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Managing risks  
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**Working Paper**



# A holistic approach to agricultural risk management for improving resilience

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## Working paper

# A holistic approach to agricultural risk management for improving resilience<sup>1</sup>

August 2018

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## Abstract

Agricultural sector is subject to a larger number of risks: not only to the ones faced by businesses but also to all the risks associated in working with organic and living material, such as seeds, livestock and fresh produce, and their biological processes. Agricultural risk management (ARM) aims at protecting agricultural businesses, farmers, and countries from the potential losses incurred due to unpredictable events, becoming also a means to boost the resilience at different levels. PARM has identified elements/pillars of an ARM-proof agricultural/rural project through a participatory engagement with stakeholders in a knowledge sharing event. These elements/pillars ultimately translate to mitigate negative shocks and boost resilience. At the same time, understanding resilience can contribute to building more grounded ARM strategies.

**Keywords:** Agricultural Risk, Agricultural Risk Management, Resilience

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## 1. Introduction

Agriculture is a particularly vulnerable sector, not only affected by idiosyncratic risks faced by most businesses but also by covariate events (i.e. weather) and all the risks associated working with organic and living material, such as seeds, livestock and fresh produce, and their biological processes. These risks negatively affect farmers' livelihoods, production and the capacity of the sector to invest and innovate.

There is a consensus that shocks like droughts, floods, epidemics, conflicts, and market volatility, have become more and more frequent, complex and severe, hitting with more intensity the well-being of populations and entire countries, in particular of, most vulnerable groups in developing countries (Constas and Barrett, 2013). Between 2003 and 2013, natural hazards and disasters affected almost 2 billion people causing USD 494 billion in estimated damage in developing countries where agriculture absorbs more than 20% of economic impact caused by medium to large scale hazards and disasters (FAO, 2015).

Both agricultural risk management (ARM) and resilience initiatives work towards managing the consequences of negative shocks and for the common goals of lifting people from poverty traps, enabling farmers to protect their assets, and improving food security at local and macro level. Resilience has recently regained attention moving from a humanitarian concept at the catastrophic level to a positive capacity to reduce, transfer, cope with a wider array of negative hazards to generate enduring solutions to chronic poverty (Constas and Barrett, 2013).

The definition of resilience includes two important mechanisms: resistance to change and recovery from change (Timpone-Padgham et al., 2017). Walker et al. (2004) defines resilience as the capacity of a system to absorb disturbance and reorganize in ways that retain essentially the same functions. This is essentially what ARM does but with a specific focus on agriculture risks: anticipating and managing potential risks for the agricultural sector, planning solutions in advance to limit negative consequences with actions that contain both the elements of disturbance absorption and reorganization of the activities.

There is a clear two-way relation between ARM and resilience: ARM practices aim to mitigate negative shocks and boost resilience. At the same time, the understanding of single component of resilience can help to better target ARM strategies in a virtuous circle. The theoretical link between ARM and resilience is clear. ARM contributes to building resilience at the household, community and country levels, strengthening the ability of stakeholders along agricultural supply chains to mitigate the effects of disasters and crises as well as to anticipate, and recovering from them in a timely, efficient and sustainable manner. In that sense, ARM can be seen as one of the building blocks of resilience, looking specifically at risks related to agriculture, and identifying and implementing risk management strategies for agricultural stakeholders and government to better plan for and face a variety of shocks.

At practical level, ARM is very context specific, and the effectiveness of ARM strategies are complex to measure. Data analysis can help identifying specific ad-hoc interventions to improve ARM impacts on resilience. However, best practices to develop an ARM project that can be applied across the board should be identified.

Through participatory engagement with stakeholders in a knowledge sharing workshop, PARM identified elements of an ARM-proofed project. The goal is to create a framework of principles for a holistic approach to agricultural risk management that can, in turn, lead to progress in building resilience.

In the next sessions, we concentrate on what a risk is, why there is the need for a holistic approach to agricultural risk management, and the five pillars of an ARM-proofed project.

## 2. What is a risk and what is a holistic approach to agricultural risk management

Agricultural risks affect farm activities and farmers' livelihoods at a broader level, the entire value chain, related businesses, and the economy as a whole. Risk is a key reason why a business may neither be profitable, nor reach its potential, nor be sustainable over time (PARM, 2018a). Risks faced by agricultural stakeholders are numerous and are often context-specific depending on climate conditions, farming system, market context, etc. They vary from unpredictable extreme weather events to market disruption, from policy or institutional changes to biological harm. These risks can be systemic, idiosyncratic, isolated, and correlated. What they have in common is that stakeholders are often not sufficiently prepared to face them and therefore recovery from shocks often implies depletion of assets and disruption of livelihood, particularly important in the presence of systemic risk (PARM, 2017a).

Risk is composed by *three elements*: threat, uncertainty, and loss. In this sense, risk is the threat of loss or damage caused by an unfavourable event which is uncertain. The uncertain event can be both the result of natural hazards or human activities. Risk is therefore a combination of the likelihood of the event and the severity of loss caused by the event. Likelihood refers to the possibility of an event occurring; it can be measured qualitatively (e.g. highly likely) or quantitatively (e.g. a 30% chance). Severity refers to the extent of the impact, often measured as physical damage (e.g. % of crop damaged, number of livestock dead, etc.) or monetary losses. Negative consequences of risks can be contained or mitigated through preventive actions, transferred to a third party, or absorbed.

ARM is the process of dealing with (agricultural) risks. It requires anticipating potential problems and planning solutions, so as to limit their negative consequences. Many are the ways to manage agricultural risks. Choosing the most appropriate tool(s) depends on the type of risk, farmer's and household's approach to risks and availability of resources, development goals, and services and infrastructure available in the geographical area.

Once aware of the risks for their activities, stakeholders may develop a range of methods for managing them, which can be classified as:

- *Ex ante measures*, i.e. measures taken before the potentially damaging event occurs such as crop diversification, share cropping, drought-tolerant crop varieties and pest and disease management;
- *Ex post measures*, i.e. measures taken after the damaging event has occurred, to try to limit its negative consequences such as the use of emergency irrigation and replanting, using savings to maintain an adequate livelihood and off-farm employment.

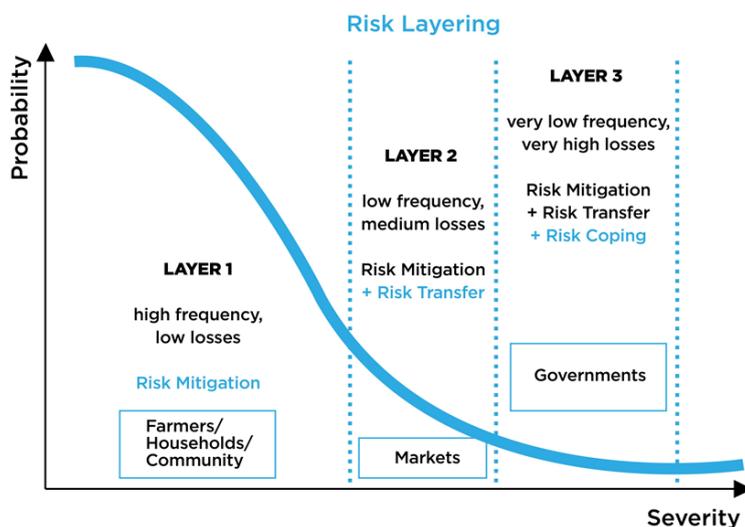
Agricultural risk management strategies are typically a combination of both to anticipate for a broader range of intensity of events, from mild ones to catastrophic risk. Ideally risk management strategies for both should be identified and implemented prior to risk events; some ex ante plans provide for actions to be taken on an ex post basis. Reacting to risks entirely on ad-hoc basis is usually more costly risk management option (PARM, 2017a).

A holistic approach to agricultural risks means to consider a broad range of risk and a broad range of solutions, and that no risk is considered in isolation (OECD, 2009). This implies dealing at the same time with different and synchronized actions to manage risks. Taking the definition in a broader way, a holistic approach not only encompasses all of the interlinked risks involved but also on the various participants along the agricultural supply chains and on the whole set of ARM tools available. In considering different elements, the holistic approach aims to design comprehensive ARM strategies that contribute to resilience building from farm to country level.

Although the goal is to improve farmers' livelihood, ARM covers in fact the key stakeholders that work at different levels and with different responsibilities. Micro-level stakeholders include actors operating on individual basis, producing or delivering products or services with the primary concern of raising output and incomes of their respective farms and businesses; they are for example farmers and small businesses. Meso-level actors instead implies a higher level of portfolio activities and therefore higher risk aggregation, including farmers' organizations, NGOs, suppliers of inputs, financial service providers. Macro-level players refer to the highest aggregation of agricultural activities at sector level, which risks are mostly the concern of governments and international organizations. Their responsibility lays on the strategic planning, policy making, and the provision of public goods for risk management for the whole sector and vulnerable stakeholders.

An illustration for looking at a holistic approach is as shown in Figure 1. Whereby the 3 risk management strategies (i.e. risk mitigation, risk transfer, and risk coping) can be planned in a layered manner to be deployed depending on the severity of risk that shocks the sector. In this illustration, risk mitigation strategies aim at retaining as much risk as possible at farm level. Whatever residual risk that cannot be retained, then some of it could be transferred to third parties willing to buy the risk. For risks that cannot be mitigated or transferred, then coping strategies come into play, particularly important is the role of government in coping mechanisms at catastrophic levels as a key component in the resilience of vulnerable stakeholders.

Figure 1: Risk management strategies and risk layering



Source: PARM (2017a) adapted from World Bank (2016)

In the next paragraph we investigate the cross-cutting elements that make a good ARM-proofed project taking into account all the stakeholders involved.

### 3. What makes a good ARM-proofed project: five pillars for agricultural risk management

Despite the diversity of contexts and approaches to managing risks, some general steps and basic guidelines emerge from field experiences. They can be grouped in five key pillars that can be applied when designing or implementing an initiative that include an ARM component, to ensure sustained management of agricultural risks.

They are:

1. *Risk assessment and prioritization.* At the inception of project that includes an ARM component, assessing and prioritizing risks is a key element;
2. *Tools identification and implementation.* Appropriate tools that match with the risk prioritized should be identified, as well as it should be known their availability and accessibility, and the responsibility for their implementation;
3. *Access to information and capacity building.* Information is crucial to plan ahead and take decisions while capacity building empowers to take informed decisions on ARM;
4. *Partnerships and policy integration.* Coordinated actions taken at various levels are crucial to create synergies and effectively manage risks. The integration of ARM into policies enables its sustainability;
5. *Monitoring and evaluation.* These two components are therefore necessary to allow for ARM adaptation and learning considering ARM as a continuous process prone to recurring changes.

#### Pillar 1: Risk assessment and prioritization

The first step is to identify the major risks in the area of interest which impacts can be analysed at different levels. As already remarked, risk is identified and ranked by frequency and severity. For the latter, both average and maximum severity can be relevant when assessing risks.

The risks should be then prioritized, taken into account the capacity to manage. This is crucial to enable rational and evidence-based decision-making to identify tools and policy instruments, and priority investment areas.

Figure 2 is an example of a risk assessment and prioritization carried out in Uganda (PARM, 2015). Crop and pest diseases have been identified as their highest priority risk for farmers, followed by post-harvest losses, and price risk for food and cash crops. Average crops losses in Uganda due to pests, diseases, and weeds are estimated at 10-20% during the pre-harvest period and 20-30% during the postharvest period bringing the total annual losses for major crops (e.g. banana, cassava, coffee, and cotton) between USD 113 million to USD 298 million (PARM, 2015).

To elaborate ARM strategies at local and country level, it is important to consider the relationship between priority risks to elaborate comprehensive strategies. In the case of Uganda, farmers and other stakeholder involved should consider protecting crops from pest and disease also in their post-harvest phase, considering thereby actions to stabilise commodity prices.

Figure 2: Risk scoring for Uganda

RISK	AVERAGE SEVERITY	AVERAGE FREQUENCY	WORST CASE SCENARIO	SCORE
CROP PEST & DISEASES	● VERY HIGH	● VERY HIGH	● VERY HIGH	5.00
POST HARVEST LOSS	● VERY HIGH	● VERY HIGH	● HIGH	4.75
PRICE RISK FOOD & CASH CROPS	● VERY HIGH	● HIGH	● HIGH	4.35
LIVESTOCK PEST & DISEASES	● HIGH	● VERY HIGH	● MEDIUM	4.10
DROUGHTS	● MEDIUM	● MEDIUM	● VERY HIGH	3.50
COUNTERFEIT INPUTS	● MEDIUM	● VERY HIGH	● LOW	3.40
KARAMOJA CATTLE RAIDS	● LOW	● HIGH	● VERY LOW	2.37
FLOODS	● VERY LOW	● HIGH	● VERY LOW	1.75
HAILSTORMS	● VERY LOW	● HIGH	● VERY LOW	1.75
THUNDERSTORMS	● VERY LOW	● HIGH	● VERY LOW	1.75
ALL OTHER NATURAL RISKS	● VERY LOW	● HIGH	● VERY LOW	1.75
NORTHERN UGANDA INSURGENCY	● VERY LOW	● VERY LOW	● MEDIUM	1.50

More detail on risk scoring are included in PARM (2015), Annex 1. Methodological note.

Source: PARM, 2015

To allow a deeper reflection upon this pillar, good practices and issues to consider have been elaborated for risk assessment and prioritization (Table 1).

**Table 1:** Good practices and issues to consider for Pillar 1: Risk Assessment and prioritization

Good practices	Issues to consider
<ul style="list-style-type: none"> <li>- Identifying all risks, although only prioritised ones will be analysed in detail</li> <li>- Identifying the capacity to manage risk by stakeholders affected by these risks, taking into account their characteristics (age, gender, etc.);</li> <li>- Assessing frequency and severity of risks at the level of analysis (farm, supply chain, geographical area, and sector).</li> <li>- Using a historical data on a long-term period or, if not available, developing a qualitative analysis</li> <li>- Estimating the potential economic impact of the assessed risks developing different scenario (average and worst-case scenario)</li> <li>- Involving local stakeholders in the risk assessment and prioritization to ensure engagement across the process (risk analysis, tools identification...)</li> <li>- Defining clear roles and responsibilities to manage the risks and tools prioritized at the macro, meso and micro levels</li> </ul>	<ul style="list-style-type: none"> <li>- Sources, quantity, quality and accuracy of data used</li> <li>- Scale of the level of risk aggregation under assessment: local, regional or national assessments will not yield the same results. Aggregation masks risk at lower level of aggregation.</li> <li>- The difference between risks, trends and constraints for the strategies to address only risk.</li> <li>- Gender differences as there might be a gendered differentiated impact and response.</li> <li>- Compounding factors that can exacerbate or mitigate risk impact</li> <li>- Risks causality, interaction and correlation.</li> </ul>

Source: Proceedings of the workshop “Agricultural Risk Management: practices and lessons learned for development”, 25 October 2017, International Fund for Agricultural Development (IFAD)

**Pillar 2: Tools identification and implementation**

Following the identification and prioritization of the risks, adequate tools or instruments (among the available ones) need to be chosen and implemented. Considering the holistic approach, a combination of tools to handle the prioritized risk(s) is the best option. There is consensus to consider capacity development (or capacity building) and information systems as two cross-cutting ARM instruments, to complement specific tools (see par. 3.3).

ARM tools generally fall into three categories: risk mitigation; risk transfer; and risk coping.

1. Risk mitigation strategies (ex-ante) aim at reducing the impact of a risk or the severity of the losses. They can be undertaken directly by the farmers individually or at community level, and include climate smart agriculture, good agricultural practices, income diversification, irrigation systems, etc. Though these measures are implemented by farmers, their availability and accessibility might depend on support from governments as public goods provision;
2. Risk transfer strategies (ex-ante) are put in place for the residual risk whose effects cannot be completely mitigated. Risk transfer tools allow for the transfer of the potential financial consequences of a risk to a willing third party, often against a fee, such as in the case of insurance. These strategies often require the intervention of private actors (banks, insurance companies) to design and operate programmes accessed by the farmers.
3. Risk coping (ex-post). For risks that cannot be mitigated or transferred, coping mechanisms are necessary to enable farmers to recover once the shock has happened. These include social protection programmes, specific disaster compensations (cash or in-kind). Although they are used once the risk has materialized, they need to be planned, and are the main responsibility of governments.

Following the risk assessment, PARM feasibility study on crop pests and disease management in Uganda (PARM, 2017b) identified improving access to high-quality inputs as one of the tools to manage risk for participants along the agricultural supply chains. The existence of adulterated and counterfeit products in fact places a risk and discourage farmers' investment in input use. Although is farmers' responsibility to use quality seeds, many are the stakeholders involved in managing risk: from extension service and seeds providers (i.e. meso-level) with tasks related respectively to material inspection and inputs commercialization, to government (macro-level) to enforce seeds regulation.

Likewise, PARM has been working with the Ministry of Agriculture in Senegal to understand how to use remittances for ARM purpose in the rural areas (PARM, 2018b). The idea is to involve in the future financial institutions and global payment services to create risk transfer tools using remittances to overcome emergencies and the negative impact of climate hazards and natural disasters.

In the context of risk coping, PARM Risk Assessment Study (RAS) in Niger (2016a) highlighted that the multiplication food crises have stimulated the use of a large part of the state budget and external aid to alleviate cyclical food insecurity. This was also reflected in the ARM tools analysis on access to information and warehouse receipt system both linked to food insecurity programs and contingency plan led by the government and bilateral partners.

Table 2 presents good practices and issues to consider in the choice of tool identification and related implementation.

**Table 2:** Good practices and issues to consider for Pillar 2: Tools identification and implementation

Good practices	Issues to consider
<ul style="list-style-type: none"> <li>- Consideration of the applicable context</li> <li>- Strengthening existing tools that have proven to be successful</li> <li>- Checking the applicability of new tools in the context in order to ensure its uptake by stakeholders and the sustainability</li> <li>- Acceptance by stakeholders as an effective and practical solution</li> <li>- Doing a cost/benefits analysis of the potential tools</li> <li>- Monitoring the implementation and the functioning of each tool</li> </ul>	<ul style="list-style-type: none"> <li>- Validate the conditions for replicability</li> <li>- When possible, designing clear indicators to measure the results of each individual tool, and to understand better the results of the combination of tools implemented</li> <li>- Factoring planned and unplanned costs of the tools' implementation</li> </ul>

**Source:** Proceedings of the workshop "Agricultural Risk Management: practices and lessons learned for development", 25 October 2017, International Fund for Agricultural Development (IFAD)

### Pillar 3: Access to information and capacity building

In managing risks, timely access to information and capacity building activities are essential to agricultural stakeholders, as well as to extension workers or policy makers to make informed decisions and progressively enhance their skills on ARM practices. As already mentioned, regardless of the tools being put in place, these should be considered as cross-cutting requirements.

Information is a key component for all the stakeholders. It is critical for planting crops, for avoiding post-harvest losses, for fetching the highest price in the market, for placing a bank loan, for designing policies.

Information sources are diverse, and their accuracy, accessibility and costs vary tremendously. Information can be collected by the farmers themselves, through ad-hoc surveys (primary data); they can come from dedicated systems such as specialized weather agencies, websites, mobile-based applications, radio, newspapers, country national bureau of statistics.

Countries need to be particularly sensitive to the issue of access to information for ARM. Besides elaborated few feasibility studies on access to information at country level (e.g. in Senegal, Niger and Cameroon), a cross-country study was conducted in seven PARM countries<sup>2</sup> to examine information availability, quality, and accessibility for different areas. The study finds that information systems for ARM on prices, satellite images and trade are relatively strong in most countries while the areas with poorest information are plant health, commodity stock and inputs (PARM, 2016b).

Capacity development is another essential cross-cutting feature of ARM to improve knowledge and management capacity among different stakeholders. Such activities should be undertaken after a thorough needs assessment, targeting its audience and in partnership with local institutions.

Box 1: Capacity development strategy elaborated by PARM in various countries.

#### Box 1. PARM Capacity Development Strategy

PARM supports capacity development (CD) activities to drive a sustainable institutional and behavioural change. CD on ARM works towards empowering and strengthening endogenous capabilities of all the stakeholders involved, transferring knowledge and expertise to allow national and local systems to manage similar tasks for the future, planning strategies and mainstreaming solutions in the national policy agenda.

In details, PARM CD strategy is articulated in three levels:

- General ARM training (CD1). It is a 2-day seminar aiming at raising awareness and providing basic knowledge on ARM. In general CD1 targets farmers and public officers;
- Institutionalization of high level ARM knowledge (CD2). It aims at creating a pool of local ARM experts through an advanced training delivered by local Universities and/or research centres. It is meant to be a training of trainers (ToT): trainees are expected to train agricultural stakeholders across the country. Target groups are extension workers, university students, and public officers with higher educational background. The ARM training can be also incorporated into academic curricula;
- Specific ARM tool capacity development (CD3). It is a flexible way to transfer knowledge on specific tools to create awareness and expertise on specific risks targeted by each country.

Source: PARM, 2017d

To extend the elements incorporated in this pillar, good practices and issues are also listed (Table 3).

<sup>2</sup> It includes Uganda, Ethiopia, Senegal, Niger, Cameroon, Mozambique and Cape Verde.

**Table 3: Good practices and issues to consider for Pillar 3: Access to information and capacity building**

Good practices	Issues to consider
<ul style="list-style-type: none"> <li>- Identifying existing information systems and areas for possible cooperation and/or integration</li> <li>- Assessing the quality of available data</li> <li>- Identifying data needs of stakeholders and obstacles to accessing this data</li> <li>- Identifying the key stakeholders for capacity development</li> <li>- Assessing the capacity development needs of each target group</li> <li>- Adapting the material taught to the specific needs and role of the various stakeholders</li> <li>- Linking theoretical knowledge with practical experiences and know-how</li> </ul>	<ul style="list-style-type: none"> <li>- Knowing what type of data is being collected, what type can be collected and who is collecting it</li> <li>- Determining the price that stakeholders are willing to pay for information- compared to the costs of setting-up or strengthening an information system</li> <li>- Keeping in mind that information is strategic- there might be specific reasons why information is not shared by farmers, governments, or private sector actors</li> <li>- Integrating the high turnover rate of government officials and international staff into capacity development strategies</li> <li>- Assessing possible synergies but also consistency with other trainings available in an area, to make sure that the target audience has incentives to participate in the activities and that time is utilized effectively</li> <li>- Planning for follow-up and application of the concepts learned during capacity development</li> </ul>

Source: Proceedings of the workshop "Agricultural Risk Management: practices and lessons learned for development", 25 October 2017, International Fund for Agricultural Development (IFAD)

#### **Pillar 4: Partnerships and policy integration**

The facilitation of a holistic approach to ARM materializes synergies and partnerships across different level of stakeholders, from farmers' cooperatives to international institutions. The role of the government, in particularly for the integration of ARM into policies and interventions, is essential to consolidate partnerships, and create the framework to ensure ARM strategies' sustainability and an enabling environment for investment.

Partnerships allow the coordination of actors dealing with different types of risks or tools, the pooling of resources and the design of broad development activities while avoiding duplication of work, implementation of contradicting instruments or conflicting agendas. This is particularly important for ARM that often requires actions at different levels to reach a common goal, with stakeholders having different operating methods and purposes.

The integration and mainstreaming of ARM in national policies is important also to shape the political agenda in favour of agricultural, trade and environmental policies. In this way ARM becomes not only more sustainable and operationalized, but also cross-cutting by integrating risk management strategies and tools into new operations and guiding actions for the private sector and development partners.

From its early stage, a priority for PARM has been to contribute to this pillar. Using the Uganda case again as illustration, PARM has worked with country and international actors to create partnerships, mainly in the areas of information accessibility for farmers, through the following actions (PARM, 2017c):

- Supporting the Centre for Agriculture and Biosciences International (CABI) in developing a comprehensive Plant Health Investment plan for Uganda of USD 24 million in five years to upgrade the Ugandan Plant Pest management system and make it sustainable, a proposal built on existing programmes and plans by the Ministry of Agriculture and other development partners;

- Endorsing a public-private partnership to enhance access to information and risk analysis for farmers and service providers. The proposal called Financial Information and Risk Management (FIRM) was developed by FIT Uganda (private agri-business consultant and developer), and AgriRiskAnalyser (developer of a risk assessment software solution). to complement information system for financial institutions, service providers and farmers through: i) providing risk profiles of farmers that wish to access financial products and ii) make it accessible to all the stakeholders involved;

- A partnership on ARM capacity development has been developed with the support of PARM between Makerere University and the extension services of the Ministry of Agriculture. After the pilot ARM training facilitated by PARM, Makerere University is expected to run other ARM training targeting agriculture extension workers and non-state agricultural service providers. Table 4 presents good practices and issues to consider for partnership and policy mainstreaming.

**Table 4:** Good practices and issues to consider for Pillar 4: Partnerships and policy integration

Good practices	Issues to consider
<ul style="list-style-type: none"> <li>- Identifying local actors already engaged in ARM and finding out their needs and possible complementarities with their work</li> <li>- Building partnerships with different types of actors for enhanced effectiveness and sustainability</li> <li>- Working with various ministries or with an inter-ministerial body/positioning ARM as a cross-cutting issue</li> <li>- Finding a key resource person with successful experience in implementing ARM to promote it within the country/specific context</li> </ul>	<ul style="list-style-type: none"> <li>- Defining clearly the roles and responsibilities in partnerships</li> <li>- Ensuring coherence at different levels and between the action of different actors (government, development partners)</li> <li>- Try to synchronize ARM proposals with government budgeting and planning.</li> </ul>

Source: Proceedings of the workshop “Agricultural Risk Management: practices and lessons learned for development”, 25 October 2017, International Fund for Agricultural Development (IFAD)

**Pillar 5: Monitoring and evaluation**

By definition a holistic approach to ARM is characterized by different and synchronized actions which effects and spill overs are difficult to disentangle. Direct results or impact of ARM tools cannot be easily established both in short- and long-term.

Tool monitoring and evaluation are however essential steps to understand the performance of ARM tools and strategy. Monitoring involves the routine surveillance of tool(s) or an overall strategy; evaluation implies a comparison between the outcomes or performance of the tools and strategy in place with their expected or required results.

It is important that information derived from M&E is adequately reported and updated. This process requires regular reporting, and clear performance indicators set when the ARM strategy is designed. For example, if pests and disease emerged as major risks, and pesticides are used at farm level, farmers should monitor how useful and effective the pesticides are on the crops under cultivation and redefine the risk prioritization in the event that risk characteristics may change.

The evaluation of an ARM strategy, whether immediately ex-post or to look at the longer terms impacts, aims at determining whether the intervention has succeeded in strengthening the ARM capacities of farmers. This evaluation enables progress and potentially the comparison between several ARM initiatives based on their costs and benefits. The evaluation of public policies related to agricultural risk management is also necessary to guide government actions.

To extend the elements incorporated in this pillar, good practices and issues are also listed (Table 5).

**Table 5:** Good practices and issues to consider for Pillar 5: Monitoring and evaluation

Good practices	Issues to consider
<ul style="list-style-type: none"> <li>- Building a M&amp;E system from the inception of the initiative (identify a baseline): defining clear indicators, timing and responsibility for data collection</li> <li>- Collecting age and sex-disaggregated data to assess the effectiveness of the tool(s) for different groups</li> <li>- Raising awareness of stakeholders on the importance of record keeping and monitoring</li> <li>- Considering external factors to contextualise impact</li> </ul>	<ul style="list-style-type: none"> <li>- Developing a qualitative approach for some activities that are difficult to monitor quantitatively (e.g. capacity building)</li> </ul>

Source: Proceedings of the workshop “Agricultural Risk Management: practices and lessons learned for development”, 25 October 2017, International Fund for Agricultural Development (IFAD)

## 4. Conclusions

A holistic and long-term approach to ARM is necessary, as this allows agricultural stakeholders involved to become aware, empowered and resilient to agricultural risk. A two-way relation exists between ARM and resilience: ARM practices aim to mitigate negative shocks and boost resilience and, at the same time, understanding resilience can contribute to build more grounded ARM strategies.

PARM offers a platform to develop appropriate practices and policy solutions to assist stakeholders, farmers and governments, in responding to the range of risks they face. Through a participatory approach, PARM has identified five pillars that should be included in a project aiming at reducing agricultural risks and/or limiting consequences of the negative shocks.

To guarantee the success of ARM initiatives, some substantial questions remain to be addressed. These include for example the scalability of ARM proofed projects and the adaptability of ARM technology to stakeholder's realities, since different contexts and external validity elements remain constraints to be handled.

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