Food and Agriculture Organization of the United Nations (FAO)

FAO Submission to the UNFCCC - Executive Committee of the Warsaw International Mechanism for Loss and Damage under the Work Plan AA7 (d)

In response to the call for submission by the Executive Committee (Excom) of the Warsaw International Mechanisms for Loss and Damage of UNFCCC and towards contributing to its work plan AA7 (d) on "Best Practices, challenges and lessons learned from existing financial instruments at all levels that address the risk of loss and damage associated with the adverse effects of climate change", FAO is pleased to submit the following points and experiences based on selected case studies in the agricultural sectors.[1]

FAO, an observer specialized UN agency supports the activities of the Executive Committee (Excom) of the Warsaw International Mechanisms on Loss and Damage to fulfil the role under the convention to promote implementation of approaches to address loss and damage associated with the adverse effects of climate change, pursuant to decision 3/CP.18. FAO is pleased to contribute to the discussions related to the initial two-year work plan of the Executive Committee in line with the decisions of the Paris Agreement (FCCC/CP/2015/10/add.1) in Paragraphs from 48 to 52 related to Loss and Damage.

Impacts of climate-related disasters on the agricultural sectors and food security are increasing, and loss and damage in the agricultural sectors due to climate extremes should be continually monitored: Changes in many extreme weather and climate events have been observed over the last five decades and there has been a rising trend in their economic damage. The increase in weather and climate-related events is of significant concern to the agricultural sectors (crop, livestock, forestry and fisheries) given the sector's sensitivity and exposure to climate. As stated by the 2015 Global Humanitarian Assistance Report, 93% of people living in extreme poverty are in countries that are either politically fragile or environmentally vulnerable (or both), highlighting the strong relationship between poverty and vulnerability to disasters. Moreover, a recent FAO study (FAO, 2015) [2] highlighted that between 2003 and 2013, economic impacts of climate-related disasters on agricultural sectors in developing countries accounted for about 25% of the total recorded damage and loss.

FAO study showed that disasters have negative consequences beyond physical damage to the agricultural sectors, including lower production and gaps in productivity, damage to the natural resource base and delivery of ecosystem services. It also showed that in the year, and year after large scale disasters hit decrease in exports of agricultural commodities and increase in food imports, and disruption and decline in agriculture sector growth and development were observed at national scale. As a consequence, disasters undermine efforts to eradicate hunger and food insecurity, eliminate poverty and achieve sustainable agricultural development, and may lead to health threats from infectious diseases – human and animal. Systematic assessment, monitoring and reporting on damage and loss caused by disasters on the agricultural sectors and dependent livelihoods are needed to support evidence-based decision-making and designing and implementation of Disaster Risk Reduction (DRR) strategies, financial instruments and social protection measures in line with national priorities and to promote sustainable agricultural development and enhanced resilience.

[1] The use of the terms 'agricultural sectors' or simply 'agriculture' in this submission refer to the broader agriculture (crops and livestock), fisheries and forestry sectors.

[2] FAO (2015) The impact of disasters on agriculture and food security, FAO, Rome: http://www.fao.org/3/a-i5128e.pdf

Comprehensive risk management approaches should enhance livelihood resilience in agricultural sectors: FAO encourages a comprehensive approach to risk management promoting Disaster Risk Reduction (DRR) policies, good practices, early warning systems, financial instruments and social protection measures to enhance livelihood resilience in an integrated way. The comprehensive risk management approach should bridge the Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) and is one of the key pathways to reduce vulnerability, enhance adaptive capacity for resilience building, and to address the risks of loss and damage associated with the adverse effects of climate change.

Comprehensive risk management to address the risks of loss and damage should have close synergies with the key pillars of the Sendai Framework for Disaster Risk Reduction 2015-2030[3] adopted at the Third UN World Conference on DRR in Sendai, Japan which articulates the need for improved understanding of disaster risk in all its dimensions of exposure, vulnerability and hazard characteristics, the strengthening of disaster risk governance, including national platforms; accountability for disaster risk management, preparedness to "Build Back Better", recognition of stakeholders and their roles, mobilization of risk-sensitive investment to avoid the creation of new risk, resilience of infrastructure, cultural heritage, strengthening of international cooperation and global partnership, and risk-informed donor policies and programs, including financial support.

National and sectoral policies and plans related to disaster risk reduction and climate change adaptation can promote financial instruments as means of addressing the risk of loss and damage: FAO articulates that the development, strengthening and implementation of relevant policies, plans, practices and mechanisms for integrated risk management need to aim at coherence, as appropriate, across sectors and renewed emphasis on food security under climate change. Mainstreaming financial instruments into agricultural sectoral policies, plans and practices for addressing risks of loss and damage can be useful, but it shall be emphasized that facilitation of finance in loss and damage situations should be in accordance with the policies of each developing country, taking into consideration of relevant national efforts. FAO's Strategic Objective on "Increasing the resilience of livelihoods to threats and crises" aims to enhance the resilience of livelihoods by strengthening of policies and plans with explicit consideration to natural hazards, protracted and food chain crisis and to ensure the food and nutrition security of vulnerable farmers, fishers, herders and forest dependent people. The efforts also focuses on technical support to members to identify, prioritize, and integrate climate risks and develop integrated risk management strategies to reduce and/or avoid the impacts of natural hazards, protracted crisis and food chain crisis[4] and ensure sound preparedness for and transition to emergency response and risk informed recovery in case disasters cannot be avoided.

A number of case studies and pilot initiatives demonstrated the potential and barriers of financial instruments for weather risk management in the agricultural sectors in developing countries. The key results from few selected case studies are elaborated below:

- Risk-driven reluctance to invest in inputs such as fertilizer and improved seeds may be one of the major reasons for low crop yields in several countries in Africa. The obvious policy intervention to protect farmers against such risks would appear to be insurance indexed to local weather conditions, to facilitate reinvestments after disasters but when such products have been introduced in the field they have typically been met by low uptake. FAO project "Ethiopia Project on Interlinking Insurance with Credit for Agriculture (EPIICA)" [5] tested

[3] Sendai Framework for Disaster Risk Reduction 2015 - 2030: http://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf

[4] FAO Resilient Livelihoods – Disaster Risk Reduction for Food and Nutrition Security Framework Programme: http://www.fao.org/3/a-i3270e.pdf,

[5] Ahmed, S, Gommes, R., McIntosh, C., Sarris, A. 2014. Interlinking weather index insurance with credit to alleviate market failures and improve agricultural productivity in Ethiopia. The Agricultural Technology Adoption Initiative.

whether a simultaneous provision of credit and insurance can solve this puzzle, thereby using innovation in financial services to spur a meaningful expansion of the use of agricultural technology. The results of the project in Ethiopia indicated that weather index insurance has a palliative rather than transformative effect, and protects farmers who already have relatively high rates of fertilizer use against risk. It does not, however, increase fertilizer demand among farmers who do not invest in inputs. The results suggest that introducing weather index insurance is a challenging process that requires a coordinated effort. Specifically, it requires the coordinated and persistent effort between all involved parties including agriculture extension programs, banks and insurance companies. A pilot project facilitated by FAO in Vietnam on aquaculture insurance (2011-2013) and implemented by the Vietnam Government concluded that to be successful the technical knowledge on aquaculture insurance of all stakeholders (i.e. farmers, players in insurance business and government officers) should be enhanced. There is a need to increase training of all stakeholders and to prepare detailed technical guidelines for the operation of the insurance program. Coordination among agencies and units in the process of implementation is necessary to synchronize the work of advocacy, damage assessment and claim settlement. Effective risk management requires a coordinated multi-stakeholder approach. Insurance subject should be incorporated in the high education system and research programmes, specifically those for developing innovative schemes suitable for small scale aquaculture.

- A case study in Tanzania indicates that producer households are affected by a variety of shocks, and prominent among them are those which are weather induced.[6] These shocks led to considerable reduction of incomes, which to a large extent is dealt with through personal savings and asset depletion. While households extensively use self and mutual insurance to cope with weather induced income shocks, findings indicate that there is considerable market demand for weather-based insurance, indicating both substantial uninsured risks as well as "latent demand" due to the costs of current ways of coping with shocks or the opportunities insurance opens up. Liquidity constraints at the household level emerge as an important constraint to translate this stated demand into actual demand. Thus, while the demand and societal benefits are sizeable, great care will have to go into the design and institutional delivery mechanisms of market-based insurance.

- A case study in Malawi indicated that the index based risk transfer instruments should be considered as one of the component of a more comprehensive risk management strategy and should be designed in order to address specific weather risks.[7] It also pointed out that the weather insurance program is still at its very first stage both in terms of crops involved, area covered and modalities on how to link to insurance. The construction of rainfall index to address or better prevent food crisis needs improvement to become operational.

There are continuous efforts taking place to address the specific barriers ranging from weather monitoring, observations and agriculturally relevant stress indices. Some of the examples relevant to agricultural sectors include:

- Often in-adequate weather monitoring, data and information availability limit the wide spread application of weather based risk insurance in agriculture. Weather stations have traditionally been the primary data source for weather index insurance programs. However, in many developing countries the number of weather stations is very limited and their distribution in relation to the agricultural areas is poor. Spatial interpolation techniques that can be used in some situations to solve the problem of low density of stations prove to systematically

[6] FAO (2006) Producer demand and welfare benefits of rainfall insurance in Tanzania, FAO Commodity and Trade Policy Research Working Paper No.18. http://www.fao.org/3/a-ah467e.pdf

[7] FAO (2008) Weather indexes in agriculture – A review of theoretical literature and low income countries' experiences, AAACP Paper Series (No.1), All ACP Agricultural Commodities Programme. http://www.fao.org/fileadmin/templates/est/AAACP/inter-regional/FAO_AAACP_Paper_Series_No_1_1_.pdf

underestimate the extreme values; precisely those extreme events that the insurance program intends to cover. Due to this fact, a potential alternative could be the use of rainfall estimates from satellite data or climate simulation models. However, rainfall estimates when compared with ground measurements (rain gauges) generally over or under estimate rainfall amounts significantly depending on the geographical position and topography of the area under analysis.

- A feasible alternative could be the use of vegetation indices even if those indices still have some technical limitations that can affect the accuracy of the data captured by satellite (amount of humidity in atmosphere/soil, position of satellite relative to earth surface and the time series is composed of data from several different sensors). The use of vegetation indices has so far been applied mainly in pastoralist areas, nevertheless, it offers some potential for use also in cropping areas if analysis is restricted to the growing period and the areas where crops are believed to be grown. Nevertheless, such vegetation indices are being used for number of other applications such as crop monitoring and food security early warning and early warning of risk of animal diseases. For example, FAO use the satellite derived data including vegetation indices for early warning messages to countries at risk of Rift Valley fever (a mosquito-borne viral disease that affects livestock and humans) in East Africa and thereby institute vaccination campaigns and public awareness messages.

- FAO has developed Agricultural Stress Index System (ASIS) based on remote sensing data and this has potential to be used for a crop insurance scheme in developing countries. However, these indices would need to be carefully calibrated at locally and country levels and be tested before making them operational.[8] Capacity building among local stakeholders would also be necessary. The remote sensing index can work better in countries with semi-arid conditions where water stress is the main limiting factor of agriculture production. With respect to weather station-based indices, a remote sensing-based index presents the advantage of exhaustive ground coverage. On the other hand, rainfall estimates derived from remote sensing present the disadvantage of over/underestimating rainfall; in this case, vegetation indices may be useful as proxy for assessing the crop condition. Composite products used in most applications tend to limit these effects that cannot be ignored completely.

Social protection has been recognized as a critical strategy to reduce rural poverty, while also contributing to reduce vulnerability to climate variability and change and enhance resilience: Over the last three decades, social protection systems have grown exponentially and at present more than 1.9 billion people in 136 countries benefit from social assistance programs and some 718 million people are enrolled in cash transfer programs. This has translated to global level political commitment to social protection, as recognized by a specific target under the Sustainable Development Goals' (SDGs)[9]. Beyond poverty alleviation, the combination of social and economic impacts is also seen as contributing to resilience: enhancing the capacity of poor households to cope, respond and withstand with natural and man-made disasters, including those resulting from the negative externalities of climate change.

Access to predictable, sizable and regular social protection benefits can, in the short-term buffer exposure of poor households from the impacts of climate risks: Social protection can protect the poor from shocks, including erosion of productive assets and minimizing negative coping practices; while helping to build capacity over time, smoothing consumption and allowing for investments. For instance, vulnerability can increase over time if households face repeated shocks that steadily erode their assets. The function of social protection should be to install 'safety nets' to prevent this

[8] Rojas, O and Ahmed, S. Feasibility of using the FAO – Agricultural Stress Index System (ASIS) as a remote sensing based index for crop insurance. http://www.fao.org/climatechange/38003-08bd1fc61507e5e22e05365a152b961f5.pdf

[9] FAO (2015) The State of Food and Agriculture – Social Protection and agriculture: breaking the cycle of rural poverty, FAO, Rome http://www.fao.org/3/a-i4910e.pdf

happening - for example, by providing cash or food transfers or public works employment during periods of crisis, as an alternative to having poor households sell their productive assets to buy food. [10]

Social protection programmes, can enhance the financial and human capacity to invest in adaptation and effective natural resource management. However, this requires a specific alignment between social protection programmes and complementary interventions around awareness raising and technical training. In many contexts, women are traditionally in charge of key elements of natural resource management such as firewood and water collection. Ensuring that social protection impacts on resilience and climate change adaptation are enhanced require that social protection effectively reaches strategic vulnerable groups, including rural women head of households. Particularly in fragile settings and to reach the most vulnerable groups in shock-prone settings, special attention needs to be paid to social cohesion to ensure inclusion

The social protection concept as it applies to forest-dependent communities has been recently explored through a global literature review and country case studies in Burkina Faso, China and Uganda. [11] The four studies reveal that many forest-dependent communities in poverty-stricken areas of developing countries face a range of economic, social, environmental and political vulnerabilities including those caused by climate change. Most are either unsupported by social protection programmes or lack social protection programmes specifically targeting forest-dependent communities. It is widely perceived that forests themselves act as safety nets to shocks and provide resources for seasonal gap-filling, which could lead to unsustainable use. Another key finding is that although some forest-based associations, cooperatives and producer groups provide their members with social protection services, this is very limited. Overall, the evidence provided by the studies suggests that targeted social protection and forest programmes can be complementary in reducing climate risks and vulnerabilities and increasing the socioeconomic resilience of forest-dependent communities while promoting sustainable forest management.

In conclusion, comprehensive risk management approaches should explicitly consider disaster risk reduction strategies (from policy to practice) complemented with financial instruments and social protection measures in accordance with national policies taking into account necessary national efforts to establish enabling environments. There are number of initiatives and case study experiences which demonstrated the potential of financial instruments for weather risk management in the agricultural sectors, but at the same time, these initiatives also pointed to a number of barriers that limited wider adoption of insurance schemes suitable for smallholders. Efforts should be taken to address the barriers in accordance with the policies and specific conditions of each developing country and/or region.

The barriers related to financial instruments for weather risk management included lack of adequate monitoring and observation of weather parameters in agricultural areas, indexing of thresholds, awareness raising, inadequate guidelines, and lack of advocacy and coordination among agencies in the process of design and implementation. FAO provides technical support to address some of these barriers and contributes to the discussions of Executive Committee (Excom) of the Warsaw International Mechanisms for Loss and Damage in this area of work. FAO's specific experiences in this context include: assessment of impacts of disasters on agriculture and food security, development of damage and loss assessment methodology and information systems, development of tools and methods to bridge the gaps in weather monitoring and observations and defining crop specific thresholds, as well as support or advance adaptation to climate change at all levels, specifically at local level.

[10] HLPE (2012) Food security and climate change. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome, 2012. http://www.fao.org/fileadmin/user_upload/hlpe/hlpe_documents/HLPE_Reports/HLPE-Report-3-Food_security_and_climate_change-June_2012.pdf

[11] FAO (2016) Social Protection for Building the Resilience of Forest-Dependent People: Evidence, Linkages, Practices and Potential Applications, FAO, Rome (Report under final preparation)

The financial instruments in the context of social protection have been recognized as a critical strategy to reduce vulnerability to climate variability and change and enhance resilience in agriculture. Moreover, if there are no adequate social protection systems in place, in event of crises, poor families are often forced to resort to negative coping mechanisms which can further exacerbate their situation of vulnerability including selling off of productive assets, impacts dietary intake as well as over exploitation of natural resources. FAO's technical support to governments to promote facilitated access to predictable, sizable and regular social protection benefits and strengthens their linkages with sustainable agriculture can protect poor households from the impacts of climate risks.