

**Disaster Risk Reduction and agriculture sector interrelated planning
processes**

Lessons learnt

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1. Introduction

The agriculture sector¹ is exposed to a wide range of risks, including socio-economic, natural hazards and food chain crises², which occur at different levels and at different temporal scales. Given its crucial reliance on weather, climate and water, the agriculture sector is particularly vulnerable to climate and weather-related extremes, as well as to pests and diseases. Climate change adds another layer of risk, as it not only alters the intensity and frequency of climate extremes (IPCC 2012), but also decreases the resilience of many poor households and communities due to factors such as decreasing agricultural productivity and increasing disease vectors and shortages of water and energy in many disaster-prone regions (UNISDR 2009).

The 2018 FAO report on the impact of disasters and crises on agriculture and food security showed that the agriculture sector alone absorbed 23 percent of all damage and loss caused by medium-to large-scale disasters triggered by natural hazards in developing and low- and mid-income countries between 2006 and 2016. When only climate-related disasters (floods, drought, tropical storms) are considered, the share of damage and loss for agriculture increased to 26 percent. Drought affects the agriculture sector disproportionately: 83 percent of all damage and loss caused by drought was absorbed by agriculture. The crop and livestock sub-sectors are most affected by this slow-onset hazard (FAO 2018c).

The same study highlighted that “*disasters impact agriculture beyond the short-term; the sector often endures long-lasting and multi-prolonged consequences such as loss of harvest and livestock, outbreaks of disease and destruction of rural infrastructure and irrigation systems*” (FAO 2018c) reversing development gains. The sector continuously faces the challenge to anticipate and reduce the negative impacts that hazards may cause, such as loss of life, damage to property and environment, the destruction of agricultural livelihoods, disruption of services, reduced production and

¹ For the purposes of this paper, the agriculture sector is understood to encompass the crops, livestock, fisheries and aquaculture and forestry sub-sectors.

² Food Chain Crises, comprehends the fast-spreading insidious transboundary animal and plant pest and diseases that could compromise food security, human health, economic and social stability of people, communities and countries, and specially of the world's poorest (FAO 2018b).

consumption, as well as negative effects on employment, incomes and prices, which often hamper access to markets, trade and food supply.

The agriculture sector is among the most important economic sectors, as it provides roughly half of the total employment in less economically developed countries and significantly contributes to the national gross domestic product (GDP), constituting up to 30 percent in developing countries (FAO, 2018a). Worldwide, the livelihoods of 2.5 billion people depend on agriculture. Small-scale farmers manage over 80 percent of the world's estimated 500 million farms and provide over 80 percent of the food consumed in a large part of the developing world (IFAD and UN Environment 2013). These small-scale farmers, herders, fishers and forest-dependent communities are particularly at risk from disasters and are disproportionately affected when a hazard hits (FAO 2017b).

At the same time, they are custodians of the environment; the way they manage their natural resources can avoid the development of disasters. Risk-sensitive agriculture is part of the solution, as it offers cost-effective measures to reduce disaster risk, while promoting sustainable resources management, greater biodiversity and socio-economic development, thereby fostering long-term resilience building. Agriculture can also help to maintain the volume and genetic diversity of food supply, *“which results in both benefits and risk reductions against nutritional deficiencies, ecosystem degradation, and climate change”* (Fanzo 2017). Along these lines, it is evident that the agriculture sector plays a critical role in reducing disaster risks and in adapting to climate change for enhancing resilient and sustainable development.

It is therefore of paramount importance to continue enhancing capacities for DRR in the agriculture sector, across local, sub-national, national and regional levels, and with the active participation of smallholder farmers.

Priority for Action 2 of the Sendai Framework for Disaster Risk Reduction (SFDRR) on *“Strengthening disaster risk governance to manage disaster risk”* stresses the importance to *“mainstream and integrate disaster risk reduction within and across all sectors and [to] review and promote the coherence and further development, as appropriate, of national and local frameworks of laws, regulations and public policies”* (UNISDR 2015).

Consequently, complementary planning³ processes on DRR, climate change adaptation (CCA)⁴ and agriculture should be and are currently being promoted in many high-risk countries through one or more of the following:

- (i) National DRR plans including the agriculture sector perspective,
- (ii) Mainstreaming of DRR into agriculture sector development plans⁵, and
- (iii) Specific DRR plans for the agriculture sector (DRR-Ag plans).

The present paper reviews and analyses these different types of complementary planning modalities and their ways of promoting DRR in the agriculture sector. Taking into account linkages with the climate change planning processes would require additional time and resources and is envisaged as a follow-up study. Based on a careful review of selected regional, national and sub-national DRR and agriculture sector planning processes, criteria for the successful formulation and implementation of these related plans are identified and discussed.

2. DRR and Agriculture sector planning processes

Agriculture actors have always been aware and very conscious of the need to keep risks low and promote and implement vulnerability reduction measures. Measures have been both autonomous⁶ at the local level and introduced as part of DRR and development programmes and plans.

³ DRR planning is aimed at preventing new and reducing existing disaster risk and managing residual risk, by analysing and addressing the root causal factors of risks of disasters and crisis, including through reduced exposure to hazard, lessen vulnerability of people and property, wise management of land and the environment, as well as improved preparedness for the response to adverse events all of which contribute to strengthening resilience and therefore to the achievement of sustainable development (UNGA 2016).

⁴ DRR and CCA linkages are often implicit in the discourse of this paper, and in some cases, such as in Myanmar, Paraguay and the Philippines, DRR/CCA linkages are explicitly addressed in the policies analysed by this paper.

⁵ Mainstreaming disaster risk reduction (DRR) into agriculture development planning implies incorporating key principles of DRR into the agriculture development goals, agriculture governance arrangements, policies and practices within and across the sector at all levels (adapted to the agriculture sector from ADPC, 2010), mainly to prevent new, and to reduce existing disaster risks in the face of hazards and food chain crisis, contributing to increase the resilience of agricultural livelihoods and therefore, to the achievement of sustainable development.

⁶ Measures undertaken spontaneously, as a part of on-going agricultural practices, in light of the context relevant risks, and in the absence of specific policy initiatives, programmes or plans to support their implementation at the local level (Adapted from: Smit and Skinner, 2002; Smit et al., 1999).

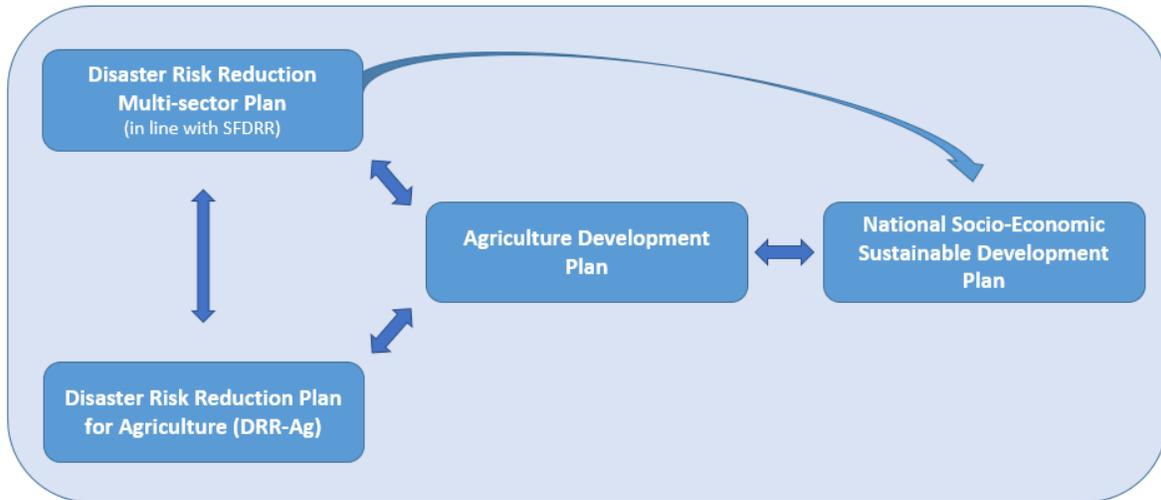
In line with SFDRR Target E on promoting national and local DRR strategies by 2020, there are different possibilities for mainstreaming DRR into agriculture sector planning processes and vice versa, as described below and illustrated in Figure 1

i. **National DRR plans** are multi-hazard and multi-sectorial and cover the different development dimensions (economic, social and environmental). In view of its socio-economic role, especially in developing countries (in terms of livelihoods, food security and nutrition, employment and income and natural resource management), the agriculture sector should be included in national DRR planning processes along with and linked to other sectors' actions and demands.

ii. Thorough **agriculture development plans** offer a good opportunity to address root causes of vulnerability and exposure to multiple hazard risks reinforcing coping capacities, in order to reduce the impacts of disasters on the agriculture sector and people depending on agricultural livelihoods. The agriculture sector development plans are usually essential building blocks of the national socio-economic development plans. When they include DRR measures, they can strongly contribute to risk-sensitive development, promoting resilient and sustainable development results.

iii. **Specific DRR plans for the agriculture sector (DRR-Ag)** entail dedicated planning processes for the sector and its sub-sectors, which should be based on a context (local, sub-national, national or regional) and multiple hazards-specific risk analyses that consider future risk scenarios that might be exacerbated by climate change. Depending on the type of agricultural livelihoods in a given area, a DRR-Ag plan could cover crops, livestock, fisheries and aquaculture and forestry (as well as other renewable natural resources such as water and soil, etc.), to prevent new, to reduce existing and to manage residual risks in the face of multiple hazards, including food chain threats. These DRR-Ag plans should feed into the national DRR (multi-sector and multi-hazard) plan and the agriculture development plan. DRR-Ag planning processes can also offer opportunities to stipulate the sustainable management of natural or modified agro-ecosystems, therefore, simultaneously providing ecosystem and biodiversity benefits that contribute to enhance the resilience of agricultural livelihoods. The DRR-Ag planning process recognizes the essential role the sector plays in providing food and income for the majority of those threatened or affected by disasters and crises on a stable basis, sustaining the means to prevent food insecurity (FAO 2018b).

Figure 1. Relations between the different planning processes on Disaster Risk Reduction and Climate Change Adaptation for the agriculture sector, and the linkages with National Socio-Economic Sustainable Development Plan⁷



3. Study Methodology

This study employs the case study methodology, which allows an in-depth analysis of a topic from different angles, involving several sources of data collection, and allowing cross-validation of findings, hence providing a holistic picture of the study subject and a basis for inferring broader theories, especially where complex processes require in-depth study (Gomm, Hammersley, and Foster 2009; Harrison et al. 2017; Stake 1995). It is therefore a suitable method to analyse and illustrate the key elements necessary for successful DRR planning processes in the agriculture sector.

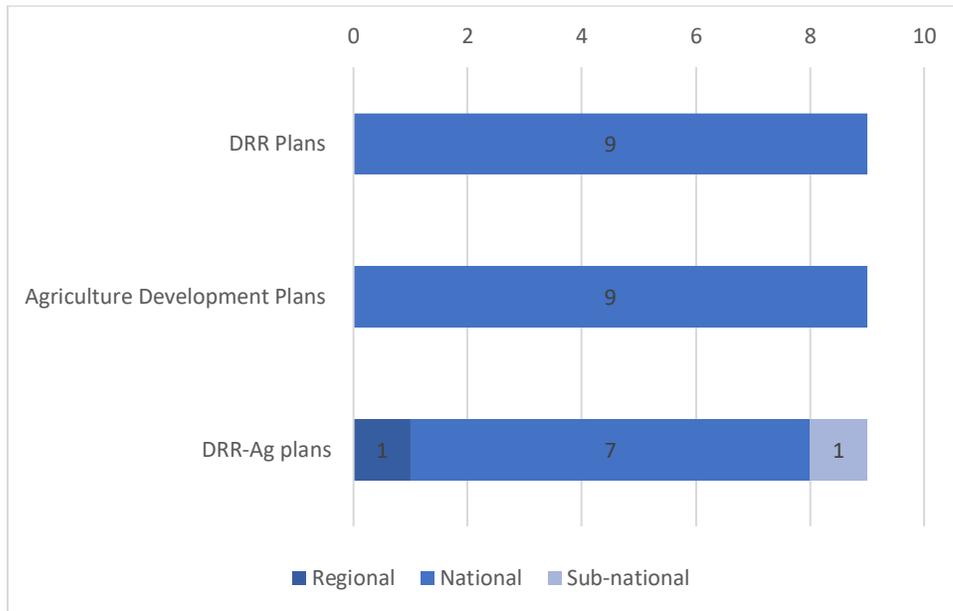
⁷ The national multi-hazard and multi-sector DRR planning contributes to the achievement of sustainable development, therefore, together with the agriculture development plan, both contribute to reduce root causes of vulnerability and exposure to multiple hazard risks as well as reinforcing coping capacities of the agricultural livelihoods. The specific DRR planning for the agriculture sector, when available, links both with the national DRR plan and the agriculture development plan focusing on the design and implementation of disaster risk governance, information systems, vulnerability reduction measures and emergency preparedness and response actions for the agriculture sub-sectors. The synergies of the different planning modalities contribute to the national socio-economic development plan.

The paper includes analyses of the three different planning processes on DRR and the agriculture sector in nine countries and one region, in which one or more of the above described planning processes were already completed or are currently underway. This study does not concentrate on legal frameworks and policy regulations (IFRC and UNDP 2014), nor includes the analysis of linkages to climate change planning processes, but rather focuses on the processes of formulation and implementation of DRR and agriculture sector related plans.

Planning processes for DRR in the agriculture sector at national level were analysed in Cambodia, Georgia, Guyana, Jamaica, Myanmar, Pakistan, Paraguay, the Philippines and Serbia. In Pakistan, the analysis focused on the planning process at sub-national level. Additionally, the planning process of the “Regional Strategy for Disaster Risk Management (DRM) in the agriculture sector and food security and nutrition in Latin America and the Caribbean (2018-2030)” was analysed (See Figure 2 for types and number of plans analysed and . The planning processes at sub-national, national and regional level discussed in this study have been or are being directly supported by FAO or through the Capacity for Disaster Reduction Initiative (CADRI)⁸, to which FAO contributes from an agriculture sector perspective in the development of the multi-sector DRR plans.

⁸ FAO officially joined the CADRI Partnership in 2012 and became the Co-Chair of the CADRI Board since 2015.

Figure 2. Number and type of plans analysed for the study



Data collection included desk reviews of the available most recent national multi-sector DRR plans, the agriculture development plans and DRR-Ag plans. The analysis of these plans was complemented with a literature review on similar studies conducted for the selected countries. Simultaneously, information on the planning processes was collected through questionnaires sent out to selected government officials and FAO officers who were directly involved in or supported the development of the DRR-Ag plans. The questionnaire consisted of a combination of closed and open-ended questions to gather data on the contextual triggers for the planning process, the characteristics of the plan, the modalities of the planning process, the impact of the plan and the planning process success factors and challenges.

Based on a thorough review of the three types of plans and a thematic analysis of the questionnaire answers received from the different stakeholders involved in the DRR-Ag planning process, common “themes” were identified that suggest what factors and challenges there are during DRR planning processes in agriculture. These themes are presented and discussed in Section 4 and outlined in detail per country in the

Annex 2. Success factors and challenges for DRR planning processes in agriculture, as reported by **countries**.

4. Results and discussion of findings

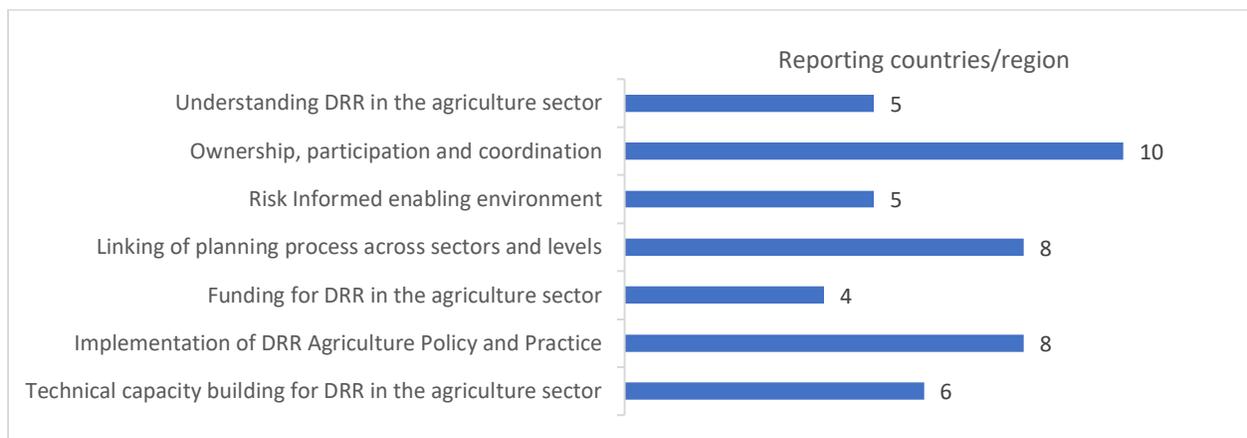
The analysis of the (i) national DRR plans including the agriculture sector perspective, (ii) the agriculture development plans, and (iii) the specific DRR plans for the agriculture sector (DRR-Ag plans) found that in all case study countries and the Region of Latin America, agriculture sector agencies are open to apply SFDRR guidance to sector-specific DRR planning and the mainstreaming of DRR into sectoral development planning.

The analysis of the national DRR plans shows that almost all of the national DRR plans analysed at least mention agriculture and some of them already outline DRR activities specific to the agriculture sector and/or mention the DRR-Ag plan, as can be seen in detail in Annex 3. In regard to agriculture development planning, the study found that all agriculture development implicitly or explicitly outline DRR measures for the agriculture sector, as can be seen in

Annex 4. This confirms that there are existing synergies between the different planning modalities.

The careful review and analysis of these types of complementary planning modalities and a thematic analysis of the answers provided by the main actors involved in the formulation and implementation of the DRR-Ag planning processes in the selected countries, helped to identify key criteria for the successful DRR planning and implementation in agriculture, which can be applied to the three types of planning processes analysed in this paper. These criteria are presented in Figure 3. Criteria for the successful DRR planning and implementation below and discussed in Section 4.

Figure 3. Criteria for the successful DRR planning and implementation in agriculture



Discussion of criteria for the successful DRR planning and implementation in agriculture

Understanding risk within the agriculture sector

Key messages

- A sector-specific risk and vulnerability assessment must be undertaken to inform the DRR planning process in the agriculture sector.
- The planning process should assess and build on existing capacities to cope with disaster risks in the agriculture sector.
- Risks for agriculture vary widely across diverse agro-ecosystems. While benefitting from overarching DRR frameworks, including early warning and other information systems, systematic risk reduction in agriculture calls for situation- and context-specific, spatial analyses and tailor-made, often localized interventions

thereafter. Specific measures for (vulnerable) community/target group are needed to reduce multiple hazard exposure and enhance resilience.

Priority 1 of the SFDRR on understanding disaster risks calls for any effort on DRR planning and implementation to be built around a comprehensive context, sector- and hazard-specific disaster risk analysis that takes into consideration “*all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.*” This type of comprehensive risk analysis allows decision-makers to understand the negative impacts of disasters on societies and economies and identify

Box 1. Development measures serving DRR in Paraguay

opportunities that could derive from implementing prevention measures (Bahadur et al. 2014). Planning processes for DRR in the agriculture sector need to be based on a sector-specific risk analysis. Often there are different agro-ecological zones (AEZ) in one country that create diverse risk patterns. In addition, hazards threatening agriculture, in particular

climate-related ones, can be extremely localized. While a region might suffer from a dry spell, a specific or neighbouring village can experience strong rains at the same time. Therefore, a planning process should include an analysis of observed climate variabilities, extremes and trends in different locations considered to be representative of the climate patterns in an AEZ. As reported by the Department of Agriculture and FAO officers involved in the DRR-Ag planning in the Philippines, the planning process, for instance, was informed by a range of decentralized risk and

The Agrarian Strategic Framework in Paraguay 2014-2018 (MEA) recognises the co-benefit of development measures on DRR, e.g. “*the development and access to technologies that incorporate water management, contributes to improve competitiveness and raises productivity while reducing risks associated with climatic phenomena*” and “*setting in place an agricultural information system that integrates climatic, economic and technologic information*” among others. Additionally, other development measures that implicitly serve for DRR (or that could easily mainstream it) are being proposed, such as the “*promotion of means to adopt production systems and process to produce innocuous food that at the same time tend to minimize negative externalities*”.

vulnerability assessments conducted in various regions. This provided additional insights on how small-scale climate hazards (even without manifesting as major hazards or disasters), in the present as well as in the long run, challenge agriculture communities based on their patterns/timing of occurrence/recurrence. Risk assessments in the agriculture sector also need to consider that and how the frequency and intensity of natural hazards might change in the future due to climate change. They should also go beyond climate hazards; other exposures like animal and plant pest and diseases pose equally important risks.

In addition to assessing hazards and the exposure of people and assets, a sound understanding of existing capacities to cope with disaster risks in the agriculture sector is key. As agriculture in itself is sensitive to risks, there are often already some practices and institutional mechanisms in place that reduce disaster risks but may not always be labelled as such. Several case study countries outline in their agriculture development plans some measures that were not tagged as DRR activities, but clearly serve to reduce disaster risks, including for instance the establishment of an early warning system (e.g. Myanmar), the diversification of agricultural production (e.g. Cambodia), research on stress tolerant varieties and breeds of crops, livestock and fish (e.g. Myanmar) and the rehabilitation of irrigation and water management systems (Pakistan), more examples of development measures serving DRR for the agriculture sector can be seen in seen in

Annex 4. The DRR for the agriculture sector planning process should take into consideration what technical capacities, tools, methods and approaches are already available within existing institutions to operationalize DRR at national and local levels. Additionally, it should be analysed what existing agricultural good practices (of either indigenous and/or scientific origin) may already be applied at local level to strengthen community resilience against climatic and other natural hazards.

However, risk awareness and an understanding of the immediate damages a disaster may cause have often not been a sufficient incentive to take up DRR planning proactively. Country experience shows that only when the negative impacts of disasters on long-term development are fully understood or felt, DRR planning in the agriculture sector is really taken up. Therefore, in addition to a sound understanding of disaster risk, additional awareness creation on the nexus between disaster risk, poverty reduction and sustainable development is a continuing precondition for the successful mainstreaming of DRR into the agriculture sector and vice versa.

Ownership, participation and coordination of the planning processes on DRR for the agriculture sector

Key messages

- Government ownership goes beyond a single individual/unit within the government agency. Creating implementation mechanisms throughout the planning process will increase the likelihood for plans to trigger public administration changes and facilitate implementation despite rotation of personnel or changes in institutional structures.
- The examples of the different DRR-Ag planning processes suggest that the formulation process must transcend governmental boundaries and involve not only relevant ministries, such as planning and/or finance, but also other important stakeholders including academia, non-governmental organizations, civil society organizations, and the people most vulnerable to disaster risks. This is particularly important in the agriculture sector, in which vital DRR activities take place at farm-level.

A formal government-led process is fundamental to ensure adoption and ownership of DRR planning for agriculture and its products. Externally driven formulation of planning documents, such as those mainly written by external consultants (irrespective of their usually high technical competence) are usually not fully embedded into the responsible institutions, increasing the risk of limited ownership and low implementation of the outcome products.

Government institutions carry the main responsibility for the architecture and implementation of development pathways by defining objectives, designing the process with multi-stakeholder participation, determining human-technical capacities and allocating economic resources. Successful coordination and implementation of planned actions are more likely, when roles are clearly defined and already outlined in the plan and responsibilities were accepted as part of the planning process. When it comes to sectoral DRR planning, the sectoral ministry should be responsible for implementing the sectoral DRR plan.

In addition to strong government ownership throughout the planning and implementation process and the creation of institutional mechanisms for implementation, the participation of relevant other

Box 2. Example of ownership created in the DRR-Ag planning process in Myanmar

stakeholders is crucial for DRR planning processes on all levels including local, national and regional.

The planning process needs to be informed by stakeholders from the public and private sectors who also play a key role in agriculture including relevant ministries and departments (agriculture, fisheries, livestock, forestry, environment and natural resource management, irrigation and water

A key sectoral institutional milestone for DRR in Myanmar and one that has driven the DRR-AG plan formulation process was the demonstrated ownership by the government establishing the MOALI DRR Task Force. The DRR task force was formally assigned to lead the DRR-AG plan development process under the overall guidance of the MOALI DRR Focal Department within the Department of Agriculture (DA) and the Department of Planning. As a working-level entity within MOALI, the DRR Task Force is composed of junior, senior and middle-management officers and staff from all MOALI departments and chaired by the Director of the Agriculture Extension Division of the DA.

authorities, etc.), agricultural research services, extension services, cooperatives and producer organizations, agricultural academic and vocational schools, trade unions, and other NGOs/civil society organizations.

As part of the planning process, Paraguay, for example, has established an Inter-institutional Working Table composed of approximately twenty-five technical experts from academia, civil society, NGOs, INGOs, the public and private sectors that as informed by the respondents, gathered twice a week throughout the three months of the planning process. Additionally, over 40 consultations with key actors on the operation of the national risk management system, were organized.

Risk-informed enabling environment

Key messages

- An overarching enabling policy environment for DRR is essential for the integration of DRR into agricultural development planning and the consolidation of DRR practices across sub-sectors and levels.
- Space for cross-fertilization between different planning processes on DRR must be created and timelines must be proactively coordinated to ensure the integration of DRR in different planning documents, respecting existing/pre-set planning terms of relevant key documents like biannual agriculture sector development plan.

The study understands enabling environment as the overall institutional set-up of a country, its implicit and explicit rules, its power structures and the policy and legal environment in which individuals and organizations function (FAO 2010). Without an enabling environment in place there would be no reference point for integrating DRR into agriculture development planning and vice versa, and thus for obtaining legitimation. While separate laws for mainstreaming DRR into agriculture are not required, DRR should be recognized as a crosscutting issue by the legal and regulatory systems of countries that face high risks. The ideal context for DRR planning in and across sectors is the availability of an overarching disaster risk management legislation recognizing the role of all relevant sectors, as well as rules, regulations and codes of conduct developed in accordance with the laws (UNESCAP 2017).

Box 3. Example of risk informed enabling environment for the planning of DRR for the agriculture sector

The Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121) provided a legal basis to promote DRR and called for the development of the National DRR Framework. It specifically points to the agriculture sectors and emphasizes the State's responsibility to "mainstream DRR and CCA in development processes such as policy formulation, socioeconomic development planning, budgeting, and governance, particularly in the areas of environment, agriculture, water, energy, health, education, poverty reduction, land-use and urban planning, and public infrastructure and housing, among others" thereby laying the foundation for the Strategic Plan of Action on DRR in the Philippine Agriculture and Fisheries. The RA 10121 triggered the development of the National Action Plan for DRR agriculture, completed in 2016, and its reinforcement as/by official DAE administrative order (DAO) in 2017, thus mainstreaming and facilitating the operationalization of DRR interventions throughout all agricultural key programmes of

The timing of DRR-Ag planning and careful analyses of timelines of other relevant plans/instruments (whether completed or on-going) are also important. The study has observed improvements or enhanced clarity in the articulation of agriculture sector DRR messages, for instance, in multi-sectoral development plans that were adopted after the multi-sectoral DRR strategy. This can be explained by a combination of the 'agenda-setting' function of the

multi-sectoral DRR strategy as well as evolving international and national discourse related to DRR and climate shocks and stresses.

Linking of planning processes across sectors and levels

Key messages

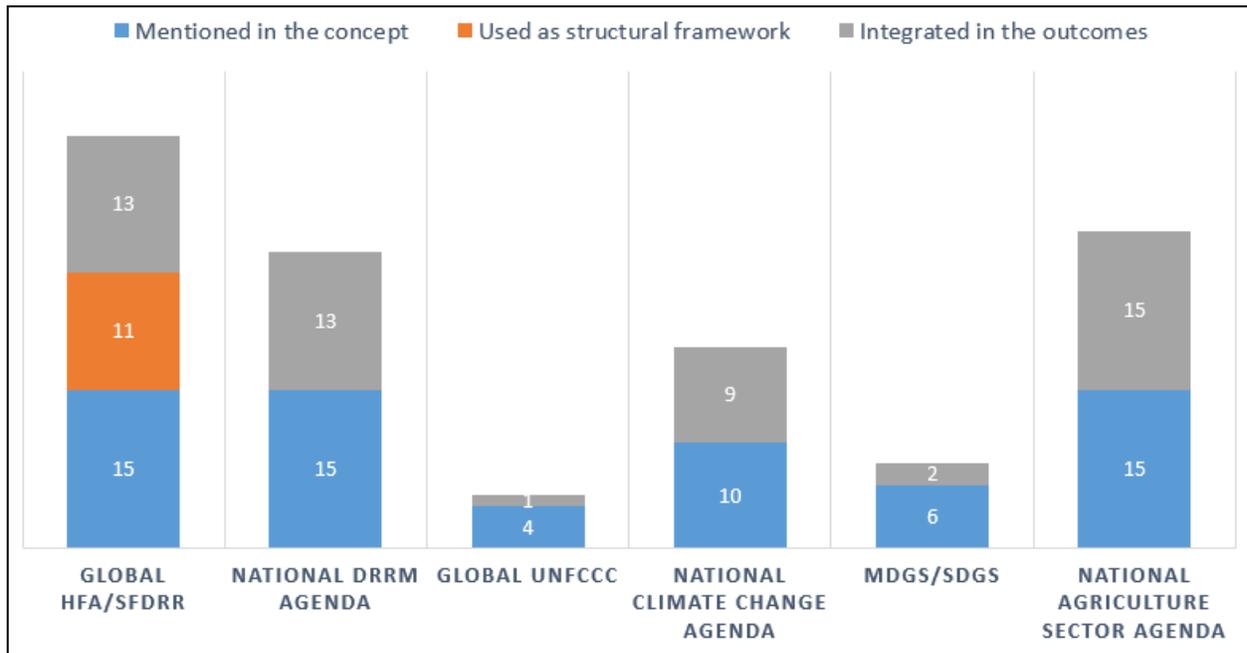
- DRR planning in agriculture is not an isolated process; it should link to and complement other sectoral planning processes, specifically those of sustainable agricultural development and climate change.
- At country level, the alignment of DRR planning at and across sectors and levels (national, sub-national and local levels) is crucial. Mainstreaming DRR across different development sectors along the four SFDRR priorities for action facilitates consistency and complementarity of planning across levels, of budget allocation, as well as the implementation of technical interventions.
- The formulation of in-depth, sector-specific DRR priorities is an indispensable step for the integration of agriculture-specific DRR issues into the sectoral development plans and cross-cutting national DRR strategies.
- Linking DRR and CCA within sector-specific planning enhances efficiency and sustainability and facilitates the integration of short/medium and long-term orientated implementation of adaptation measures and DRR activities in agriculture.

Agriculture provides multiple entry points to prevent new risks, and to reduce and manage existing ones including those exacerbated by climate change. While this study focuses on synergies between national DRR plans, agriculture development plans and DRR-Ag plans, the planning processes for DRR in agriculture must also be synchronized and linked with plans related to climate change and natural resources management, amongst other sectoral development plans.

The figure below displays the level of alignment of 14 DRR-Ag plans found over the last decade with global agendas such the HFA and/or SFDRR, climate change related processes and agendas, the Millennium Development

Goals and the Sustainable Development Goals.⁹ Eleven out of the 14 plans assessed included the HFA/SFDRR priorities of action as main thematic pillars, all plans made reference to HFA/SFDRR priorities of action, and thirteen plans integrated the HFA/SFDRR priorities into their outcomes (FAO 2016).

Figure 4. Alignment of the national DRM-AG plans with global and national agenda (FAO 2016).



Based on the findings of this earlier study, the present paper has investigated how/if the more recent DRR planning processes in the agriculture sector are linked to other planning processes, in particular agriculture development plans and their alignment with the SFDRR. The analysis found that all analysed plans refer to the priorities of either the HFA or the SFDRR and at least 8 out of the ten planning processes align their targets and priorities to the structure given by the global framework.

One of the big achievements of the SFDRR has been the establishment of four priorities for action, seven targets, as well as indicators or DRR and to get countries to voluntarily report on its implementation progress. The four SFDRR priority areas also provide a suitable structure for sector-specific DRR planning. Aligning DRR planning processes

⁹ Case study countries included Belize, Cambodia, Democratic People's Republic of Korea, Dominica, Guyana, Jamaica, Lao PDR, Nepal, Paraguay, Philippines, Saint Lucia, Saint Vincent and the Grenadines, Serbia and Zimbabwe.

to the principles and priorities of the SFDRR facilitates coherence and consistency across different planning processes and documents at different levels.

This study found that agencies actively promote the design of DRR agriculture activities along the SFDRR structure, as can be particularly observed in Paraguay and the Philippines, where specific national policies and plans instruct the alignment with the SFDRR. They all recognise that alignment with SFDRR facilitates consistent planning and allocating budgets and guidance for implementing DRR measures in a coherent and complementary manner. Some countries like Serbia are transitioning from Hyogo Framework for Action (HFA) to SFDRR by adapting their planning processes accordingly.

Aligning the planning process to the SFDRR structure, as reported by the facilitators of the Community of Latin American and Caribbean States (CELAC)'s Regional Strategy for Disaster Risk Management in the Agriculture Sector and Food and Nutrition Security, has allowed to better link the regional strategy to the respective national DRR-Ag plans in the region, ensuring collaborative action at regional, sub-regional and multi-country level. A unified planning structure across actors and sectors, and even across countries, facilitates cross-sectoral collaboration and helps reduce potential duplications.

In Jamaica, questionnaire respondents reported that the first DRR-Ag planning process did not take into consideration other plans and was therefore perceived as additional work. It was stated that, if the DRR-Ag plan had been a simple, living document, and consistent across sectors and agencies, it would have complemented the ongoing development work within and across sectors. Thus, the plan would had been more readily operationalized. This is particularly valid for small institutions, such as agricultural ministries in the Caribbean SIDS, which may struggle with limited human resources, small budgets, and often decreasing government allocations for agriculture, as compared to other sectors. As of 2018, a new process of updating the DRR-Ag plan in Jamaica is about to start. The new plan will be aligned with the SFDRR and coherence and sustainability are expected to permeate across the different levels of planning and implementation, once sub-national and local level plans have been elaborated.

The SFDDR structure has also allowed to better articulate DRR in the agriculture development plans, thus

Box 4. Example of alignment of local DRR plan with the SFDRR in the Philippines

The Philippines' local governments are mandated by law to formulate their Local DRR Plan in line with the National DRR Plan and with alignment to the SFDRR, as per Sunset review 2016 for the update of the National DRR Plan. Within and inspired by this overall national DRRM framework, the Philippines' Department for Agriculture is proactively promoting a coherent DRR approach across policies, plans, programs, projects, systems and at different levels and emphasizes the need to connect national and local priorities and implementation approaches of DRR.

promoting the objective of more risk-sensitive development measures and interventions. These plans should also incorporate when/as available, the key components of the specific DRR-Ag plans, which are ideally also aligned to the SFDRR.

Additionally, due to their common aim to reduce vulnerabilities and enhance resilience to the impacts of climatological and hydrological disasters,

DRR and CCA approaches are highly interconnected and especially relevant for the agriculture sector (Gero, Méheux, and Dominey-Howes 2011). Linking DRR and CCA planning processes in the agriculture sector , including National Adaptation Plans (NAPs), Nationally Determined Contributions (NDCs), and DRR planning, contributes to a more efficient use of allocated resources, avoids duplication of efforts, bridges between different temporal and special scales and enhances consistency in capacity development approaches at national and sub-national level (Birkmann and von Teichman 2010; UNFCCC 2015). Better integrated planning across DRR and CCA could also reduce a growing “planning fatigue” , as reported by several governments often stemming from the involvement into too many planning processes done in parallel within the sector on closely related/overlapping topics.

Funding for DRR in the agriculture sector

Key messages

- Besides DRR earmarked budget allocation by the National Disaster Management Authorities (NDMAs), legislation on mandatory budget allocations for DRR across sectors are highly desirable to ensure a consistent implementation of complementary DRR measures in the agriculture sector.
- The formulation of DRR action fiches as part of DRR-Ag planning helps to attract budget allocation by the Ministries of Agriculture and development partners.

In the Philippines, Serbia and Guyana, an increase in national public budget allocations was observed after the development of their respective DRR-Ag plans. It was striking that in these same countries building institutional capacities for the formulation of the plans, as well as for the piloting of farm-level DRR good practices had already been supported by international donors (FAO 2016). This points to the catalytic effects that financial support of donors at early stages of DRR planning processes, including of sectoral DRR planning processes, can have.

Box 5. Example of funding created for DRR in agriculture in Cambodia

Similarly, external support for the DRR-Ag planning process at province levels has influenced the later budget allocation of the local governments for the implementation of DRR measures in Cambodia, Pakistan and Serbia. In Guyana, the DRR-Ag plan attracted additional financing from development partners including UNDP and the Government of Japan for strengthening institutional coordination within the Ministry of Agriculture and for piloting DRR good practices in the agriculture sector at the community level in selected most vulnerable locations of the country.

In Cambodia, the draft national budget for 2017 indicated that the Ministry of Agriculture Forestry and Fisheries (MAFF) and the Ministry of Water Resources and Meteorology (MOWRAM) received a significant increase in their budget (from just 23 million USD to 247 million USD for MoWRAM and from 46 million USD to 107 million USD for MAFF). As reported by an official from the General Directorate of Agriculture, the increase on budget is meant for CCA. For MoWRAM, the key priority is improvement of the irrigation infrastructure. In both cases, the measures will contribute to DRR issues and in particular drought and flood.

Ideally, mainstreaming DRR into development sectors, such as agriculture, should be funded by the sectoral ministries, such as the Ministries of Agriculture, with budgets earmarked for DRR through *ad hoc* project funds. Yet, this is not necessarily a reality in all countries. The funding for DRR in agriculture continues to be a challenge in many of the assessed countries and is mainly driven by the international community. Yet, new funding windows could be explored,

Box 6. Example of funding created for DRR in agriculture in

In the Philippines, 20 percent of the Department for Agriculture total budget appropriations is earmarked for the implementation of DRR/M programmes, in the form of (a) Quick Response Fund (QRF) of the DA under the General Appropriations Act (GAA); a stand-by fund for relief and recovery programs of PHP 500 Million, (b) budget head of PHP 1.6 billion; for prevention and preparedness activities such as but not limited to training of personnel, procurement of equipment, and capital expenditures, and (c) inclusion of DRR activities/features to existing/proposed development programs that are not primarily DRR in nature such as

if better articulation of existing DRR measures would materialize within agriculture development plans, meaning to include specific measures that contribute to DRR within the agriculture development plans and to label the agriculture development measures that contribute to DRR.

Additionally, administrative orders for DRR as a precondition for projects within the agriculture sector could help not only to increase funding for DRR in agriculture but to prevent the creation of new risks, when a percentage of the total budget could be earmarked to reduce identified vulnerabilities at initial stages of any agriculture development project.

In general, budget allocation for the implementation of DRR-Ag measures is clearly facilitated, if indicative frameworks for budget requirements (and ideally allocations, if already in place) are provided as part of the plans. This is the case in Pakistan, where the plans explicitly describe specific investments for DRR in the agriculture sector. Nevertheless, the arrangements and mobilization of the funds in Pakistan is the sole responsibility of district and provincial authorities, where the district governments may use their normal development funds for the execution of plans, as reported by FAO's country office.

From planning to implementation of DRR in Agriculture

Key messages

- The planning process for DRR in agriculture should not be considered completed with the formulation of the plan, but as preparatory step for a longer term implementation of risk sensitive measures into the sustainable development of the agriculture sector.
- Capacity building for DRR in agriculture is essential, both during the formulation process to enhance the basic understanding of the topic, as well as along the implementation to ensure capacity development for the agricultural service providers at all levels.
- To enhance the implementation of DRR measures in agriculture, these should be linked to the already existing – even if often seemingly production-centric– agricultural flagship programmes, thus promoting the nexus between production, natural resources management DRR, and socio-economic sustainable development.

The planning process for DRR in agriculture is not an end in itself. While the plans serve agriculture sector planners as a roadmap for DRR, it is only when the plans are implemented at local level that real change towards more

risk-sensitive development can happen. In order to assess whether a planning process has been moved from the planning stage to implementation, a series of proxy indicators are suggested:

- i. The extent to which the plan or sections of the plan helped to mobilize resources or served as a guidance for development partners to allocate resources for DRR in the agriculture sector;
- i. The take-up of the plan or sections of the plan, for its implementation, through existing government agriculture flagship programmes (e.g. rice and other commodity focused programmes);
- ii. The incorporation of the DRR plan or parts of it into sectoral government development strategies.

DRR-Ag plans (or at least their prescribed actions) should be iterative and treated as 'living instruments' in order to capture and adapt to sometimes rapidly evolving policy-socio-institutional contexts/landscapes and advancements in risk information. This is especially important in countries where the current body of knowledge on disaster risk needs to improve. For instance, during the planning process of just one planning document in Myanmar, two batches of new risk datasets were generated. Interim updates of the plans during the implementation process could help to accommodate such fast-paced change.

Capacity building along the formulation and implementation process is important not only to ensure that the plan is developed on strong technical bases, but also for building/strengthening local capacities necessary for the sustainable implementation of the plan. During the DRR planning process in agriculture, capacity building serves to bring the different actors participating in the process to a minimum level of understanding of the SFDRR and its application in the agriculture sector, while at the same time, deepening their awareness of the importance of the duty, and enhancing collaboration among the different stakeholders. In Guyana, for example, "the establishment of an internal capacity for DRR within the Ministry of Agriculture and the alignment to the national DRR department was a key element both for the development of the DRR-Ag plan and the risk-informed agriculture development plan. A series of capacity development initiatives were identified to support implementation of DRR measures for the agriculture sector, including field demonstration of good practices".

In order to move from formulation to implementation, DRR planning processes in agriculture should identify entry-points within existing – even if seemingly - production-centric traditional-sounding agricultural flagship programmes (and not just in plans/strategies). Farm-level oriented DRR technologies and practices can be integrated as part of on-going commodity-based and productivity-focused programmes by articulating how such technologies and

practices add value. The Philippines, for example, reported DRR technologies, such as stress-tolerant varieties are - with the backing of DA's DRR action plan for agriculture (2016) and the subsequently released administrative order issued in 2017 Agriculture was formally promoted through the DA's national banner programmes on rice, corn and high-value crops. In the Myanmar Agricultural Development Strategy, resilience has been made one of the outcomes of the strategic pillar "Productivity".

Finally, DRR planning in agriculture should be catalytic and able to effectively inspire and influence other parallel or future planning and programming actions of ministries and sectoral stakeholders to be risk-sensitive—regardless of their main sector goals, in addition to facilitating through regularly updated planning cycles the implementation of DRR specific activities/programmes.

However, it is important to stress that it is not essentially necessary to have stand-alone DRR-Ag plans in all situations to trigger DRR implementation at local level. When national DRR plans sufficiently incorporate the agriculture sector, or when the agriculture development plans have mainstreamed in detail DRR as part of the development measures, DRR in agriculture can also be achieved.

5. Conclusions and way forward

The agriculture sector has an important role in reducing disaster risks, adapting to climate change and enhancing resilience. DRR planning processes in the agriculture sector help bridging short-term humanitarian and long-term development interventions, as emergency response on the one hand, and sustainable economic development and climate change adaptation on the other hand, cannot be achieved without resilient agricultural livelihoods able to withstand shocks, while providing food and nutrition security to the most vulnerable people.

As three-quarters of the world's poor are farmers, mainstreaming DRR into the agriculture sector and vice versa is essential for ensuring sustainable development (FAO 2017b). While the agriculture sector is at risk, it can also be the foundation upon which more resilient livelihoods are built. In fact, a cost benefit analysis of farm-level DRR has as shown, that, on average, the DRR good practices bring benefits 2.5 times higher than previously used practices under hazard conditions, making it both necessary and worthwhile to place agriculture at the heart of DRR action (FAO 2017a).

Effective DRR from the local to the global level depends on sustained political commitment and investment by governments. Mainstreaming DRR within the policies and programmes of the agriculture sector and mainstreaming of agriculture within DRR policies are indispensable steps towards more resilient agriculture development.

This paper has analysed three different yet complementary and synergetic sectoral planning processes that influence DRR in agriculture, namely (i) national DRR plans including the agriculture sector perspective, (ii) mainstreaming of DRR into agriculture sector development plans, and the (iii) specific DRR planning in the agriculture sector, with special attention given to the planning processes of DRR-Ag planning processes, and its linkages to the other two.

Based on an in depth review of different plans and interviews with stakeholders involved in the DRR-Ag planning processes, a number of criteria for the successful mainstreaming of DRR in agriculture and vice versa could be identified, including a better understanding of disaster risks in the agriculture sector, ownership, participation and coordination of the processes, an enabling environment, planning processes that are linked across sectors and levels, ensuring funding for DRR in the agriculture sector and building capacities for the successful implementation of the plans. Key findings include:

- The spatial and temporal complexity of disaster risks for agriculture require sector-specific risk and vulnerability assessments, which take into consideration both, the often highly localized low-impact hazards, as well as the high range of different types of extreme events to which the sector is exposed in different AEZs. Both have devastating impacts on the livelihoods of farmers in the long run.
- During the planning process, strong and lasting ownership and responsibility for the implementation of the DRR plans in agriculture needs to be created. It is therefore important that focal points or units are created early on in the planning process and embedded within responsible institutions to enhance ownership throughout the process, to provide internal guidance and insights and to ensure that the plans will be implemented.
- While the different planning documents are important instruments for promoting DRR in the agriculture sector, it is the planning process itself and its ownership that is most important for the successful mainstreaming of DRR into agriculture, and vice versa, as well as its application at the local level through the implementation of DRR and vulnerability reduction measures.
- In order to integrate DRR into agricultural development, an enabling policy environment is key. Policy frameworks are particularly catalytic when they address the nexus between disaster risk, poverty reduction and sustainable development, as DRR mainstreaming process permeates more easily into development planning.

- DRR planning in the agriculture sector should not be done in isolation from other planning processes. Due to its heavy reliance on climate and its vulnerability to climate extremes, the agriculture sector is particularly well placed at integrating DRR planning processes with climate change planning processes. The timing of DRR planning in agriculture and careful analyses of timelines of other plans/instruments (whether completed or on-going) are also important.
- The availability of specific DRR-Ag plans can enhance the opportunity to include agriculture issues into the crosscutting national DRR planning efforts as well as into CCA and development plans. The inclusion of agriculture into the national DRR planning processes, and the mainstreaming of DRR within climate and development plans should always be ensured.
- Stand-alone funding for DRR in agriculture is difficult to obtain. However, agriculture might attract more resources for DRR, if legislation on mandatory budget allocations for DRR (in addition to the often already existing emergency contingency funds) across sectors were established for the implementation of resilient development pathways.
- The overarching sectoral development plans are most suitable instruments to promote, through corporate resource mobilization, the uptake of both DRR and the underlying causes of vulnerability in an integrated way including issues related to land tenure, environmental services, access to key natural resources and markets, which are all necessary to effectively address the issues that hamper agricultural smallholders from enhancing their resilience.
- There is significant scope for undertaking an even more comprehensive policy coherence review, which would take into account climate change (in particular CCA) planning processes, as DRR and CCA often overlay and reinforce each other, especially in agriculture.

Annex 1. List of countries and available plans interconnecting DRR and agriculture planning processes

Country	Plan	Level	Sector	Online Availability	Lead Institution	Supported by
Cambodia	Strategic National Action Plan for Disaster Risk Reduction 2008-2013	National	General	Available	National Committee for Disaster Management and Ministry of Planning	-
	Agriculture Sector Strategic Development Plan 2014 - 2018	National	Agriculture	Available	-	-
	Plan of Action for Disaster Risk Reduction in Agriculture 2014-2018	National	Agriculture	Available	Ministry of Agriculture, Forestry and Fisheries	FAO
Georgia	National Disaster Risk Reduction Strategy of Georgia 2017-2020	National	General	Available	-	CADRI
	Rural Development Strategy of Georgia 2017-2020	National	Rural Development	Available	-	-
Guyana	National Integrated Disaster Risk Management Plan and Implementation Strategy for Guyana 2013	National	General	Available	Civil Defence Commission	-

Country	Plan	Level	Sector	Online Availability	Lead Institution	Supported by
	National Strategy for Agriculture in Guyana 2013-2020	National	Agriculture	Available	Ministry of Agriculture	-
	Disaster Risk Management Plan for the Agriculture Sector 2013 – 2018	National	Agriculture	Available	Ministry of Agriculture	FAO
Jamaica	National Hazard Mitigation Policy 2005	National	General	Available	National Hazard Mitigation Policy Development Committee	-
	Ministry of Agriculture and Fisheries Business Plan 2014-2017	National	Agriculture	Available	Ministry of Agriculture and Fisheries	-
	Agricultural Disaster Risk Management Plan 2010	National	Agriculture	n/a	Ministry of Agriculture and Fisheries	FAO
Latin America Regional Strategy	Regional Strategy for Disaster Risk Management in the Agriculture Sector and Food and Nutrition Security in Latin America and the Caribbean 2018-2030	Regional	Agriculture	Available	Community of Latin American and Caribbean States	FAO and UNISDR
Myanmar	Myanmar Action Plan on Disaster Risk Reduction 2017-2020	National	General	Available	National Disaster Management Committee,	UNDP

Country	Plan	Level	Sector	Online Availability	Lead Institution	Supported by
					Ministry of Social Welfare, Relief and Resettlement	
	Myanmar Agriculture Development Strategy and Investment Plan (2018-19 - 2022-23)	National	Agriculture	Available	Ministry of Agriculture, Livestock and Irrigation	ADB, FAO, Livelihoods and Food Security Trust Fund
	Agriculture Action Plan for Disaster Risk Reduction	National	Agriculture	n/a - currently under development	Ministry of Agriculture, Livestock and Irrigation	FAO
Pakistan	National Disaster Risk Reduction Policy 2013	National	General	Available	National Disaster Management Authority	-
	National Food Security Policy in Pakistan 2018	National	Agriculture	Available	Ministry of National Food Security and Research	FAO
	District Agriculture DRM Operational Plan and Implementation Guidelines for Kashmore District	District	Agriculture	n/a - currently under development	Department of Agriculture	FAO
Paraguay	Política Nacional de Gestión y Reducción de Riesgos 2014	National	General	Available	Secretaría de Emergencia Nacional	UNDP

Country	Plan	Level	Sector	Online Availability	Lead Institution	Supported by
	Plan Nacional de Implementación del Marco de Sendai 2018-2022	National	General	Available	Secretaría de Emergencia Nacional	UNISDR
	Marco Estratégico Agrario 2014-2018	National	Agriculture	Available	Ministerio de Agricultura y Ganadería	-
	Plan Nacional para la Gestión del Riesgo de Desastres y Adaptación al Cambio Climático en el Sector Agrícola del Paraguay 2016-2022	National	Agriculture	Available	Ministerio de Agricultura y Ganadería	FAO
Philippines	National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028	National	General	Available	National Disaster Risk Reduction and Management Council - Office of Civil Defence	-
	DRRCCA Policies and Standardization Project RA 10121 Sunset Review 2016	National	General	n/a	National Disaster Risk Reduction and Management Council - Office of Civil Defence	UNDP
	Agriculture and Fisheries Modernization Plan 2018 to 2023	National	Agriculture and Fisheries	n/a - currently under development	Department of Agriculture	FAO

Country	Plan	Level	Sector	Online Availability	Lead Institution	Supported by
	Strategic Plan of Action for DRR in Agriculture and Fisheries 2015-2025	National	Agriculture and Fisheries	n/a	Department of Agriculture	FAO
Serbia	Action Plan for the Implementation of the National Disaster Risk Management Programme of the Republic of Serbia 2016-2020	National	General	Available	Office for Flood Emergency Response and Rehabilitation	CADRI
	The Strategy of Agriculture and Rural Development of the Republic of Serbia 2014-2024	National	Agriculture	Available	Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia	-
	Comprehensive analysis of the disaster risk reduction and management system for the agriculture sector in Serbia 2018	National	Agriculture	Available	FAO	-

Annex 2. Success factors and challenges for DRR planning processes in agriculture, as reported by countries

Country	Criteria	Success Factors and/or Challenges
Cambodia	Ownership, participation and coordination	<p>Success Factors</p> <p>Government-led participatory planning process with full commitment and cooperation from all sub-sectoral departments.</p> <p>The State Secretary of the MAFF chaired the process enhancing efficient collaboration across departments.</p>
Cambodia	Linking of planning process across sectors and levels	<p>Success Factors</p> <p>Four plans on DRR-Ag have been developed at different levels, where the national planning document serves as conceptual and thematic umbrella and makes explicit references to the existing related plans and strategies within the country. Sub-national level planning is hazard specific and with context fine-tuned prioritization.</p> <p>Additionally, DRR and CCA which form an agriculture sector perspective are highly complementary and partially identical, have been integrated as crosscutting issues in the agriculture development plans, rather than isolated standalone topics, and DRR aspects have been included into the Climate Change Priority Action Plan, covering all sub-sectors (crops, livestock, fisheries and aquaculture, and forestry).</p>
Cambodia	Technical capacity building for DRR in the agriculture sector	<p>Success Factors</p> <p>The plan development contributed to the capacity building of staff within MAFF and its line Technical Departments/Administration, as well as sub-national departments. It was opportunity for relevant technical staff and management of MAFF to work together to come up with the Plan.</p>

Country	Criteria	Success Factors and/or Challenges
Cambodia	Funding for DRR in the agriculture sector	<p>Success Factors</p> <p>Timely development of the DRR-Ag plans and their alignment with the global development agendas (Sendai, SDGs, and Paris Climate Agreement) provided critical momentum to gain attention including from donors. This, together with the production of action fiches for each priority area of the national DRR-Ag plan, helped to mobilize donor support for selected sub-sectoral DRR actions as part of risk sensitive development projects.</p> <p>At province level, the DRR-AG planning processes influenced the budget allocation from the local governments for the implementation of DRR measures.</p> <p>Challenges</p> <p>There was lack of funding to implement the full plan after its endorsement by the Government and no funding could be mobilised for the implementation of the full DRR/CCA-Ag plan as one. Follow-up projects to support selected priority actions could be mobilized. This however did not promote consistent implementation of DRR, but rather a piece meal approach.</p>
Cambodia	Implementation of DRR Agriculture Policy and Practice	<p>Success Factors</p> <p>The vertical and horizontal institutional DRR/M coordination in agriculture sector was strengthened through the establishment of the DRR-Ag planning mechanisms. This unit was absorbed and integrated into the larger Technical Working Group on climate change at the Ministry of Agriculture, Forestry and Fisheries (MAFF) and has continued its functioning beyond the planning timeframe.</p> <p>Challenges</p>

Country	Criteria	Success Factors and/or Challenges
		<p>No review of the implementation progress of the plan. The unit serves as the main institutional mechanism for operationalization of DRRM activities at national and regional levels, including awareness raising, preparedness, assessment of disaster damages and losses in agriculture, coordination of emergency response, recovery and rehabilitation at ad hoc basis.</p>
Georgia	<p>Understanding DRR in the agriculture sector</p>	<p>Success Factors</p> <p>Recognizing the exposure and vulnerability the country faces, the government made a commitment to strengthen the DRR system at national and local levels, and ensuring that DRR is integrated across all development strategies, plans and frameworks. Furthermore, it was also acknowledged the process implies identification of gaps, detailed study of the existing situation and planning of corresponding measures based on received information, with periodic updates to incorporate changes and constant upgrades to take advantage of innovations.</p>
Georgia	<p>Ownership, participation and coordination</p>	<p>Success Factors</p> <p>The National DRR Strategy and Action Plan was developed by inter-agency working groups under the overall coordination of the State Security and Crisis Management Council of Georgia, with the contribution from sectoral ministries and technical assistance from the international organizations and non-governmental organizations. By brining all multi-stakeholders to work together, the joint-up priority action plan was developed in a coherent and complementary manner.</p>
Georgia	<p>Linking of planning process</p>	<p>Success Factors</p> <p>The Action Plan provides a common basis for priority setting and for the alignment of government and partners' interventions across sectors and governance levels under a single comprehensive framework. It identifies concrete activities</p>

Country	Criteria	Success Factors and/or Challenges
	across sectors and levels	from 2017 to 2020, determines responsible partners and sets timeframe, based on the existing budget allocations and additional financing needs.
Georgia	Implementation of DRR Agriculture Policy and Practice	<p>Success Factors</p> <p>One of the key priorities identified in the planning process was the need to establish a more comprehensive and nationwide multi-hazard early warning system (MHEWS). Building on this recommendation, in February 2018, the Green Climate Fund (GCF) approved a new project that will scale up MHEWS and the use of climate information across all sectors in Georgia. The project aims to enhance the resilience of 1.7 million people equivalent to 40 percent of Georgia’s population who are currently at risk from hydro-meteorological hazards. This project has a total budget of USD 70 million (i.e., USD 27 million grant from the GCF, USD 5 million grant from the Swiss Government and USD 38 million in Government co-financing).</p>
Guyana	Understanding DRR in the agriculture sector	<p>Success Factors</p> <p>For the DRR-Ag planning process a livelihood baseline assessment was done, to inform the risk assessment and the formulation of context-specific DRR vulnerability reduction measures.</p>
Guyana	Ownership, participation and coordination	<p>Success Factors</p> <p>A sectorial DRR-Ag committee was set in place, comprised of the DRR focal points from each of the Ministry’s agencies and departments, for the planning process.</p> <p>The DRR-Ag planning process was participatory, bottom-up, with extensive involvement of key stakeholders from government, non-government, civil society organizations, and farmer and research organizations.</p>

Country	Criteria	Success Factors and/or Challenges
Guyana	Linking of planning process across sectors and levels	<p>Success Factors</p> <p>The DRR-Ag plan for Guyana is aligned to the priorities of the national agriculture and food security agenda including the Vision for Agriculture 2020, National Policy on Inland Fisheries and Aquaculture, the National Water and Sewerage Act 2002, the National Agricultural Research and Extension Institute Act 2010, the Guyana Livestock Development Authority Act 2010, Animal Health Act 2011.</p> <p>The priorities of the DRR-Ag are also compatible with other sectorial development frameworks, including the Guyana Low Carbon Development Strategy and the regulations of the Environmental Protection Act.</p> <p>With such alignment of the plan and priorities, the Ministry of Agriculture of Guyana aims for a coherent, integrated approach to DRR for the agriculture sector. The DRR-Ag plan provides powerful tool for advocacy and commitment at the political and policy levels to catalyse DRR for the agriculture sector agenda and maximize its integration within the agriculture sub-sectors.</p>
Guyana	Technical capacity building for DRR in the agriculture sector	<p>Success Factors</p> <p>The establishment of an internal capacity for DRR within the ministry of agriculture and aligned to the national DRR department was a key element both for the development of the DRR-Ag plan and the risk informed agriculture development plan.</p> <p>Series of capacity development initiatives were identified to support implementation of DRR measures for the agriculture sector, including field demonstration of good practices.</p>

Country	Criteria	Success Factors and/or Challenges
Guyana	Funding for DRR in the agriculture sector	<p>Success Factors</p> <p>The simple availability of a DRR-Ag plan, demonstrating government commitment to the issue attracted additional financing from development partners such as UNDP and Government of Japan for strengthening institutional coordination within the Ministry of Agriculture and the demonstration of DRR good practices in agriculture sector at the community level.</p>
Guyana	Implementation of DRR Agriculture Policy and Practice	<p>Success Factors</p> <p>The implementation of DRR for agriculture was supported by the establishment of a DRR-Ag Coordinator with key role of driving the DRM mainstreaming process in the agriculture sector at national level. The DRR-Ag coordinator and his/her assistant will form a DRM Secretariat which will submit quarterly reports on ADRM plan implementation to the Chair of the Sectorial ADRM Committee.</p> <p>Challenges</p> <p>In Guyana, the DRR-Ag plan implementation progress assessment (FAO, 2016) highlighted that further action is required in appointing the DRR-Ag Coordinator and one-person secretariat at the Ministry of Agriculture Head Office. Moreover, the DRR-Ag Oversight Committee established in 2014 should focus on the DRR-Ag plan implementation, rather than on reporting on activities/achievements of the individual entities.</p>
Jamaica	Ownership, participation and coordination	<p>Success Factors</p> <p>A new process of updating the DRR-Ag plan in Jamaica is about to start in 2018. The new plan will be aligned with the SFDRR and coherence and sustainability are expected to permeate across the different levels of planning and implementation.</p> <p>Challenges</p>

Country	Criteria	Success Factors and/or Challenges
		<p>The 2009 DRR-Ag plan was developed by a consultant who undertook an assessment, developed the plan's components through some participatory consultation and held a validation workshop to get feedback from stakeholders, which was then incorporated in the final version of the plan.</p>
Jamaica	Linking of planning process across sectors and levels	<p>Success Factors</p> <p>The DRR-Ag plan aimed to build on existing disaster functions of the Ministry of Agriculture and Fisheries as well as other agencies that have a role to play in agricultural DRR, taking into account existing measures such as the Drought Management Plan, the ODPEM Community Training Manual, the National Animal Disease Preparedness Plan and the National Agricultural Good Practices for the Mitigation of Hydro-meteorological hazards.</p> <p>Challenges</p> <p>The first DRR-Ag planning process was developed independently from other plans and was therefore perceived as additional work.</p>
Jamaica	Technical capacity building for DRR in the agriculture sector	<p>Success Factors</p> <p>Accompanying the development of the DRR-Ag plan, there was training in the FAO Livelihood Assessment (LAT) Toolkit to undertake baseline assessments and help agriculture extension officers to do damage assessment. Additionally a manual was created.</p>

Country	Criteria	Success Factors and/or Challenges
Jamaica	Implementation of DRR Agriculture Policy and Practice	<p>Success Factors</p> <p>In order to ensure that institutional arrangements were also in place to sustain the implementation of the plan, a DRR-Ag dedicated unit within the Division of Technology, Training and Technical Information of Rural Agricultural Development Authority was established to coordinate activities related to DRR-Ag plan.</p> <p>Challenges</p> <p>Thereafter, the plan was adopted at the senior technical level of the ministry. There was strong ownership by the government project focal point, however, when the individual left the government service, the ownership and responsibility for the plan implementation were lost.</p>
Latin America Regional Strategy	Ownership, participation and coordination	<p>Success Factors</p> <p>The document is the result of a process initiated in April 2016 with the technical support of the United Nations Food and Agriculture Organization (FAO) and the United Nations Office for Disaster Risk Reduction (UNISDR). This process involved several rounds of technical and political consultations in the development of the document. A Technical Committee” was established in February 2017 with the task of drafting the strategy, submitted to the Ministries of Agriculture and DRM or Civil Protection authorities of CELAC’s 33 national delegations, for final technical validation in September 2017.</p>
Latin America Regional Strategy	Implementation of DRR Agriculture Policy and Practice	<p>Success Factors</p> <p>The Working Group on Family Farming and Rural Development (WG-FF), through its designated officials and with the support of FAO and UNISDR, will provide strategic advice to the process of implementing the Regional Strategy on DRM in the Agriculture Sector and FNS in LAC.</p>

Country	Criteria	Success Factors and/or Challenges
		<p>Based on the proposals derived from the process of developing the Strategy, work will continue with the DRM focal points of the Ministries of Agriculture through the ad hoc Technical Committee. With FAO and UNISDR support, this committee will be responsible for (a) managing the operational mechanisms for the Strategy's implementation; (b) periodically reporting to the WG-FF on the Strategy's progress; and the (c) establishing an Advisory Group composed of international cooperation agencies and research institutions that can support, at the request of the ad hoc Technical Committee, the implementation of the Regional Strategy.</p>
Myanmar	<p>Understanding DRR in the agriculture sector</p>	<p>Success Factors</p> <p>The planning processes were based on sound knowledge of the local conditions, taking into consideration previous disaster experiences, taking into account emerging future hazards and building good practices on DRR and CCA.</p>
Myanmar	<p>Ownership, participation and coordination</p>	<p>Success Factors</p> <p>The MoALI initiated an internal planning process to develop the Agricultural Action Plan for Disaster Risk Reduction (AAPDRR) which was consolidated at Union level through the active contribution of all 13 departments across MOALI. This Union-level consolidation based on sub-sectoral inputs from the different MOALI departments was intended to enhance coherence and avoid the risk of over planning and potential duplications between or across departments.</p> <p>A key sectoral institutional milestone for DRR in Myanmar was the establishment of the MOALI DRR Task Force which was formally assigned with the task to lead the DRR-Ag planning process under the overall guidance of the Department of Agriculture (the MOALI DRR Focal Department) and the Department of Planning.</p>

Country	Criteria	Success Factors and/or Challenges
Myanmar	Enabling environment	<p>Success Factors</p> <p>The development of the Agriculture Action Plan for Disaster Risk Reduction (AAPDRR) was in line with Priority Action 2.4 Strengthening Disaster Management Systems at National and sub-national levels in line with Disaster Management Law, 2013 and Rules, 2015 of the new 2017 Myanmar Action Plan for DRR. This priority action calls for the development of sector-specific plans, including multi-hazard Disaster Risk Management plans and the establishment of DRR focal sections in each department.</p>
Myanmar	Implementation of DRR Agriculture Policy and Practice	<p>Challenges</p> <p>Clear coordination mechanisms are to be established to promote regular information sharing/feedback gathering, including timely reporting of sectoral accomplishments.</p>
Pakistan	Ownership, participation and coordination	<p>Success Factors</p> <p>All the process was carried out with the support of local level district administration, District Disaster management Authority (DDMA), agricultures sector representatives (crops, livestock, irrigation, forest, fisheries etc.) I/NGOs and local level civil society organizations. They all were invited for the consultation through local administrations/DDMAs. The results/findings of the study were shared and validated through organizing workshop and their feedback were incorporated in to the document before sending it to the district authorities who endorsed the document after further improvement of the plan.</p> <p>Challenges</p> <p>Engaging all stakeholders in a meaningful way was challenge.</p>

Country	Criteria	Success Factors and/or Challenges
Pakistan	Enabling environment	<p>Success Factors</p> <p>After the establishment of the NDMA 2010 a National Disaster Risk Reduction Policy was approved in 2013 which underscore the need for localized disaster management. The National Disaster Risk Management Plan calls for the development of sector specific district-level plans to ensure that most vulnerable sectors are made more resilient.</p>
Pakistan	Technical capacity building for DRR in the agriculture sector	<p>Success Factors</p> <p>The devolution of planning and operationalizing disaster risk management to local governments, had as first step the empowerment of Provincial Disaster Management Authorities that coordinate with District Disaster Management Authorities to ensure that existing protocols, programmes, and plans are executed and there is coordination among multiple district-level departments.</p> <p>Challenges</p> <p>While developing ADRMOP, it was observed that the stakeholders from government department(s) require capacity building in terms of disaster risk management. The government departments were involved from the onset of the initiative and hands on knowledge on tools/methodology were imparted to develop their capacities.</p>
Pakistan	Implementation of DRR Agriculture Policy and Practice	<p>Challenges</p> <p>Clear coordination mechanisms for the implementation of DRR measures for the agriculture sector are to be established to promote regular information sharing/feedback gathering, including timely reporting of sectoral accomplishments.</p>

Country	Criteria	Success Factors and/or Challenges
Paraguay	Ownership, participation and coordination	<p>Success Factors</p> <p>The plan was developed in a participatory fashion, under the demand of the Government of Paraguay through the Ministry of Agriculture and Livestock, specifically the Risk Management Unit (UGR / MAG) and the General Directorate of Planning - DGP / MAG, with support from FAO.</p> <p>For the plan formulation an inter-institutional working table was established. It was conformed by approximately 25 technical experts from academia, civil society, NGOs, INGOs, the public and private sectors.</p>
Paraguay	Enabling environment	<p>Success Factors</p> <p>The National plan for the implementation of the Sendai Framework 2018-2022 encourages public entities to incorporate DRR and the preservation of ecosystem functions across sectors and levels in the planning of development in a coherent manner. It suggests consequent adjustments of national frames, local laws, regulations, public policies, budgets and responsibilities, in line with the SFDRR four priorities. In doing so, it promotes the implementation of contextualised strategies and plans, with the objectives to avoid creating new risks, reduce existing risks and increase economic, social, and environmental resilience. In this way, it contributes to the safety, well-being, quality of life of people and sustainable development in the country.</p>
Paraguay	Linking of planning process across sectors and levels	<p>Success Factors</p> <p>The plan aims to implement measures to reduce the risk of disasters and to adapt to climate change across agriculture sectors (crops, livestock, fisheries and aquaculture, and forestry) in Paraguay. The plan links to other national development plans, policies and strategies across sectors such as the Agrarian Strategic Framework 2014-2018 and the National Strategy</p>

Country	Criteria	Success Factors and/or Challenges
		<p>for Adaptation to Climate Change, coordinated with the Ministry of Environment and Sustainable Development (former Secretary of the Environment).</p> <p>Challenges</p> <p>Paraguay does not have DRR plans for the agricultural sector at the regional and/or local level. The national DRR-Ag plan will be the anchor to sub-national plans.</p>
Paraguay	Technical capacity building for DRR in the agriculture sector	<p>Success Factors</p> <p>Capacity building was simultaneously taking place while developing the plan not only addressing technical capacities, but also capacities related to the planning process. During the process, it became apparent that a better knowledge and understanding of global frameworks was needed to guide the formulation of the sectoral plan.</p>
Paraguay	Funding for DRR in the agriculture sector	<p>Success Factors</p> <p>Having a DRR-Ag plan has facilitated the identification of potential donors for the different sections of the plan.</p>
Paraguay	Implementation of DRR Agriculture Policy and Practice	<p>Success Factors</p> <p>Two ministerial resolutions were issued by the Ministry of Agriculture and Livestock; the first for the approval of the plan (Resolution of 2017), and the second for the formalization of the "Working Group" as implementer of the plan (Resolution of February 2018). This was instrumental for the creation of links with third parties, to support implementation.</p> <p>Challenges</p> <p>No systematic monitoring of the implementation has taken place.</p>

Country	Criteria	Success Factors and/or Challenges
Philippines	Understanding DRR in the agriculture sector	<p>Success Factors</p> <p>During the planning process, there was clear understanding that disasters impact negatively on development gains, food security and nutrition, and that DRR and CCA are essential for enhancing resilience and contribute to the sustainable development. Therefore, the national and sub-national development plans as well as the agriculture development plan have strong emphasis on resilience building mainstreaming DRR and CCA.</p> <p>Challenges</p> <p>At the core of DRR is addressing the underlying causes of people’s vulnerability – social, economic, physical and environmental. More effort are needed to understand context-specific hazards and vulnerabilities and build capacities towards resilient agricultural livelihoods.</p>
Philippines	Linking of planning process across sectors and levels	<p>Success Factors</p> <p>For the promotion of coherence across policies, plans, programs, projects, systems at different levels of the DA organization, the DRR-Ag plan is aligned to the national DRR framework, and its priority areas and strategies are in line with the four priorities of the SFDRR.</p> <p>Aiming to build on and seek synergies with existing structures, processes, strategies, projects, knowledge, and capacities across levels, the DRR-Ag plan links with the agriculture and fisheries sector development goals and adopts complementary approaches such as ecosystem-based DRR, the sustainable livelihoods approach and other multi-disciplinary approaches.</p> <p>In order to connect national and local priorities and implementation approaches of DRR, the DRR-Ag plan serves as umbrella for sub-national action plans for disaster risk reduction, enhancing coherence across levels.</p>

Country	Criteria	Success Factors and/or Challenges
		<p>Challenges</p> <p>DRRM needs to consider the shifting risks associated with climate change. There is need to find better ways to: (1) understand CCA and DRRM as complementary and not as competitive; (2) reduce overlaps while putting synergies at work.</p>
Philippines	Funding for DRR in the agriculture sector	<p>Success Factors</p> <p>The law RA 10121 required the formulation of DRR plans also mandated national and local government agencies to set aside a portion of their budget for Quick Response Fund and for National Disaster Risk Reduction and management Fund. The same law also created funds for quick response and rehabilitation. Therefore, the plans serve as basis for the mobilization of these funds, along with sectoral and spatial plans, if and where available.</p> <p>For the agriculture sector, the implementation of the DRR-Ag plan is to be supported by both public and private resources, where the Department of Agriculture’s cost of implementing DRRM programs shall be at least twenty percent (20%) of the DA’s total budget appropriations. The allocation is to be in the form of (a) quick Response Fund of the DA under the General Appropriations Act; (b) budget head; and (c) inclusion of DRR activities/features to existing/proposed development programs that are not primarily DRR in nature such as FMRs, and irrigation projects.</p>
Philippines	Implementation of DRR Agriculture Policy and Practice	<p>Success Factors</p> <p>The mechanism for coordination and implementation builds upon existing institutional frameworks of the Department of Agriculture (DA) and the National DRRM Council, thus, allowing an easy integration of DRR into regular planning and operations. The DA bears the institutional arrangements and mechanisms to provide the leadership, guidance and the coordination for the implementation, monitoring and evaluation of the Plan.</p>

Country	Criteria	Success Factors and/or Challenges
		<p>Challenges</p> <p>While considerable work has been done for the implementation of the DRRM framework, the gap between policy and practice remains considerable. Rehabilitation and recovery still takes precedence over prevention, preparedness and mitigation.</p>
Serbia	Understanding DRR in the agriculture sector	<p>Success Factors</p> <p>The Ministry of Agriculture and Environmental Protection has stepped up its efforts in conducting risk assessments in agriculture, water management, forestry, veterinary, water resources and environmental protection, for the following activities: development of a CCA plan and a national strategy (led by the Ministry of Environmental Protection); undertaking vulnerability and risk maps for floods and forest fires; setting up a database on the movement of animals, risks of animal diseases including outbreak prevention and monitoring; and setting up a database for food safety (led by the Ministry of Agriculture).</p> <p>Local level vulnerability assessments are being slowly developed, after the development of the National multi-sector vulnerability assessment.</p> <p>Challenges</p> <p>There is still lack of understanding of the DRR for the agriculture sector, and hence, the recognition of role of various institutions in DRR in agriculture.</p> <p>Few municipalities have adopted these assessments formally. DRR action plans should be also developed based on the vulnerability assessments.</p>

Country	Criteria	Success Factors and/or Challenges
Serbia	Ownership, participation and coordination	<p>Success Factors</p> <p>The Public Investment Management Office and the Ministry of Agriculture with the support from the UN system led the step-by-step process, ranging from raising awareness and building the capacities on DRR/M in the agriculture sectors to applying the knowledge gained from the capacity development activities to the Action Plan development, this way creating the ownership of the whole process.</p>
Serbia	Technical capacity building for DRR in the agriculture sector	<p>Success Factors</p> <p>A series of training workshops were facilitated to build the capacities of the ministry on “Strengthening preparedness and planning of DRRM measures in agriculture in Republic of Serbia”. This served to guide participants in defining DRR activities and setting priorities where the agriculture sector should focus as part of the National DRRM Action Plan. The capacity building process not only increased participants’ knowledge and understanding of DRR in the context of agriculture sector and SFDRR, but also resulted in better collaboration among Ministry of Agriculture and Environmental Protection’s sub-sectors in joint DRR activities, created ownership on DRR in agriculture, and strengthened its partnership with the Public Investment Management Office.</p>
Serbia	Implementation of DRR Agriculture Policy and Practice	<p>Success Factors</p> <p>A few development proposals were successfully submitted to donors to support the implementation of specific planned activities. Some of these include the development of a methodology for Post Disaster Needs Assessment (PDNA) in agriculture and the revision of the disaster damage and loss assessment methodology for the agriculture sectors, with</p>

Country	Criteria	Success Factors and/or Challenges
		participation of the Public Investment Management Office, the Ministry of Agriculture, the Statistical Office, local government authorities and agriculture extension services.

Annex 3. Inclusion of the agriculture sector in national DRR plans

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
Cambodia	Strategic National Action Plan for Disaster Risk Reduction 2008-2013	<p>The objective of the plan is to reduce the vulnerability of its people, especially the poor, to the effects of natural, environmental and human-induced hazards, by strengthening the disaster management system and incorporating a DRR perspective into the policies, strategies and plans of government in all sectors and at all levels.</p> <p>The action plan was conceived and formulated to serve as the “road map” or guide for strengthening and undertaking DRR in Cambodia. Implementation of the activities and projects identified in the plan aim to contribute significantly to the attainment of</p>	yes	yes	yes

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
		<p>government's primary objective of poverty reduction.</p> <p>The action plan has the following specific objectives; (i) Contribute to a common understanding, knowledge and awareness of disaster risk reduction; (ii) Provide a comprehensive framework to guide and monitor the implementation of disaster risk reduction initiatives in the country; (iii) 3. Create a conducive environment for the mainstreaming of disaster risk reduction into development plans, policies and projects of the government; (iv) 4. Enhance coordination and cooperation between disaster management and development stakeholders; (v) 5. Improve the efficiency of resource allocation and utilisation in disaster reduction; and (vi) Orient donor support in DRR to government-identified priorities.</p> <p>The national strategy for DRR has among its components the mainstreaming of DRR into policies and programmes of relevant government ministries, including agriculture, through the development of sector specific contingency programmes, development and</p>			

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
		<p>implementation of vulnerability reduction measures, income diversification and insurance and credit schemes.</p> <p>The strategy outlines institutional arrangements, where the Ministries of Interior and Rural Development are responsible of providing the overall facilitation and coordination, and delegating the responsibility for implementation to the relevant government ministries and local governments, in collaboration with other relevant government institutions.</p>			
Georgia	National Disaster Risk Reduction Strategy of Georgia 2017-2020	<p>Developed in response to the legal requirement of the National Threat Assessment Document 2015-2018 which translates the national Sendai framework commitment into action.</p> <p>Seeks to establish a unified, coordinated and multi-stakeholder DRR system at all governance levels.</p> <p>Places a strong emphasis on well-established disaster preparedness and response practices, prevention and resilience building.</p>	yes	no	no

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
		<p>Provides a common basis for priority setting and for the alignment of government's and partners' interventions under a single comprehensive framework. It identifies concrete activities for the strategy implementation across sectors from 2017 to 2020, determines responsible and supporting institutions/agencies and sets implementation timeframes and sources of financing.</p> <p>The strategy recognises the different types of hazards that affect the agriculture sector, yet, no concrete activities are mention in order to reduce the risks of the agriculture sector.</p>			
Guyana	National Integrated Disaster Risk Management Plan and	<p>Recognizes the severe impact of natural hazards on the agricultural sector. Highlights governmental awareness of the high economic loss and damages due to floods and the costs of emergency response for the agricultural sector.Strong focus on vulnerability reduction in line with sustainable development across sectors, with specific inputs aimed to reduce the risk of the agriculture sector along the four SFDRR priorities.The</p>	yes	yes	yes

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
	Implementation Strategy for Guyana 2013	development of the plan counted with the involvement of the Ministry of Agriculture, who leads the “Agriculture, Industry/Commerce” disaster sub-committee, and contributes to the Mitigation, and the preparedness-response sub-committees. The strategy outlines ongoing DRM projects for Guyana, with defined timeframes and budgets for implementation, including one on mangrove reforestation. The Strategy makes reference to the National Land Use Plan for the implementation of prevention and mitigation measures and to the Agriculture Disaster Risk Management Plan and Strategy agriculture response plan.			
Jamaica	National Hazard Mitigation Policy 2005	The policy recognizes that over the last two decades Jamaica economic growth and development has been persistently hampered by the impact of natural hazards, being the agriculture sector one of the most affected and vulnerable, setting back the development achievements and putting food security under threat.	yes	no	no

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
		Stresses the importance of investing in disaster prevention and preparedness to make economy more resilient.			
Myanmar	Myanmar Action Plan on Disaster Risk Reduction 2017-2020	<p>Strong focus on the agriculture sector.</p> <p>Recognizes the important role of Myanmar’s Ministry of Agriculture, Livestock and Irrigation (MOALI) in DRM and has involved the agriculture sector, amongst others, during the formulation process.</p> <p>The agriculture sub-sectors, in particular crops, livestock, fishery/aquaculture and irrigation are featured in various priority actions of the plan.</p> <p>Planned activities ranging from risk assessments link developing an agricultural drought monitoring system, to risk governance activities like including DRR/CCA into small village development plans, considering community infrastructure, livelihoods and agriculture and promoting the application of DRR and sustainable agricultural practices.</p>	yes	yes	no

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
Pakistan	National Disaster Risk Reduction Policy 2013	<p>Agriculture does not play a role in the 2013 National Disaster Risk Reduction Policy, but lays the foundation for the existing Agriculture DRR Plan, as it prescribes “sectoral and hazard-specific plans” as one of its three instruments for implementation.</p> <p>The need for sectoral plans for DRR in agriculture stems from Pakistan’s National Disaster Risk Reduction Policy 2013. Acknowledges the roles of reducing risks and mainstream a proactive approach to increase the adaptive capacity to withstand disasters triggered by natural hazards.</p> <p>National policies and acts (such as the National Disaster Management (NDM) Act 2010) provide the overarching framework for risk reduction, yet the division of roles and responsibilities is foremost a provincial and district-level subject.</p>	yes	no	yes
Paraguay	Política Nacional de Gestión y	The main objective is to install the theme of DRRM at the various levels of the government, its institutions, civil society, the private sector and the community.	no	no	no

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
	Reducción de Riesgos 2014	Attempt to mainstream DRR in the formulation and implementation of public policies as well as development programmes.			
	Plan Nacional de Implementación del Marco de Sendai 2018-2022	Medium and long-term multi-sectoral planning tool for the achievement of SFDRR priorities and targets, in order to strengthen resilience in the country. Invites public entities to incorporate DRR and the preservation of ecosystem functions across sectors and levels in the planning of development in a coherent manner.Considers the consequent modifications to national frames, local laws, regulations, public policies, with plans, budgets and responsibilities, across sectors, in line with the four SFDRR priorities.Aims for the implementation of contextualised strategies and plans, in order to avoid creating risks, reduce existing risks and increase economic, social, health resilience and environmental, and, in this way, contribute to the safety, well-being, quality of life of the people and sustainable development of the country.The National Plan harmonised its strategies and actions in compliance with the constitutional mandate and it is supported	yes	yes	yes

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
		<p>by the national policy on DRR and the National Development Plan Paraguay 2030, to contribute to the achievement of the 2030 Agenda for Sustainable Development. For its implementation different sources of funding are considered, and among those the General Expense Budget of the Nation, budgets of binational entities, international cooperation and public-private partnerships.</p>			
Philippines	National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028	<p>The plan calls for a comprehensive, multi-hazards, multi-sectoral, inter-agency and community-based approach to DRRM, serving as the principal guide to DRRM efforts in the Philippines.</p> <p>It provides the legal basis for policies, plans and programs to deal with disasters, recognising the importance of mainstreaming DRRM and CCA in the development processes such as policy formulation, socio-economic development planning, budgeting and governance, across sectors, including agriculture.</p> <p>The plan sets down the expected outcomes, outputs, key activities, indicators, lead</p>	no	yes	yes

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
		agencies, implementing partners and timelines under each of the four distinct yet mutually reinforcing thematic areas in line with the HFA and structured along four thematic areas of the DRR cycle; (i) prevention and mitigation; (ii) disaster preparedness; (iii) disaster response and (iv) disaster rehabilitation and recovery.			
	DRRCCA Policies and Standardization Project RA 10121 Sunset Review 2016	<p>The sunset review aims to harmonize Philippine policies, frameworks and strategies and standardize tools and methodologies for integrated DRR/M and CCA at the national and local level, including mainstreaming gender approaches in all project activities to ensure the participation and involvement of women in managing risks from natural hazards and CC.</p> <p>The review consistent on a series of sectoral consultations, involving participants representing the interests of people with disabilities, women and girls, children and youth, senior citizens, the urban poor, agriculture and fisheries, environment, infrastructure, economic development, civil society organizations, and emergency responders at the</p>	no	yes	yes

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
		<p>national and local level.</p> <p>Each group identified issues, challenges and policy recommendations for the assigned assessment areas in relation to RA 10121 and related issuances, rules and regulations.</p>			
Serbia	Action Plan for the Implementation of the National Disaster Risk Management Programme of the Republic of Serbia 2016-2020	<p>The National DRR Programme represents a general framework for the development of a comprehensive disaster protection programme and for coordinating, directing and managing DRR funds and implementing DRR related activities in the Republic of Serbia. The Action Plan for the implementation of National DRR Programme (2016-2020) is a strategic and long-term investment in DRM system. Serves as the basis for cooperation among key stakeholders from different institutions, and lays out a concrete foundation for their joint work on DRRM and efficient response to disasters. The objective of the Action Plan is that, by 2020, the Republic of Serbia would have an effective DRM system developed and a solid inter-institutional coordination system established. Hence, the</p>	yes	yes	no

Country	Plan	Description	Recognizes the impact of NH on the Ag sector	Outlines priorities for the Ag sector, along the SFDRR	Makes reference to a DRR-Ag plan
		country will increase its resilience to disasters and other hazards, and will be capable of retrofitting after disaster or any other hazard strikes.			

Annex 4. Agriculture development measures serving DRR for the agriculture sector

Country	Document	Development Program/ Topic	Action in AG DRR plan
Cambodia	Agricultural Sector Strategic Development Plan 2014-2018	Sub-Program 1.2: Promote Sustainable Management of Agricultural Land Resources	<ul style="list-style-type: none"> • Capacity building and upgrading of climate change adaptive research activities for agricultural production systems. • Identification of vulnerable areas prone to disasters such as flood, drought and salt-water penetrating area. • Preparation of strategic plan and work plan for risk mitigating in agriculture sector.
		Sub-Program 1.3: Promote Rice Production Development	<ul style="list-style-type: none"> • Conduct research, development, production and extension of potential and high quality horticultural seed and secondary crop seed adaptive to climate change and market needs.
		Sub-Program 1.6: Strengthen the Development and Utilization of Agricultural Machinery and Equipment	<ul style="list-style-type: none"> • Improvement of cultivation land and on farm irrigation system following technical norm in order to increase productivity and profit and resilient to climate change.
		Sub-Program 1.7: Enhance Plant Protection, Sanitary and Phyto-sanitary Measure	<ul style="list-style-type: none"> • Improve agricultural productivity, quality and safety through capacity building on good agricultural practices (GAP) and monitoring & evaluation of potential risk. • Risk prevention on pest composition within Cambodia through the acceleration of monitoring and evaluation on importation of goods and agricultural product, which is the subject matter phyto-sanitary inspection in conformity with standard phyto-sanitary measure in force.

Country	Document	Development Program/ Topic	Action in AG DRR plan
		Sub-Programme 2.2: Strengthening of Animal Health Services and Infectious Disease Prevention	<ul style="list-style-type: none"> • Research for identification of the risk areas of infectious disease. • Strengthen staffs' capacity and stakeholders on technique, veterinary rules and animal health management. • Conduct, monitor and evaluate nationwide animal infectious vaccination campaign. • Manage animal health situation, prevent animal infectious disease and implement veterinary rules.
		Sub-Programme 2.3: Strengthening the Inspection Works and Quarantines	<ul style="list-style-type: none"> • Establish animal quarantine stations and operating expenses.
		Sub-Programme 2.4: Improvement of Public Health, Strengthening Slaughterhouse Management, and Zoonotic Disease Prevention	<ul style="list-style-type: none"> • Prevention and protection animal disease transmit from human to animal and vice versa and public health.
		Sub-Programme 3.2: Fisheries Domain Management	<ul style="list-style-type: none"> • Promoting Climate Change Resilience of wild fisheries resources. • Enhancing the Climate Change Responses in fisheries sector. <p>Sources.</p>
		Sub-Programme 3.3. Aquaculture Development	<ul style="list-style-type: none"> • Promoting Aquaculture Production Systems and Practices that are more adaptive to climate change.

Country	Document	Development Program/ Topic	Action in AG DRR plan
		Sub-Programme 4.1: Forest Development and Management and Community Forestry	<ul style="list-style-type: none"> • Conduct awareness on forest fire protection, publish signboards and administrative letters. • Conduct training on Mapping and GIS
		Sub-Programme 4.4: Saving, Restoring Bio-diversity, Breeding, and Releasing Wildlife	<ul style="list-style-type: none"> • Prevent forest fires.
	National Strategic Development Plan 2014-2018	Improved productivity, diversification and commercialization. A. Policy Priorities for the Fifth Legislature	<ul style="list-style-type: none"> • Farmers diversify into crops other than rice, such as corn, cassava, sugarcane, cashew nut, pepper and others. • Investing in irrigation and rationalizing water use. • Improvement of collection and storage facilities. • Enhancing soil fertility management to combat land degradation and desertification. • Assessing and classifying land for crop zoning and land use plan.
		Water resources and irrigation system management A. Policy Priorities during the Fifth Legislature	<ul style="list-style-type: none"> • Expansion of irrigation systems through mobilizing public and other resources in order to rationally increase irrigation capacity, focusing on enhancing standards and quality of irrigation infrastructure, effectiveness of investment and construction of water storage reservoirs, and development of a fully extended irrigation system, with attention on needed preparations for adaptation to climate change. • Improving flood management and prevention by developing water release infrastructure, flood prevention dams, water storage reservoirs and water diversion

Country	Document	Development Program/ Topic	Action in AG DRR plan
			<p>channels to reduce impact from floods.</p> <ul style="list-style-type: none"> • Strengthening and expansion of monitoring, forecasting and institutional mechanism for dissemination of timely and more accurate hydrological and meteorological information in particular, to ensure safety of cultivation and to prepare for adverse effect of disasters.
		<p>Water resources and irrigation system management</p> <p>B. Planned Actions to Implement the Prioritized Policies</p>	<ul style="list-style-type: none"> • Water resources management and development of irrigation systems. • Flood and drought management. • Rehabilitation and construction of irrigation schemes and drainage system. • Maintenance and expansion of reservoirs, lacks, ponds, intake canals and drainage system. • River basin development planning in short, medium and long term with the consideration of changing of water discharge, water current, and aquifers to ensure the sue of water resources. • Construct flood-control and drainage structures for minimizing disasters caused by floods. • Encourage people and institutions to participate in flood mitigation: identifying flood safe grounds; providing materials and machineries, education; and disseminating new technologies.

Country	Document	Development Program/ Topic	Action in AG DRR plan
			<ul style="list-style-type: none"> • Participate in national and international programs aimed at mitigating the impact of flood disasters. • Preparedness for pumping water to rescue paddy crops in areas facing water shortage, especially those near water sources but not covered by irrigation systems. • Forecast and announce emergencies to people living in areas affected by droughts, floods and other fragilities. • Set up meteorological and hydrological stations, rain gauge stations, and water staff gauges at important locations and rivers. • Provide to public, weather forecast information, advice and education to enhance their understanding on how to minimize the impact of natural events: storm, lightening, storm, flood etc. • Develop geographical map for irrigation systems, flood control systems, polders, river basins, inundated land areas, and water resources management.
Georgia	Rural Development Strategy of Georgia 2017-2020	Priority Area 3: Environmental Protection and the Sustainable Management of Natural Resources	<ul style="list-style-type: none"> • Objective 3: Climate Change. Activities used to mitigate the negative impact of climate change.

Country	Document	Development Program/ Topic	Action in AG DRR plan
Guyana	National Strategy for agriculture in Guyana 2013-2020	Priority area 1: Sustaining and expanding Guyana's agro-diversity policy and programme	<ul style="list-style-type: none"> • Establish a Crop Development and Diversification Unit at NAREI. • Establish an Agriculture Mapping Program for Guyana using GIS/GPS technology and techniques.
		Priority area 3: Further advancing water security and water management drainage and irrigation system expansion and strengthening	<ul style="list-style-type: none"> • Develop and implementation of a portfolio of drainage and irrigation infrastructure development projects. This inventory will be developed into works, service and goods packages. • Develop and implement a Flood Prevention Strategy. • An Annual Report from NDIA to capture all flood situations and analysis for flood losses.
		Priority area 11: Increased production and diversification of crops, with priority and new crops	<ul style="list-style-type: none"> • Establish a crop development and diversification unit at NAREI
		Priority area 18: Promoting environmental sustainability	<ul style="list-style-type: none"> • Develop a manual of techniques and technology for soil nutrient management and carbon sequestration promoting techniques.
		Priority area 19: Further develop agriculture disaster risk reduction and disaster risk management	<ul style="list-style-type: none"> • Objective 3: Climate Change. Activities used to mitigate the negative impact of climate change. • Develop and promote institutional mechanism to coordinate and implement DRM at the Ministry of Agriculture.

Country	Document	Development Program/ Topic	Action in AG DRR plan
			<ul style="list-style-type: none"> • Design and implement risk transfer instruments to improve the recovery potential of farmers and fisher-folk. • Develop and implement EWS for proactive mitigation and responses. • Develop policies and programs on DRR and CC designed to promote resilience to hazards. • Develop resources for DRM. • Develop DRR and CCA Guidelines for use at community levels.
		Priority area 20: Enhancing hydrometeorology and weather forecasting	<ul style="list-style-type: none"> • Enable Hydromet to work effectively and benefit from regional and international context of weather and climate. • Informing the public, special users, such as aviation and marine communities, of short term weather conditions and warn them of potential bad weather. • Development and provision of clear and precise, user targeted information on weather, climate and water, and awareness of farmers and other user groups to the benefits of using weather and climate forecast in decision-making. • Enhanced capacity to monitor climate conditions of Guyana and associated changes by filling gaps in network data and employing scientific staff to undertake analysis.
Jamaica		National Strategy Goal 9: Strong economic infrastructure	<ul style="list-style-type: none"> • Ensure adequate and safe water supply and sanitation services.

Country	Document	Development Program/ Topic	Action in AG DRR plan
	National Development Plan 2030	National Strategies Goal 14: Hazard Risk Reduction and Adaptation to Climate Change	<ul style="list-style-type: none"> • Improve resilience to all forms of hazards. • Improve emergency response capacity. • Develop measures to adapt to climate change.
		National Strategies Goal 15 - Sustainable Urban and Rural Development	<ul style="list-style-type: none"> • Ensure safe, sanitary and affordable shelter for all.
	Ministry of Agriculture and Fisheries Business Plan	GOJ/Adaptation Fund: Enhancing the Resilience of the Agricultural Sector and Coastal Areas to Protect Livelihoods & Improve Food Security	<ul style="list-style-type: none"> • Construction of small water catchment structures and distribution systems. • Establishment of Water User Groups (WUG).
Myanmar	Agriculture Development Strategy and Investment Plan	Outputs on Irrigation and Water Management	<ul style="list-style-type: none"> • Rehabilitate small dam irrigation systems. • Establish medium pond/recharge basins that store water and recharge groundwater, for use by both irrigation and water supply.
		Outputs on Resilience	<ul style="list-style-type: none"> • Ensure adequate and safe water supply and sanitation services. • Conduct research on stress tolerant varieties and breeds of crops, livestock and fish for the development of climate resilient agriculture that are at the same time higher in yield. • Establish climate information and weather indexation systems designed to provide information to farmers. This will include building capacity of the Meteorology

Country	Document	Development Program/ Topic	Action in AG DRR plan
			<p>Department to provide weather risk indexation at local levels (as described for agricultural insurance), and building capacity for crop yield forecasting based on weather indexation.</p> <ul style="list-style-type: none"> • Strengthen the food reserve system to cope with emergency and food safety distribution to targeted farm households. • Improve capacity of extension staff and farmers in climate smart agricultural practices through training, farmer field schools (FFS) and demonstrations. • Implement programme to in-build mitigation factors and resilience of livestock farmers to climate change, disasters triggered by natural hazards and other uncertainties. • Increased climate smart and conservation-oriented livestock utilization practices and conservation farming. • Establish a fund for preparedness and response to droughts, flood, epidemics and emergencies affecting rural areas and farmers not covered by agricultural insurance. • Carry out Community Based Disaster Risk Management (CBDRM) capacity building.
		Outputs on Rural Infrastructure	<ul style="list-style-type: none"> • Improve rural road infrastructure consistently with master plan for transportation.
Pakistan	Agricultural Action Plan	Strategic Approach for the Agriculture Sector	<ul style="list-style-type: none"> • Increased levels of food security and rehabilitation of rural livelihoods. • Resilience capacity of affected communities and public sector to anticipate, absorb

Country	Document	Development Program/ Topic	Action in AG DRR plan
			and recover from external pressures, shocks and crisis - including potential conflict and unrest.
		Rehabilitation of Irrigation and Water Management Systems	<ul style="list-style-type: none"> • Repair and rehabilitation of community managed water courses/irrigation schemes. • Rehabilitation of water harvesting structures.
Paraguay	Marco Estratégico Agrario 2014-2018	Axis 1. Agricultural competitiveness	<ul style="list-style-type: none"> • Development and access to technologies that incorporate integrated water management for the improvement of competitiveness, increasing production while reducing risks associated with climatic phenomena. • Setting in place an agricultural information system that integrates climatic, economic and technologic information. • The promotion and facilitation of the means for the adoption of systems and production processes that generate harmless food and at the same time tend to minimize negative externalities. • Promote the establishment of public-private partnerships to facilitate the adoption of appropriate technologies by producers. • Strengthen public and private education and agricultural training services. • Establish an agricultural information system that integrates climate, economic and technological information.

Country	Document	Development Program/ Topic	Action in AG DRR plan
		Axis 2. Development of family farming and food security	<ul style="list-style-type: none"> • Improve natural resource management. • The integral planning of the new settlements under the format of sustainable development projects. • Promote the titling of lands, cadastral sanitation and legal regularization of rural settlements. • Adoption of sustainable measures and the promotion and diffusion of alternative productive systems, such as agro-forestry, organic production, agro-ecological production, among others. • The impulse to the formation of the producers so that they undertake activities generating non-agrarian goods and services to supplement income, as is the case of tourism in the rural area, among others. • Increase and diversification of food production. • Establish risk management mechanisms in production processes, to enhance their resilience in the face of climate and other contingencies. • Implement soil management and recovery programs. • Reduce production losses in the post-harvest phase. • Address the adequate provision of seeds for food production.

Country	Document	Development Program/ Topic	Action in AG DRR plan
		Axis 3. Sustainable forest development and provision of environmental services	<ul style="list-style-type: none"> • Promote and sustainably develop forest resources, by enhancing protection of watersheds; soil conservation; the conservation of biodiversity and the protection of different terrestrial ecosystems. • Reverse the process of forest loss and degradation and promote the sustainable management of forest ecosystems based on land use planning. • Promote and encourage public and private investment in afforestation, reforestation, agroforestry and the recovery of degraded natural forests. • Improve the production, productivity and quality of native forests and forest plantations through sustainable forest management plans.
		Axis 4. Livestock development	<ul style="list-style-type: none"> • Improve the productivity, the genetic quality, the sanitary status and the diversification of the major and minor livestock, with environmental sustainability. • Dissemination of technologies and protocols on traceability, safety, quality and health of livestock and farmer production. • Establishment of disease monitoring and control programs. • Compliance with standards and protocols for the maintenance and improvement of the sanitary status of livestock and farmer production. • Adaptation and modernization of the laboratory system applied to the improvement of animal health and quality.

Country	Document	Development Program/ Topic	Action in AG DRR plan
		Axis 5. Risk reduction associated with climate variability and change	<ul style="list-style-type: none"> • Develop an agro-meteorological information system with a territorial approach. • Development and adoption of technological packages that incorporate risk management. • Development of institutional mechanisms that stimulate good silvopastoral practices and that are complemented with access to adequate instruments for managing climate risks. • Enhance rational and sustainable productive use of water. • Introduction of irrigation in productive systems as a factor of competitiveness and risk reduction. • Enhance capacities in risk management and integrated water management. • Improve the knowledge of producers regarding the climatic factors. • Development of institutional mechanisms for forecasting and compensating for losses. • Development of financing lines in adequate and accessible conditions that facilitate the reduction and mitigation of risks. • Develop a national system of information and climate forecast that allows the construction of projected scenarios to be applied to agricultural activities. • Increase capacities in risk management for the agricultural sector.

Country	Document	Development Program/ Topic	Action in AG DRR plan
			<ul style="list-style-type: none"> • Incorporate forecasting and mitigation systems for climate change. • Develop protective technologies for the prevention and mitigation of risks associated with climate variability. • Promote the dissemination and appropriation of technological packages. • Formulate and implement policies that allow the sustainable management of water resources for productive agricultural use. • Adapt the normative and institutional bases for water management. • Formulate and implement a National Irrigation Plan. • Implement early warning systems that allow actors in the productive chain to implement preventive and mitigation actions and / or procedures. • Design and implement an agricultural insurance system. • Create a contingency fund for cases of climate emergency of agrarian impact. • Implement financing lines for the adoption of risk prevention and mitigation technologies.
Philippines	Philippine Development Plan 2017-2022	Strategies to Reduce Vulnerability of Individuals and Families	<ul style="list-style-type: none"> • Roll out climate and disaster vulnerability and risk assessment nationwide. • Develop facilities for adaptation including risk transfer mechanisms (RTM).
		Strategies to Reduce Vulnerability of Individuals and Families	<ul style="list-style-type: none"> • Provide adequate transition houses and livelihood opportunities to disaster victims during the early rehabilitation and recovery period.

Country	Document	Development Program/ Topic	Action in AG DRR plan
		Strategies to Accelerate Infrastructure Development	<ul style="list-style-type: none"> • Formulation of an irrigation master plan to set the direction for irrigation development and a framework for capital and financing of irrigation projects. • Flood management initiatives will continue to be undertaken.
		Strategies to Ensure Ecological Integrity, Clean and Healthy Environment	<ul style="list-style-type: none"> • Strengthen the implementation of CCA and DRR across sectors, particularly at the local level. • Strengthen institutional response to disasters. • Strengthen the monitoring and evaluation of the effectiveness of CC and DRRM actions.
Serbia	The strategy of agriculture and rural development of the Republic of Serbia (2014–2024)	Priority area 2. Establishing the efficient agriculture and rural development financing system and risk management	<ul style="list-style-type: none"> • Improved insurance system, adjusted to the needs of agriculture.
		Priority area 3. Efficient land management and improved accessibility of land resources	<ul style="list-style-type: none"> • Decrease in loss and land degradation.
		Priority area 6. Adjustment to and alleviation of the climate change effects	<ul style="list-style-type: none"> • Improvement and adjustment of production technology. • Raising awareness on climate change, its consequences and needs for addressing them.
		Priority area 9. Protection and improvement of environment and preserving of the natural resources	<ul style="list-style-type: none"> • Increased application of environment favourable agricultural practices.

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