive summaries for these two feasibility studies are available under the section 3 of this Liberia Country Final Report

5. Facilitating dialogue between Government, local institutions and development partners

From the initial setting up phase in 2016, PARM met and held active discussions with key stakeholders from diverse organizations, including NEPAD, IFAD, FAO, USAID, World Bank, AfDB and ACDI/VOCA. In the discussions, partners proved their increasing interest and engagement in ARM and on the PARM's holistic approach. PARM received support from these agencies and many others during the capacity development seminar in March 2017 and in the national stakeholders' validation workshop in June 2017. It is no surprise that ARM has been on the table of all these stakeholders, and the MoA invited PARM to participate in Liberia's high-level Agriculture Coordination Committee (ACC) meeting to discuss on the institutional, technical and financial opportunities of the PARM proposed ARM investments and way forward for the agriculture sector.

Timeline of Liberia ARM process

1. Launch of PARM process in 2016

The PARM process in Liberia commenced in May 2016 with an official mission to Liberia under invitation from the Ministry of Agriculture. The mission was a necessarily first step to get the official commitment and support from the government and other relevant country partners. During the mission, stakeholders developed a road map to initiate the joint process of integrating ARM into national agricultural strategic development policies, plans and budget. Different meetings were held with national and international stakeholders to identify potential synergies to support the PARM process in Liberia.

By June 2016, a roadmap to guide PARM Liberia's joint ARM process was officiated with the CAADP Focal Person (who is based at the Ministry of Planning), and in October 2016, a Country Liaison Officer was identified and assigned to coordinate activities and manage stakeholder relationships among the diversity of partners involved in the PARM process in Liberia.

2. Risk Assessment Phase in 2016/17

After a successful inauguration of the PARM process and finalisation of the roadmap, the PARM Secretariat and country partners initiated the risk assessment phase, consisting of a competitive launch of a call for proposal, the execution of a risk assessment study and the validation of findings from the study. The call for proposal for RAS was launched in September 2016, after PARM and CAADP together with the MoA validated the **Terms of Reference (ToR)** for the study. The Research Centre for the Management of Agricultural and Environmental Risks (CEIGRAM) was awarded the contract in December 2016 following the review of a pool of applications that were received from experts/institutions. Preparation for the RAS kicked-off in the same month of December 2016. The RAS was conducted throughout the first quarter of 2017, and the draft report was received in May 2017.

PARM also organized a **capacity development** (CD1) seminar in April 2017, in collaboration with the Ministry of Agriculture. The seminar attracted national stakeholders from government agencies, farmers' organizations, and academia. It introduced the participants to the holistic approach to ARM, risk assessment methodology, and tools for managing agricultural risks.

In June 2017, a **national stakeholders' workshop** was organized in to mark the end of the PARM RAS in Liberia. The workshop was an important event as it provided an opportunity for the researchers to present the preliminary findings and for the stakeholders to validate the results. Inputs from stakeholders were collected at the workshop and integrated into the final report. By December 2017, the final version of the RAS report was submitted to the Ministry of Agriculture for official validation. Given the importance of the study, the Government decided to include components of RAS into its Liberia Agriculture Sector Investment Program (LASIP II). The RAS also received significant attention from the newly appointed MoA officials following the change of Government after the 2018 elections.

3. Tools assessment Phase in 2018/19

During the National Stakeholder workshop in June 2017, two ARM tools were identified for priority investment in Liberia: 1) timely access to information for farmers on weather, pest and diseases and price through the establishment of an integrated information systems in Liberia; and 2) sustainable investment plan for ARM training in Liberia. In September 2018, a **Terms of Reference (ToR)** for a feasibility study to assessment the potential of these two ARM tools were drafted and validated by the Government of Liberia.

Two institutions were identified to proceed with the studies, after the competitive call for proposal was launched. The NITIDAE consultancy firm was awarded the contract for the first ARM tool and the Natural Resources Institute (NRI) of the University of Greenwich for the second ARM tool. Both studies were conducted from the late 2018 until March 2019. Results of the studies were presented to stakeholders during Liberia's high-level Agricultural Coordination Committee (ACC) meeting in March 2019 and validated by the MoA shortly afterwards.

The overall outcomes of PARM process in Liberia was presented during the high-level **Agricultural Coordination Committee meeting** in March 2019. This officially ends the joint process between PARM and a diversity of partners in Liberia. However, further opportunities exist to continue engagement in PARM Horizon 2.

The way forward: matching ARM investment needs with Government's priorities and donors' investment plans

Investment proposals developed as part of the PARM process are a strong and attractive holistic package for improving ARM in Liberia. The proposals have attracted discussions with interest of development partners at the ACC meeting. This is an excellent opportunity for the Government of Liberia to lead the implementation of the proposed ARM tools under the support of the development partners.

During the ACC meeting in Liberia, the preliminary results of the two feasibility studies on i) Improving access to agricultural risk information for meso level stakeholders in Liberia and ii) Integrating ARM capacity development trainings into the extension service strategy; were disseminated to a wider group of high-level stakeholders (from Government agencies and development partners). The axes of an action plan and institutional arrangements to support the implementation of the ARM tools were discussed with the MoA to ensure ARM integration into Liberia's National Agriculture Investment Plan (LASIP II) (2018-2022).

Also, at the ACC meeting, PARM discussed ARM investment plans with the committee, which comprised of stakeholders from the Donor Community including USAID, EU, WB etc. and other international organizations including World Food Program (WFP), IFAD and Food and Agriculture Organization (FAO). The discussions attracted their interest into possible opportunities to collaborate with the MoA for investment in the proposed ARM tools – the 1.5M 3-year information systems on ARM and the 5M 5-year CD4ARM training programme in Liberia. Particularly, IFAD-ICO showed interest to integrate findings from the PARM RAS into its country strategic opportunities programme (COSOP), which is under formulation.

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MANAGEMENT

2. Prioritizing risks

Risk Assessment

Liberia

Agricultural Risk Assessment Study (RAS)

Executive summary

August 2016

Study conducted by:
CEIGRAM

In collaboration with:
Ministry of Agriculture of Liberia

In this report, the Liberia country profile is presented based on the general and agricultural information on risks emanating from weather and climate change, food security, biological and environmental, inputs and infrastructure, market and prices as well as the policy and institutional context.

Because of the difficulties to calculate the average economic losses for every agricultural risk due to the lack of reliable data, statistics and information, we followed a methodology for risk prioritization which combines quantitative and qualitative risk assessments depending on the availability and reliability of data. The methodology is based on four elements:

1. quantitative or qualitative assessments of frequency, severity and worst scenario for the different agriculture risks;
2. main constraints that increase the impact of some agricultural risks and the vulnerability of farmers facing that agricultural risks;
3. academic literature review and the search for reports, studies and analysis from NGOs, consulting, think tanks, cooperation agencies and national and international institutions; and
4. interviews with experts from NGOs, cooperation agencies, international institutions and officers of Liberian ministries and national institutions collected in the field work and by e-mail or teleconference.

Based on these four elements and using the scoring methodology, the following table was generated to present the prioritization of the agricultural risks in Liberia.

Table A: Risk scoring for Liberia

Risk	Severity	Frequency	Worst scenario	Score
High precipitation (Floods)	VERY HIGH	HIGH	VERY HIGH	4.60
Post-harvest 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
Politic risk	MEDIUM	MEDIUM	MEDIUM	3.00
Inputs counterfeit	MEDIUM	LOW	MEDIUM	2.59
Windstorm	LOW	MEDIUM	LOW	2.34

Source: Authors Construct based on qualitative assessments of risk and scoring methodology

The most important risks to tackle for the agricultural development in Liberia according to the scoring 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.

Further, the study prioritizes risks according to the main crops and livestock production sectors. We observe that the high precipitation is a high risk for cassava and livestock, but it has a medium risks core for rice and some cash crops which are widely grown in the North and Central part of the country where excess rain-fall and floods are uncommon. The second risk according to relevance is post-harvest losses as it is very high in cassava and rice the two main staple foods in Liberia and therefore with a high potential negative impact on food security. The crop pest and diseases risk are very high for rice provoking important reduction of rice harvest which implies increasing import and food aid to face food security problems.

The lack of pesticides for fighting against the pest and diseases of rice is a constraint that increases the impact and harvest losses from rice pest and diseases.

The livestock pest and diseases risk are very high for livestock farmers but the impact on national economy is not very relevant as the livestock subsector represents only 14% of agricultural GDP. The three main diseases of livestock are Pest des Petit Ruminants (PPR) in goat and sheep, swine fever in pigs and Newcastle Disease in back-yard poultry production. These three are the most devastating diseases for livestock in Liberia, followed by the all sort of non-well-defined diarrheal diseases. They occur regularly and damage a great proportion of rural and peri-urban households.

About 95% households reared chickens or ducks, 52% reared goats and at least 35% reared pigs according to data issued in 2013. An important increase in the number of households with chickens, goats and pigs is taking place during the last five years and therefore the risk and impacts of animal and human health (zoonosis) is increasing. The lack of veterinary services, vaccination and medication products together with the very limited access to adequate raw materials are important constraints that increase the impact of pest and diseases on Liberian livestock.

Concerning the price risk, we assessed a great difference between the price risks in food crops compared to cash crops. The price risk is high in cash crops which are exported as the farmers growing cocoa and rubber are subject to the volatility of the international markets and the lack of transparency of domestic market prices as the transition from LPMC to LACRA is still pending. In the case of cassava, rice and palm oil the price risk is medium based on information published by WFP on retailer prices

The study also prioritizes agricultural risk according to the different regional context of the country. For this analysis we consider five regions in Liberia: Montserrado that includes Monrovia, North Western, North Central, South Central and South Eastern. The main risk in Liberia is deemed as flood which is very high in the South regions provoking huge impacts in these regions due to the combination of very high risk of huge precipitations and very bad road infrastructure. In addition, the risk of wind storm is very low or low in across Liberia except in the North Central Region where the topography is very hilly. The risk of post-harvest losses is very different across regions, is low in Montserrado, medium in North Western, high in North Central and South Central and very high in South Western. Farther from Monrovia more post-harvest losses risk increases as the road and storage facilities are much worse in the south and excess of raining and floods has dramatic impact on post-harvest losses.

Concerning biological risks, the crop pest and diseases risk is just high in North Central and South-Central regions where the upland rice cultivation is concentrated. In Montserrado the risk is low and medium in North Western and South Eastern. In the case of livestock pests and diseases risk are relatively high throughout all the rural areas, except North Western Liberia and medium in Monrovia because of the establishment of animal farms in the peripheral areas. The risk of communicable diseases related to water is a major threat in Liberia due to the high prevalence of diarrheal related disease like malaria. Malaria is endemic across the entire country and it is the nation's number one direct cause of morbidity and mortality.

The price risk is different in the North compared to the South. The Southern regions have a high price risk since they are far regions from Monrovia and the frequent floods collapse the roads and prevent the transport to and from outside provoking impacts on food markets and prices. Lastly the input risk and political risk is very similar in all regions and ranking from low to medium risk.

After the assessment and prioritization of agricultural risks in Liberia and the analysis of the main constraints that Liberian agriculture face, the main recommendations on policies to be implemented and tools to be used for agricultural risk management in Liberia are summarized in the following table.

Table B: Risk management tools for Liberia

Ranking	Risk	Risk management option
1	Rain (Floods)	Watershed management (improvement of roads and drainage) Information system and early warning;\
2	Post-harvest 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	Politic 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

The study also reviews the existing policy and institutional environment as well as the initiatives for risk management in Liberia. It goes on to conclude that the capacity to implement national policies is limited mainly due to institutional weaknesses, lack of technical capacity and budgetary constraints. Programs and projects in Liberia funded by international agencies and NGOs in many cases do not focus on the strengthening of the technical capacity of national institutions. Deficiencies in human resources and technical capacities and limited financial resources make it difficult for the government to implement national policies, programs and projects.

More capacity for data collection and technical analysis is needed in the public sector. In several risks, the role of extension services is a key component of ARM policies. The lack of coordination and collaboration among different institutions is another institutional weakness that should be overcome to improve the agricultural risk management effectiveness.

Risk Assessment

Liberia

Agricultural Risk Profile

What are the key findings?

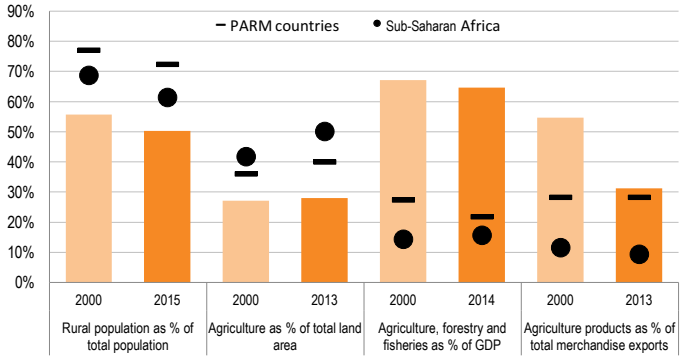
- The analysis suggests that output price risks are greater than production risks. Natural rubber prices drive this result.
- Floods and storm events are the most frequent natural disasters.
- Droughts are rare. The number of drier months is falling.
- The Ebola epidemic severely disrupted production, markets and income.
- Maize, cocoa beans and rice are the crops most affected by yield losses.
- Natural rubber, coffee and palm oil are most affected by output price risks.
- Political stability was improving before Ebola but remains relatively low.

What are agricultural risks?

Agricultural risks are uncertain events that cause farmers significant financial loss or other adverse outcomes. They are different from constraints, which are predictable and constant limitations. Risks can negatively affect rural employment and assets, increase food insecurity, and lead to inefficient private and public sector investment. The purpose of the profile is to provide a high-level quantitative analysis of selected risks. It uses a common methodology, drawing on easily available information. As annual national averages are used, local and seasonal variations cannot be observed. This may underestimate production risks as compared to output price risks. The scope of the analysis is also limited by the lack of output data for livestock products. For Liberia local price data was not available so export prices were used. A detailed country risk assessment requires a much fuller investigation

What role does agriculture play?

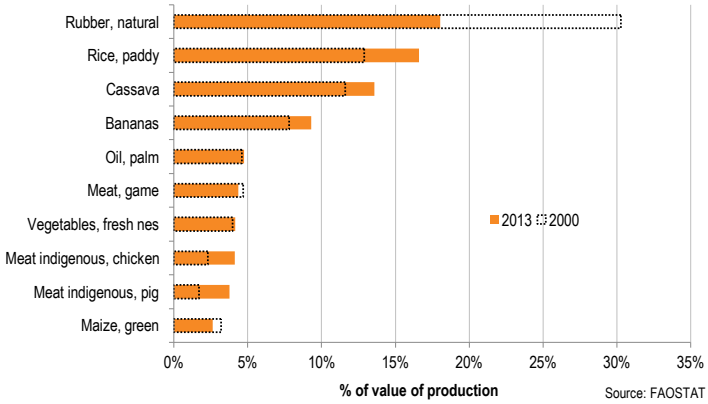
About half of the total population of 4.5 million is rural, less than the Sub-Saharan Africa and PARM countries averages. Despite occupying less than 30% of land area, agriculture accounts for two-thirds of GDP, well above the African average.



Source: FAOSTAT

What products are most important?

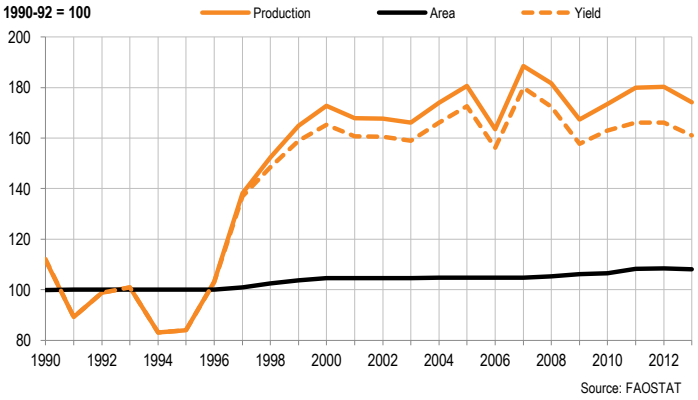
Rubber, rice and cassava are three more important products. The top ten products represent 81% of production in 2013, with all crops accounting for 85%. While the production of rubber has fallen, the output of most other commodities has been increasing.



Source: FAOSTAT

How has the sector grown?

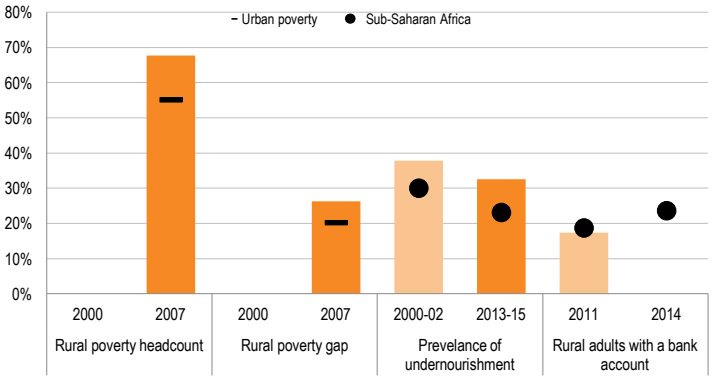
Between 1990 and 2013, agricultural output increased by 75%, with most of this occurring in the late 1990s. This is primarily due to rising yields, with just 8% more land in agriculture. Both crop and livestock output has risen at very similar rates (2.7% and 2.6% per annum).



Source: FAOSTAT

How vulnerable are people to risks?

Almost 70% of the rural population is living in poverty, with the poverty gap wider than in urban areas. While the prevalence of undernourishment has fallen it remains above the Sub-Saharan Africa average. Access to credit appears to be around average African levels.



Sources: World Bank and FAOSTAT

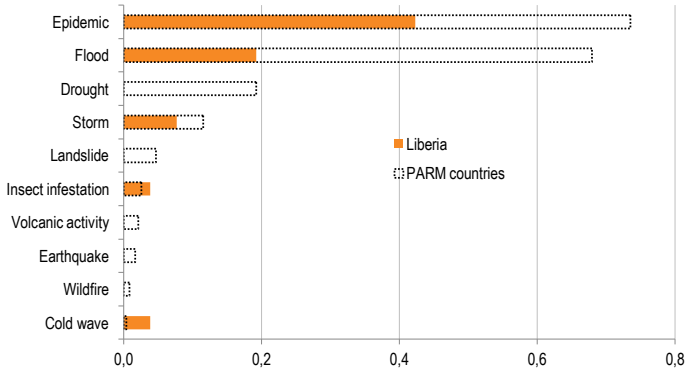
Production risks

What are production risks?

A large number of risks affect agricultural production. These include climate related events (such as droughts, floods and cyclones), outbreaks of pests and diseases, and damage caused by animals, windstorms or fire. The geographic and temporal spread of these impacts can vary significantly. Production risks are mostly associated with yield reductions but can also affect product quality

How often do major disasters occur?

In the period 1990-2015, epidemics were the most frequent disaster to affect Liberia. A major flood event occurs once every five years, and a storm disaster every decade. No droughts or volcanic activity events were recorded.



What is the likely impact of future climate change?

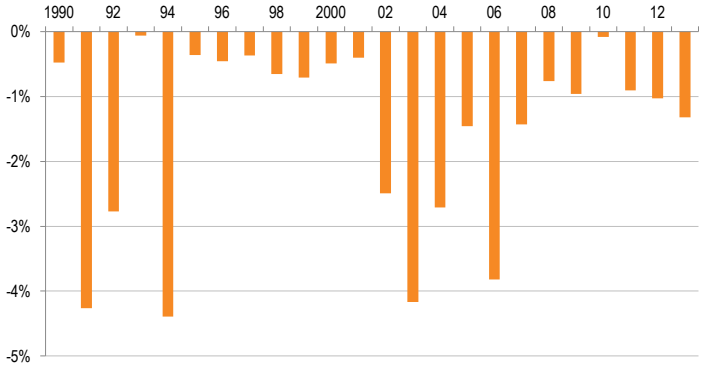
The IPCC 5th assessment report concludes that land temperatures over Africa are likely to rise faster than the global land average, particularly in the more arid regions. Tropical West Africa, including Liberia, is also identified as a hotspot, with possible temperature rises of between 3-6°C above the late 20th century baseline.

Projected rainfall change over most of sub-Saharan Africa, including West Africa, is uncertain due to complex topography. Further research is required.

Increasing temperatures and changes in precipitation are very likely to reduce cereal crop productivity, and could also adversely affect high-value perennial crops. Pest, weed, and disease pressure on crops and livestock is expected to increase.

Has the risk varied over time?

Totalling the annual value of production losses for the 12 crops provides an indicative production risk profile for the period. Production losses averaged 2%, ranging from 0-4%. The largest estimated losses occurred in early 1990s and early 2000s.



Estimated production lost

Sources: PARM and FAOSTAT

What animal diseases are present?

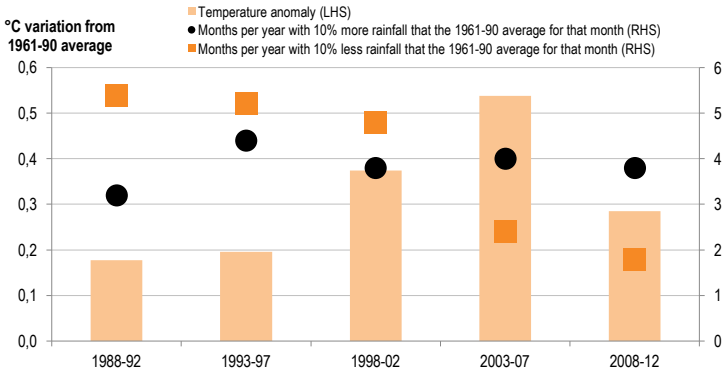
No information on livestock diseases is available for Liberia from the OIE database.

What has been the impact of Ebola?

Since the first reported outbreak in December 2013, the Ebola Virus Disease (EVD) has exacted a heavy toll in Liberia, along with neighboring Guinea and Sierra Leone. As of 13 April 2016, Liberia has reported over 10,600 cases of EVD, and over 4,800 deaths. In June 2016 the country was declared Ebola-free. The epidemic has impacted agriculture in many ways. The flight of rural workers and an inability to work in groups due to fear of infection caused a drop in crop production. Government imposed movement restrictions prevented goods reaching the market, leading to post-harvest losses for producers and higher prices for consumers. Further, the purchasing power of households fell due a large reduction in employment, income, foreign investment.

Are weather anomalies increasing?

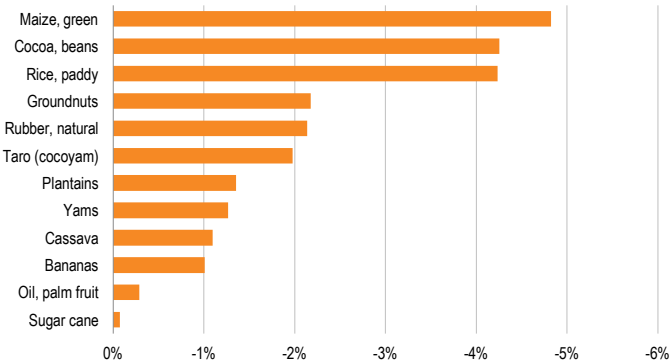
While temperature levels are higher than the 1961-1990 average, a notable fall in the average occurred in 2008-12. A downward trend in the number drier than average months is also observed.



Sources: PARM and World Bank Climate Change Knowledge Portal

Which crops appear most at risk?

Maize, cocoa beans and rice are the crops most affected by yield losses as estimated by the impact on production. Annual yield losses averaged over 4% of production for these crops during 1990-2013, with maize having an average loss of 10% every 2 years.



Average production lost to risks, 1990-2013

Sources: PARM and FAOSTAT

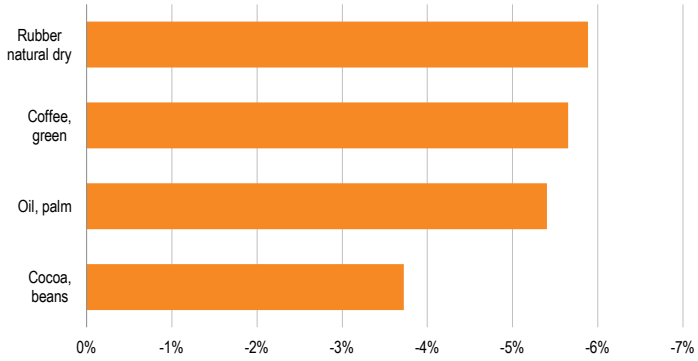
Market risks

What are market risks?

Market risks are issues that affect the price and availability of outputs and inputs. Commodity markets can have a high degree of volatility caused by changing local and global supply and demand. Producers are concerned about low prices (reducing their income); consumers are worried by high prices (raising their expenditure). Other market risks include exchange rate volatility, which can affect the price of outputs and inputs.

Which products appear most at risk?

Over the period 1999-2013, natural rubber, coffee and palm oil appear to be the commodities most affected by output price risks. These three products have an average annual price loss of greater than 5%, with an average loss of 15% every 2.5 years for rubber.



Annual average expected price loss ratio, 2005-2014

Source: PARM and FAOSTAT

How are the product and temporal risks estimated in this profile?

Indicative estimates of production and output price risks are calculated in a similar way. A loss threshold of 0.33 times the standard deviation below the trend value in either yield or prices is calculated to set a benchmark for identifying the losses resulting from production and market risks respectively.

To calculate product specific risk values, the average yield or price loss below the threshold level and the frequency of these occurrences are multiplied to obtain average production and price loss ratios. This is done for the 12 most important crop and livestock commodities for which data was available.

To calculate the risk profile over time, the individual loss for each respective year is added together across the crop commodities only

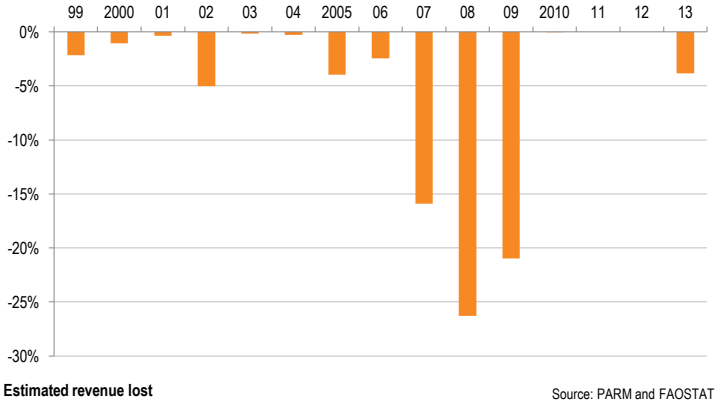
How variable are input prices?

Import data is not available for Liberia.

IMPORT DATA IS NOT AVAILABLE FOR LIBERIA.

Has price risk changed over time?

Totalling the estimated revenue lost due to output price risks for the individual commodities provides an indicative market risk profile. The average annual loss is 6%, with losses over 20% in 2008 and 2009. This is driven by the profile for natural rubber.

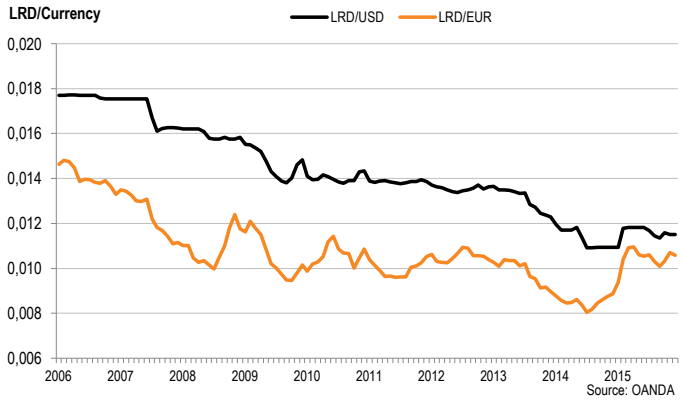


Estimated revenue lost

Source: PARM and FAOSTAT

Is there an exchange rate risk?

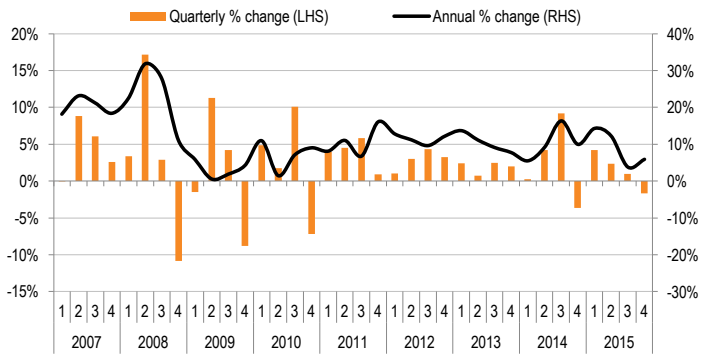
Liberia has a dual currency regime, with the USD enjoying legal tender alongside the Liberian dollar (LRD). The vast majority of exports are to the United States and Europe. With the USD accounting for 90% of money supply, there is little exchange rate risk.



Source: OANDA

Do food prices vary for consumers?

Over 2007-15, the food component of the consumer price index recorded an average annual increase of 12%. The highest annual rate of 32% was recorded in June 2008. Prices have risen more slowly since 2010 and fluctuate less.



Source: Central Bank of Liberia

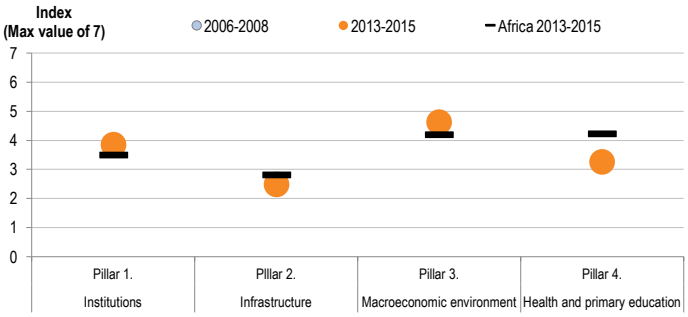
Macro level risks

What are macro level risks?

Macro level risks cover unexpected changes in the broader economic environment in which agriculture occurs. It can include changes in government or business regulations, fiscal and monetary policy settings, external trade restrictions, political instability, corruption, regional conflict and domestic unrest.

Are basic requirements in place?

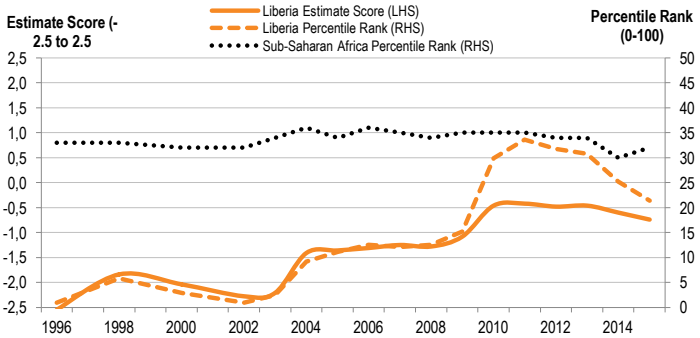
Index scores for the basic requirement pillars place Liberia above the African average for two pillars but below for two. While institutions and the macro-environment are move favourable, Liberia scores relatively poorly in health and primary education.



Source: World Economic Forum, Global Competitiveness Index

Is the political environment stable?

Liberia scores below the Sub-Saharan Africa average in the political stability and absence of violence index. Its ranking has improved markedly this century, rising from the bottom 1% in 2002 to 34% in 2011. Its ranking has slipped in the last few years.



Source: Worldwide Governance Indicators

Overall risk assessment

The PARM process

A detailed risk assessment is carried out as part of the PARM process, in partnership with NEPAD and the relevant African government. It is a rigorous consultation process involving a risk assessment report drafted by international and local experts, followed by a national validation workshop with the participation of stakeholders including farmers, private sector companies and government. Risks are identified at a detailed level, e.g. droughts, raids, etc.

A detailed risk assessment has yet to occur for Liberia. Consequently, the overall risk assessment is conducted at a higher level based on the analysis contained in this profile.

What are the main agricultural risks?

The analysis suggests that overall output price risks are greater than production risks. Both are relatively low compared to other PARM countries. The frequency of revenue losses associated with output price risks and their severity (both on average and in the worst-case scenario) are greater than for production risks.

RISK	VARIABLE	AVERAGE FREQUENCY	AVERAGE SEVERITY	WORST-CASE SCENARIO
PRODUCTION	RAW SCORE	0.29	-7%	-24%
	RISK LEVEL	● HIGH	● LOW	● MEDIUM
OUTPUT PRICE	RAW SCORE	0.37	-14%	-29%
	RISK LEVEL	● HIGH	● LOW	● MEDIUM

What are the linkages between risks?

Managing risks in agriculture is particularly challenging, as many risks are highly correlated, resulting in whole communities being affected at the same time. Impacts on yield that are widespread and have a significant impact on total market supply can have profound effects on market prices. In Liberia, an epidemic such as Ebola is a clear example of one risk that can trigger others, reducing crop output because of labour shortages (production risks), and further inflating prices because of government imposed travel bans (market risks).

What is PARM? The Platform for Agricultural Risk Management (PARM), an outcome of the G8 and G20 discussions on food security and agricultural growth, is a four-year multi-donor partnership between developing nations and development partners to make risk management an integral part of policy planning and implementation in the agricultural sector. PARM operates a process to achieve this through risk assessment, policy dialogue, tools assessment and capacity development.

PARM Secretariat International Fund for Agricultural Development (IFAD)

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AFD
Cooperazione Italiana allo Sviluppo Ministero degli Affari Esteri
IFAD Investing in rural people
german cooperation
KFW
NEPAD TRANSFORMING AFRICA

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3. Finding the right tools

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3.1. Information systems for ARM

Tools Assessment

Liberia

Feasibility study for investment in information systems for agricultural risk management

Executive summary

April 2019

Study conducted by:
Nitidæ

In collaboration with:
Ministry of Agriculture of Liberia

Study context and objective

In 2017, the Center for Studies and Research for Agricultural and Environmental Risk Management (CEIGRAM) conducted an agricultural risk assessment study in Liberia for PARM. The study divided agricultural risks in Liberia into 3 categories:

- Weather risks, especially floods and wind storms
- Production risks, especially postharvest losses that reduce food self-sufficiency and marketable surpluses
- Environmental risks, especially pests and diseases that decrease yields in main staple and cash crops.

From the CEIGRAM study, it was concluded that strengthening early warning and information systems as well as strengthening the Ministry of Agriculture (MoA)'s extension services capacities for assessing and managing agricultural risks are key for the agricultural sector productivity in Liberia. Therefore, this feasibility study is to develop recommendations and an investment plan for agricultural risk management (ARM) information system that would be useful for value chain stakeholders and meso-level operators to efficiently manage risks related to weather, pests, diseases and price volatility in Liberia. The study relies on the analysis of demand and supply of agricultural information in Liberia.

Demand and supply of agricultural information in Liberia

Demand

We analyze agricultural information demand according to stakeholders and risk categories. The table 1 below summarizes the data collected.

Table 1: Agricultural information demand in Liberia.

Stakeholders	Needs on weather information	Needs on price and market information	Needs on pests and diseases information
Producers	**High priority** – Weekly weather forecast during the rainy season (especially about the onset)	**High priority** – Regularly updated information on farm-gate prices (county level) – Advises on potential marketing price – Contact with trustworthy spot buyers **Lower priority** – Market information at the national and international level – Wholesale prices in nearest cities	**High priority** – Advises on cultural and post-harvest practices, especially on pest control – Contacts of agro dealers (improved seeds and seedling, inputs) – Updates on potential pest propagation
Farmers' Organisations	**High-priority information** – Weekly weather forecast during the rainy season (especially about the onset)	**High priority** – Regularly updated information on farm-gate prices (price range at the national level) and nearest wholesale prices – Markets price trend for the coming weeks or coming months – Contact with trustworthy buyers, possibly with willingness to pre-fund their purchases **Lower priority** – Contacts of banks and financial institutions – Market information at the international level	**High priority** – Updates on pest propagation – Contacts of agro dealers (improved seeds and seedling, inputs) – Advises on cultural and post-harvest practices, especially pest control and storage good practices
Local traders and wholesalers	**High-priority information** – Weekly weather forecast during the rainy season (especially about the onset)	**High priority** – Farm-gate and wholesale prices at the national level (price range) – International market prices variation and trends (weekly to monthly trend) – Contacts of potential buyers with capacity to purchase in bulk (>30 MT)	**Lower priority** – Advises on storage practices and market quality requirements – Contacts of agro dealer (inputs, bags) – Forecasts on production at the national level

Supply

The Table 2 below sums up existing and past agricultural information supply in Liberia, as observed during the mission. Agricultural information supply is currently very limited for value chain stakeholders and meso-level operators. Most of the information available are now historical data and are available online. Most producers and farmers' organizations declared having no access to weather information, extension and advisory services. Market information is accessed through direct phone contact with Monrovia's wholesalers. The Liberia Agriculture Commodity Regulatory Agency (LACRA)'s minimum price radio statement for the 2018 cocoa campaign has been well perceived by stakeholders as information are otherwise not available.

Table 2: Existing and past agricultural information supply in Liberia.

Organizations	Weather information	Price and market information	Pests and diseases Information	Other
Central Bank of Liberia		– Historical and aggregate information on agricultural products exports and imports as well as consumer price index – Last publication: Oct 2018 – Available online		
MoA	– Direct information feedback (calls) from field officers in case of urgent matters (major flood or drought)		– Direct information feedback (calls) from field officers in case of urgent matters (pest propagation)	– Monthly information feedback from field officers on their field activities – Annual crop assessments, in partnership with LISGIS. Last done in 2016. Available on line and by request
LISGIS		– Local retail prices monitoring (rice, cassava, palm oil, pepper and bitterballs) – Last publication in Sep. 2017, also disseminated through WFP's dataviz and FAO's GIEWS		– Annual crop assessments, in partnership with MoA. Last done in 2016. Available on line and by request
Liberia Meteorological service	– Current joint project with UNDP on climate information services – Weather information dissemination stage not yet reached			
LACRA		– First minimum price for the cocoa campaign done in 2018 – Dissemination through radio statements		
GROW Liberia		– Tried to build market linkage and information system activities in the past year – Activities stopped due to low results		

Opportunities and challenges for an efficient ARM information system

Regarding the **main opportunities** for an efficient ARM information system, the study identify that:

- Liberia has good telecommunication infrastructure in the main agricultural areas: 56% of the population has a mobile phone subscription and 80 radio stations are active, mainly in rural areas.
- There is a good literacy rate in rural areas: 43% of the total population and 49% of those within the ages of 15-and 24-years old in 2007.
- More producers have now a more market-driven strategy for their farming systems, as observed with the resumption of cash and commercial food crops plantation dynamic (cocoa, rubber, palm oil, plantain, pepper).

The **main challenges** observed are:

- MoA's field officers are poorly equipped and trained. They are also dependent on projects funds
- Liberia's market is small and poor to attract private companies wanting to invest in services for agriculture, including agricultural information.
- There is a high turnover in public agencies in key positions (technical and managerial positions) which create losses in skills, knowledge and network in the administration.
- Mobile phone communications are costly. Average cost is 18.41 USD/month for 30 calls and 100 SMS according to the International Telecommunication Union (ITU).
- The mobile network is relatively good in the country, but internet use remains very limited, particularly in rural areas.
- Increasing industrialisation and medium/commercial plantations (rubber and palm oil mainly) in several rural areas decrease the availability and increase the cost of manpower for family farming. This situation pushes small household to orientate their own production towards a subsistence strategy (food crops only for self-consumption) and generate incomes by renting out labour.

Technical and operational proposal

We suggest that an efficient ARM information system in Liberia should rely on:

- **Fast and cheap data collection**: data collection should be done by a limited number of staff, through phone calls to key informers previously met. This approach greatly reduces costs and

allow a greater flexibility in the data collection than the usual network of field staff collecting local data. Moreover, it enables the inclusion of qualitative information in the data collection, which are useful for context analysis.

- **Data processing by sectorial experts**: data collection and analysis should be done by a pool of experts (specialized in a crop or in a specific agrarian context). Experts can easily identify determining factors during routine data collection. They can also quickly synthesize the information to advice on risk management.
- **Timely, broad and useful information dissemination**: the information system must disseminate broad and unrestricted information. Information should be disseminated rapidly (max 48h between data collection and information dissemination). Dissemination should be regularly and timely so that users know they can rely on it to make decisions. In addition, it must provide advice on how to manage priority risks.

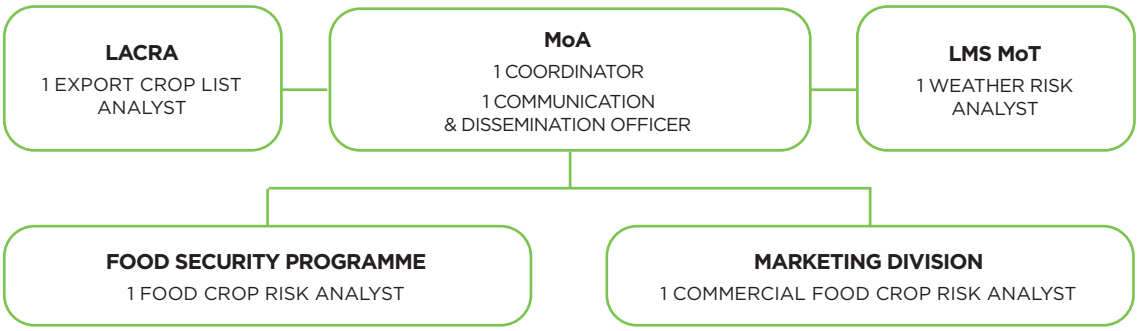
We also recommend to:

- **Start the ARM information system with a limited number of crops**: rice, cassava (the two main staple crops), palm oil, plantain (crops at the junction between food security and producers' commercial strategy), rubber and cocoa (the two main cash crops in the country). More challenging crops could be added later, such as pepper and bitter balls (highly perishable).
- **Focus on short term updates**: weekly weather forecasts (rainfall forecasts), market information (farm-gate trends and marketing advices), pest control information, cultivation & post-harvest tips for the first stages of the ARM information system as they appear the most strategic.
- **Collect data through phone calls** to private and public stakeholders on a weekly basis to start. Using this methodology, few individuals can manage data collection nationwide in a timely and efficient manner.
- **Disseminate information using several channels**, such as mail and WhatsApp groups, for public agencies, research units, international organizations and NGOs, text messages and radio broadcasts for local stakeholders.

To enhance the implementation of the recommendations outlined above, we suggest the creation of a six-member ARM Information System Team within the MoA. The team should compose of 4 Agricultural Risk Analysts, 1 ARM Coordinator and 1 Communication/Dissemination Officer. The ARM information system would be based and coordinated by the MoA. 1 Agricultural Risk Analyst would be based in the MoA's Food Security Division (supervising information on cassava and rice) and another Agricultural Risk Analyst would be based in the MoA's Marketing Division (supervising information on palm oil and plantain). The third Agricultural Risk Analyst would be based in LACRA (export crops: cocoa and rubber) and the last Agricultural Risk Analyst would be in the Liberia Meteorological Service (weather risk).

To monitor and coordinate the program, the following institutions should be represented in a steering committee additionally to the institutions implementing the Information System:

- Ministry of Agriculture: Department of Planning & Development, Division of Extension and Advisory and Division of Crop Protection
- Ministry of Commerce
- Liberian Institute of Statistics and Geographic Information System (LISGIS)



We propose an investment plan for 3 years with a total cost of 1,276,240 USD. The yearly cost to run the ARM Information System after the end of the project would be of 52,080 USD.

Amount in USD	Year 1	Year 2	Year 3	Total	Post-project
Project coordination, M&E and capitalization	44,000	44,000	44,000		0
Capacity building (Technical Assistance + Training sessions)	102,000	69,000	46,000		0
Collection and production of information	80,080	27,080	17,080		17,080
Dissemination of the information	333,000	417,000	53,000		35,000
Total	559,080	557,080	160,080	**1,276,240**	**52,080**

Several exist strategies are proposed in the conclusion part of the report, including opportunities for both private and public sources of financing for the Information System. But as an advantage, we specify clearly the need for the proposed Information System is to have a limited running cost.

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3.2. Capacity development as a tool for ARM

Tools Assessment

Liberia

Feasibility study on sustainable investment plan for ARM training

Executive summary

April 2019

En collaboration avec :
Natural Resources Institute
University of Greenwich, UK

In collaboration with:
Ministry of Agriculture of Liberia

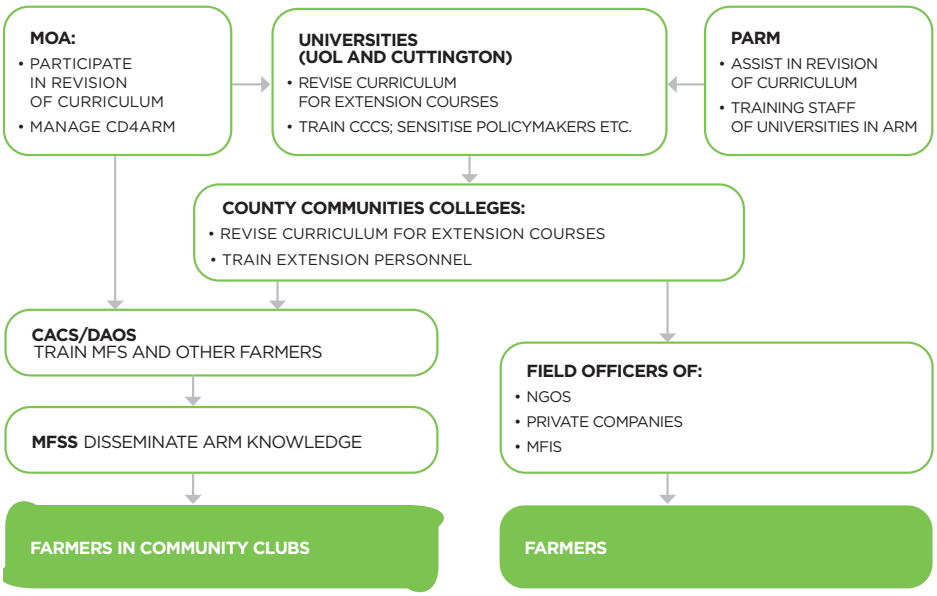
This report is for a study commissioned by the Platform for Agricultural Risk Management (PARM) to produce a sustainable investment plan to develop the capacity of smallholder farmers in Liberia to assess, prioritise and manage agricultural risks. It forms part of activities agreed between PARM and the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



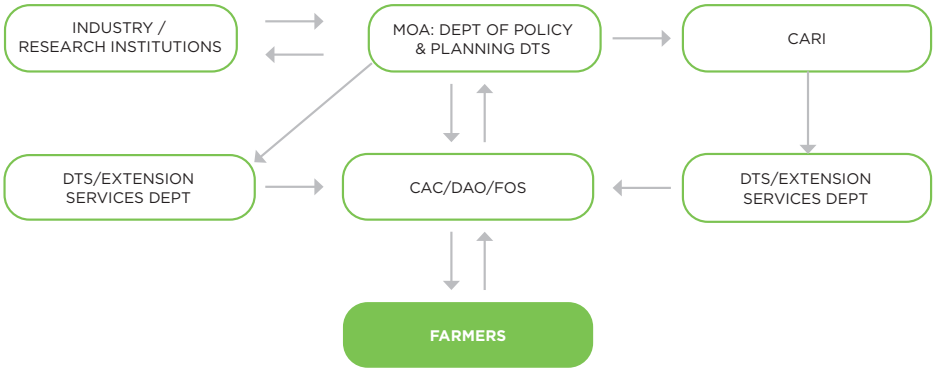
Source: authors

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:

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 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 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.

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MANAGEMENT

4. Developing capacities and sharing knowledge

Capacity Development

Liberia

Capacity development on agricultural risk management

Country strategy note

February 2019

1. Context

Agriculture is a risky business. Extreme weather conditions and climate change are likely to affect negatively the performance of crop production and livestock activities. High food prices and global market uncertainties pose a major threat to food security, especially for the poor. Global, regional and national interests call for opportunities to develop sustainable tools to manage risk in agriculture beyond a humanitarian intervention to disasters and to implement an ARM system covering other risk layers for farmers, private sector and government.

Agriculture risk management, however, requires knowledge and skills to assess the risks and to implement appropriate tools successfully. Developing capacity at country level among relevant stakeholders is essential to plan strategies and mainstream solutions in the national policy agenda. As part of the overall initiative, PARM supported capacity development (CD) activities on agricultural risk management oriented towards the understanding of the structure of risk management cycle considering the diversity of risk sources and risk management options, from agricultural practices to improved seeds, irrigation or financial tools. PARM's capacity development (CD) strategy is articulated in three levels of activity: 1) CD1, a 2-day general ARM seminar; 2) CD2 - A high level ARM course/Training of trainers (ToT) to be included in the curricula of local training institutions; and 3) CD3 - Specific CD activity in support to the feasibility studies for investment on ARM.

The Capacity Development component of PARM was also supported by feasibility studies for investment in training of agricultural extension services to develop smallholder farmers' ARM capacity. In addition, PARM has also conceived and disseminated its own training material to enhance knowledge and practical use of the new ARM concepts proposed by the platform.

In particular, Liberia benefited from all of PARM's capacity development activities, which are:

- CD1 material 'Managing risk at farm level':
  - *Manual*, with the theoretical framework for developing the ARM CD1 seminar;
  - *Guidelines for Trainers*, with practical information, tips and suggestions for trainers on how to conduct a two-day ARM seminar and manage its content;
  - *Handbook*, with the theoretical framework developed using visual and graphic tools for participants;
  - *Slides*: to help trainers provide the course content using the computer.
- CD2 material 'Agricultural Risk Management in Developing Countries: a Learning Course for Practitioners':
  - *Module 1. Understanding the risk environment in agriculture;*
  - *Module 2. Risk assessment in agriculture;*
  - *Module 3. Agricultural Risk Management Tools;*
  - *Module 4. Planning, Implementation and Evaluation of ARM Strategies*

The above four modules of the CD2 Materials contribute to the PARM / FAO / NEPAD e-learning course on «Agricultural Risk Management and Resilience» available on FAO E-learning Centre. Together, all the learning materials are used in PARM's CD activities at the country level.

Liberia benefited from the following CD activities developed by PARM:

- A 2-day general ARM seminar (CD1);
- Workshop on sustainable investment plan for capacity development in agricultural risk management.

2. A 2-day general ARM seminar (CD1)

The training was delivered to 35-37 participants. Most of the participants came from Monrovia, and few others from Bong, Nimba, Lofa, Maryland, and Margibi. The majority of participants were government officials and also farmers; there was a good representation of farmer leaders or representatives from farmer organizations. Few representatives of academia (University of Liberia and Cuttington University) also attended the seminar.

The seminar was structured into two days. Day 1: Understanding and assessing risk, and Day 2: Managing risk with ARM tools. Each day's seminar was designed with presentations that left space for simultaneous interactive discussions, and group works were organized to enable participants to apply the lessons learned. PARM video and ARM-Aware game tool were used to provide other ways to explain and evaluate the understanding of the ARM topics, respectively.

The group work, and discussions produced interesting results linked to agricultural risks in Liberia. During the introduction sections on General Concept of Agricultural Risk Management, most severe risks were discussed. During the first group work, pest and diseases, low quality inputs, and climate related risks emerged as main risks; the crops most affected resulted rice and cassava.

A second group work on risks for selected value chains that included identification of root causes and prioritization of risks was organized and the groups presented the outcomes in plenary. Four groups were formed with 7-10 participants and each group was assigned a value chain (rice, cassava, rubber and poultry). The participants were very engaged in the group work and used different approaches to examine the issues proposed (i.e. evaluation of risks for the entire crop production and/or identification of the value chains activities most prone to risks). During the exercise on risk assessment for the value chain, all groups identified a broad range of risks that affect farming business, starting from low quality inputs (for crop and livestock), pest and disease, animal damage, climate change. Participants also discussed the lack of knowledge and technology, difficult access to good inputs for crops and livestock, and the absence/bad conditions of infrastructures, such as storage facilities.

3. Feasibility study on sustainable investment plan for capacity development in agricultural risk management

PARM finalised a feasibility study in April 2019 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 ARM into agricultural sector programmes.

Following the demands and willingness of the stakeholders to learn more about ARM, PARM also delivered a technical presentation on sustainable investment plan for ARM training in Liberia during Liberia's high-level Agricultural Coordination Committee (ACC) meeting in March 2019. The meeting was another great avenue where PARM strategically discussed with stakeholders on partnership opportunities for increasing capacities on ARM at the farm level though extension service. It saw the participation of a diversity of stakeholder groups whose capacities on ARM were increased..

The meeting mainly focused on presentation of findings from the feasibility study on sustainable ARM training in Liberia. Presentations highlighted on the basic definitions and concepts of ARM, justification of a proposed CD on ARM programme, and a phased implementation approach to deliver the CD on ARM programme.

Knowledge management

Liberia

E-library: studies, reports and other knowledge products on ARM

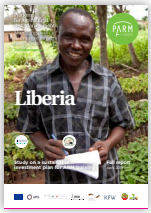
Studies

Risk Assessment

Agricultural Risk assessment study in Liberia
Full Report
August 2018

Tools Assessment

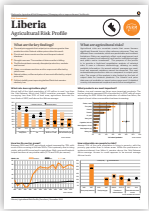
Feasibility study for investment: information systems for agricultural risk management
Full Report
April 2019



Study on a sustainable investment plan for ARM training
Full Report
April 2019

Briefs

Country Risk Profile



Agricultural Risk Profile of Liberia
Factsheet
November 2016

All publications are available in our library

http://p4arm.org/library/

Workshop Reports

National Stakeholder ARM Validation Workshop reports

Risk assessment validation workshop
Vol. 1 – Main Report | Vol. 2 Presentations
June 2017

Capacity Development Seminar reports

Capacity development seminar (CD1)
Vol. 1 – Main Report | Vol. 2 - Presentations
April 2017

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PARM
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