The development of early warning systems and contingency plans in relation to extreme weather events and assessment of risk and vulnerability of agricultural systems to different climate change scenarios

Coordination SUD[1] submission to the UNFCCC's SBSTA (Subsidiary Body on Scientific and Technological Advice) Work Programme on Agriculture, March 2015

The SBSTA invited Parties and admitted observer organizations to submit to the secretariat their views on issues relating to the elements referred to in paragraph 3(a) and (b) above by 25 March 2015, and requested the secretariat to compile them into a miscellaneous document for consideration at SBSTA 42 (June 2015). With this submission, Coordination SUD and its member organizations want to remind Parties what is really at stake when considering the two subjects that will be discussed during the workshop in June 2015:

Our main recommendations:

1. Ensure **participatory processes** for adaptation from vulnerability assessment to early warning and adaptation measures where communities and especially the **most vulnerable people** can voice their needs, capacities and visions and be agents of change. The engagement of local authorities, research and other key stakeholders will ensure that communities are linked to policy development processes and can thus scrutinize public service provision. Thus, their efforts can be scaled-up.
2. Make sure that climate vulnerability is taken into account together with other vulnerabilities and capacities **and look beyond crops vulnerability**. The **vulnerability of the whole value chain** (pre and post harvest management and storage, processing, market) should be looked at and addressed by adaptation measures. Food security is not only about production.
3. Invest further in research and analysis of the **links between early warning, early action and community-based adaptation** to improve anticipation, adaptive capacity and disaster risk management simultaneously.
4. In early warning systems work with vulnerable agriculture-dependent communities, apply the IPC principle of using the 'crisis as opportunity' to redress underlying structural causes of this vulnerability and risk.
5. **Underlying causes of vulnerability should also be analysed** to build up resilience including **gender and power dynamics** but also access to resources, services and information and be considered during the design of adaptation measures including early warning system and action. The provision of agricultural sector support to the poorest rural households and women farmers needs to be a priority so that barriers in accessing productive assets, land, credit, technical services, climate and market information services etc. can be overcome[2].
6. **Define and differentiate the vulnerability and the potential of the different agricultural models in the face of climate change in all the discussion about agriculture under the UNFCCC.**

[1] Coordination SUD is being accredited under the UNFCCC. Thus this submission is submitted by GERES, who is chairing the Climate and Development working group.
[2] Sahel Working Group, Gubbels, P. Escaping the Hunger Cycle: Pathways to Resilience in the Sahel, 2011

Workshop 1: Development of early warning systems (EWS) and contingency plans in relation to extreme weather events and its effects such as desertification, drought, floods, landslides, storm surge, soil erosion, and saline water intrusion;

1. Context

- *Rainfed Agriculture*
  The large majority of smallholder farmers depends on rainfed agriculture in developing countries. The importance of rainfed agriculture varies regionally but produces most of the food for poor communities in developing countries. In sub-Saharan Africa more than 95% of the farmed land is rainfed, while the corresponding figure for Latin America is almost 90%, for South Asia about 60%, for East Asia 65% and for the Near East and North Africa 75% (FAOSTAT, 2005).

- *Pastoralism*
  Pastoralists are facing specific difficulties related to resource degradation:
  - Loss of quality forage species (related to the decrease in rainfall and overgrazing around water points).
  - Reduction of grazing land for the benefit of agriculture.
  - Poor condition of hydraulic structures, which are mostly from the fifties and obsolete (degradation, mismanagement and frequent breakdowns).
  - Inadequate water resources (early draining of ponds, small mesh of hydraulic structures).
  - Lack of access to critical information (items available at the weekly markets, prices, sanitation ...).

- *Food insecurity*
  Despite large strides made in improving productivity and environmental conditions in many developing countries, a great number of poor families in Africa and Asia still faces poverty, hunger, food insecurity and malnutrition where rainfed agriculture is the main agricultural activity. These problems are exacerbated by adverse biophysical growing conditions and poor socioeconomic infrastructures in many areas in the semi-arid tropics (SAT). The SAT is home to 38% of the developing countries' poor, 75% of whom live in rural areas. Over 45% of the world's hungry and more than 70% of its malnourished children live in the SAT.

- *Climate Change / Climate information*
  Over time, smallholder farmers (including pastoralists and agro-pastoralists) have adjusted their planting patterns, farming calendar and transhumance departure to the onset, duration and end of the rainy seasons. However, with increasingly changing rainfall patterns due to climate change, their planting patterns, farming calendar and transhumance departure no longer match seasonal rainfall distributions, which often lead to crop and/or cattle losses. Early Warning Systems (EWS) are thus crucial for the provision of early warning information to trigger early action and enhance food security. Indeed, this information, if disseminated appropriately, could lead to better-informed decision-making that would enhance the adaptive capacity of farmers.

Thus, the consideration of extreme weather events is important to support smallholder farmers when developing early warning system and contingency plans but should not be disconnected from other slow-onset events linked to increased rainfall variability. It should be participative and have a strong linkage to food security indicators and not only focus on agricultural and weather information. Thus the following recommendations should be taken into account.

2. Information that should be included in an early warning system for farmers

2.1 Agro-advisories to serve as EWS

Agro-advisories that could be used should include: planting time, good farm management practices, choice of inorganic fertilizers and use of farm manure, suitable crop types and varieties to be planted, weeding regimes, the available seed suppliers, prevention and control measures for crop pests and diseases, pasture management and measures that community members could use to exploit the forecasted seasonal climate and other agronomic practices.

As regards pastoralists, information should be adapted and should include: water and fodder availability, epizootics, bush fire information, legal information but also a livestock movement monitoring system. This component would fill the gap of information helping to target the vulnerable communities. Handheld GPS devices could be used to enable pastoralists to provide their location on a regular basis. The resulting dataset would help to build a picture of movement patterns and adaptation strategies. In addition, the system would aim to follow livestock movements, which is an additional early warning indicator. This information could allow re-orientation of breeders avoiding over-concentration and potential conflict (over resources), and lead them to productive areas.

2.2 Critical components of an EWS to trigger early action

Early warning systems alone are currently unable to sufficiently transform information into action in both humanitarian and development settings. Decision-making, based on an analysis of this information, is key in leading to action and making a concrete and positive impact for vulnerable populations.

The collection of data at community level, using both formal and informal community information systems, is the foundation of the system.

2.2.1 Participatory mechanism - Involvement of farmers into the preparation of forecast and data collection

Farmers should be involved and be the key players in the different steps of the mechanism: analysis of vulnerability, gathering of data, decisions on contingency plan and/or adaptation measures.

All the processes should be carried out taking into account gender inequality and socio-economic inequalities to make sure that the different needs, vulnerabilities and capabilities are taken into account appropriately.

For example: The use of rain gauges to keep a record of actual rainfalls on a season by season basis reflects changing rainfall patterns in the community, and helps communities to make better informed decisions at the right time.

Involvement of agricultural and livestock field extension officers ensures access and interpretation of seasonal forecasts and advisories generated are properly used for increased farm productivity and food security and improved livelihoods.

2.2.2 Seasonal information

Dissemination of information should be carried out before the beginning of every major rainfall season. It should be done at community level in a participatory manner, involving farmers, extension workers, local community leaders (Chiefs) and meteorological services.
In the forecast dissemination process, the previous seasonal forecast should be evaluated, then the scientific and traditional forecasts are to be shared and harmonized. Advisories developed by agro-meteorologists are then presented and discussed based on the performance of the previous season's forecast, current forecast and technical advice from agricultural and livestock extension workers. Final climate-based agro-advisories to advise on seasonal farming activities are agreed upon by participants, with emphasis on gender perspectives.
A 10-day seasonal update could help users be aware of prevailing weather and forecasted climate patterns for improved on-going decision-making.

2.2.3 Communications technologies to improve dissemination

Well-established communication networks that integrate "new technology", like the use of mobile SMS platforms, are essential for effective dissemination of EW information.
The use of radio to disseminate information has also proven to be useful – for instance to disseminate daily forecasts, seasonal updates and explanations of some simple climate-related terms for educational purposes in the local language.

2.2.4 Capacity building - adaptation and contingency plans

To trigger action, the information disseminated should be used. Thus, there is a crucial need to make sure that the information is understood by those who receive it and inform their planning. Capacity building on the interpretation and use of weather bulletins and other disseminated information is crucial.
To face extreme weather events, contingency plans should be ready in advance and include different scenarios to be applied by the population depending on the severity of the hazard.
Simulation exercises have proven to be very helpful.
But in addition to that, adaptation plans (or development plans that take into account climate-related risks) should be established to develop strategies that enable communities to face other events such as droughts, which can trigger food crises.
They should then be implemented to enhance capacity building and/or support on techniques and practices that are more resilient to climate change.
For participatory approaches to have the desired impact, holistic and inclusive planning that brings together multiple actors working at differing scales is critical for sustainable outcomes and good governance.
Without that, EWS could not support vulnerable populations.

2.2.5 Linkages with Food Security Early Warning system

Early warning systems in rural areas cannot not be thought without linking them to food security EWS. Interesting initiatives already exist on the matter. For example, the Integrated Food Security Phase Classification (IPC) is a set of analytical tools and processes to analyse and classify the severity of a food security situation according to scientific international standards. The IPC contributes to greater transparency and coordination of interventions and holds decision makers accountable. The IPC standardised tools and procedures respond to the need for a common approach for classifying various food insecurity situations. Furthermore, the IPC synthesises complex information and analysis into actionable facts and identifies response objectives, and thus provides stronger links between information and action.
This kind of information would also help address any food crisis that could emerge due to different drivers and not only climate-related risks and hazards. It would also help to coordinate better emergency and development actions to respond to the need of vulnerable people.

The main impacts of these different integrated approaches are:

- improved food security and reduce loss and damages ;
- limited use negative coping strategies ;
- enhanced adaptive capacities : access to resilient livelihoods, improve land planning and management ;
- reduced conflict over resources.

Two case studies can give specific examples of successful approaches:
1/ The Participatory Scenario planning approach developed by CARE in Kenya:
http://www.careclimatechange.org/files/JotoAfrika12_FINAL.pdf
2/ The specific case of pastoralism supported by AVSF in Senegal:
http://www.avsf.org/fr/posts/866/full/adaptation-des-eleveurs-a-la-secheresse-au-nord-senegal

Workshop 2 - Assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels, including but not limited to pests and diseases

Climate change risk and vulnerability of agricultural systems are not limited to the impact of Climate change on crops due to increased/new diseases and pests that affect crop yields. The assessment of risk and vulnerabilities should look at the vulnerability of the lands/plots/crops but also at the farmer's / households' / community's vulnerability. Farmers and communities are also vulnerable because of threatened access to water and land, access to market, lack of access to information, vulnerabilities of the whole value chain, etc. Thus the importance of the methodology to assess risk and vulnerabilities is essential and this should be highlighted during the workshop.

Food security and sovereignty are often not a problem of productivity or availability of food on a global scale, but rather a problem of access and quality. Adaptation to climate change should aim to enhance food sovereignty, considering not « feeding the world » but « helping the world feed itself ». The access to quality food is ensured by a relocated production, and by rural development actions that contribute to raise the resilience in farms.

A - Some key highlights

1. **Participatory analysis** should be promoted and lead to local planning (integration of adaptation into development planning and/or development of adaptation plans). Different tools[3] do exist and have proven to be very useful to empower and enhance local adaptive capacities in the end.
   They should be made compulsory in development programs.
   Ex of CASE study AVSF in Nicaragua:
   http://www.avsf.org/public/posts/1746/fiche_innovation_avsf_nicaragua_adaptation_2014.pdf

2. **Underlying causes of vulnerabilities** should also be looked into, especially **gender inequalities**.
   Community-based adaptation (CBA) is a holistic approach that focuses on building adaptive capacity and on addressing the underlying (structural, social, economic and political) causes of vulnerability.
   People's social positions, including those related to gender, have a strong influence over their vulnerability to climate change and the adaptation options available to them. Technologies such as drought-resistant seeds or irrigation systems are only useful to those who have land to cultivate and the power to decide how they will use it. Information is a critical resource for adaptation, which may or may not reach all members of the community depending on how it is communicated. Adaptation actions by one group may influence the availability of resources for another, making them more vulnerable to climate-related shocks and stresses. Consequently, equity in access to resources, opportunities and benefits must be an underlying principle in order to effectively build resilience and support adaptation. **To support this, analysis of vulnerability and adaptive capacity must facilitate dialogue on the barriers facing particularly vulnerable social groups and identify specific actions to overcome these barriers and ensure equitable approaches to adaptation.**

[3] CARE has developed the CVCA: Climate Vulnerability and Capacity analysis tool.

3. **Bridging the gap between local, regional and national risk/vulnerability analysis** should be sought to enhance coherence and relevance of regional and national planning.

4. **Assessment of risk and vulnerabilities of agricultural systems should not only look at the vulnerability of crops but the analysis should look into the whole system and the value Chain promoted**. The process should involve a review of each stage in the value chain, from inputs and production through post-harvest management, aggregation and processing to wholesale and retail marketing.

4.1 Storage Capacity

For example, climate variability and extreme events have a serious impact on **human and agricultural settlements**. Indeed, floods and storms could destroy or affect the place of seeds storage seeds and lead to pre or post-harvest lost threatening the food security of smallholder farmers. The value of grain losses in sub-Saharan Africa is for example estimated at around $4 billion a year.[4]

A variety of practices and technologies are available for reducing post-harvest losses, including storage practices that used low-carbon technologies and are resilient to climate impacts. This should be considered in adaptation planning.

4.2 Market Based Development approach

Some local Market based development approaches (based on agro ecological principles) have showed positive results to enhance resilience of vulnerable smallholder farmers when smallholder's farmers are equipped with entrepreneurial skills. Research and participatory assessment should look more closely at these models to evaluate their results and resilience to climate change.

5. **Different agricultural models have different vulnerabilities and potential to ensure food security for the most vulnerable**

The workshop should also aim to differentiate the potential of the different agricultural approaches to different climate change scenarios at regional, national and local levels. Indeed, **the potential of an agro-ecological approach to reduce vulnerability of poor farmers has proven far higher than high intensive agricultural models that rely on chemicals**. Olivier De Schutter, the former UN Special Rapporteur on the Right to Food, has identified "*agroecology as a mode of agricultural development which not only shows strong conceptual connections with the right to food, but has proven results for fast progress in the concretization of this human right for many vulnerable groups in various countries and environments.*" (A/HRC/16/49)

6. **Linkages with climate information and EWS**

Adaptation action combines social decision-making processes with support to technical adaptation strategies or interventions (such as introducing drought-tolerant seeds), informed by climate science forecasts and projections, climate risk and impact analysis, and the designing of 'climate-resilient' livelihoods and disaster risk reduction interventions. CBA builds on good sustainable development but with the addition of climate change analysis that considers different timescales and decision-making, which is informed by anticipated future weather and climate. Some of the most important issues for smallholder agriculture in the 21st century are **risk and uncertainty**, trade-offs and cost benefit issues, climate and market information, equity and power dynamics, early warning early

[4] FAO-World Bank report, entitled Missing Food: The Case of Postharvest Grain Losses in Sub-Saharan Africa, estimates http://www.fao.org/news/story/en/item/79444/icode/

action system links and consequent connections to humanitarian action, disaster risk reduction and livelihood security.

7. **Sustainability of the process – involving different stakeholders**
   As referred to in the first section on workshop 1, a multi stakeholder approach should be used in vulnerability assessment. It should include the most vulnerable people among the communities as well as local authorities. This engagement will ensure that communities are linked to policy development processes and can thus scrutinize public service provision and that local authorities can adapt their planning to the real needs of the communities.

B - Format of the workshop to be organized in June 2015

In addition to governments and international research institutes or UN bodies, civil society members should be given a voice during the workshop in order for them to share their experience and learning, especially smallholder's farmer organizations, NGOs and INGOs.

Summary of main recommendations of Coordination SUD to the UNFCCC

1. Ensure participatory processes for adaptation from vulnerability assessment to early warning and adaptation measures where communities and especially the most vulnerable people can voice their needs, capacities and visions and be agents of change. The engagement of local authorities, research and other key stakeholders will ensure that communities are linked to policy development processes and can thus scrutinize public service provision. Thus, their efforts can be scaled-up
2. Make sure that climate vulnerability is taken into account together with other vulnerabilities and capacities and look beyond crops vulnerability. The vulnerability of the whole value chain (pre and post harvest management, processing, market) should be looked at and addressed by adaptation measures. Food security is not only about production.
3. Invest further in research and analysis of the links between early warning, early action and community-based adaptation to improve anticipation, adaptive capacity and disaster risk management simultaneously.
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6. Define and differentiate the vulnerability and the potential of the different agricultural models in the face of climate change in all the agricultural discussion under the UNFCCC.

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Coordination SUD - Development Emergency Solidarity is the national platform of French international solidarity NGOs. Founded in 1994, it brings together more than 150 NGOs active in the fields of humanitarian aid, development assistance, environmental protection, the defense of disadvantaged people's human rights and international solidarity education and advocacy.

The members have formed a **climate and development working group** in 2007 now composed of 15+ organizations working in particular on Agriculture and Climate Change and Disaster risk reduction and climate change.
Members of the Climate and development working group are: 4D, Action contre la Faim, ATD-Quart Monde, Association La Voûte Nubienne, AVSF, CARE-France, CARI, CCFD-Terre Solidaire, ESF, Good Planet, GERES, Gevalor, Gret, Initiative Développement, IRAM, Médecins du Monde, Oxfam France, Secours Catholique-Caritas France.

[5] Sahel Working Group, Gubbels, P. Escaping the Hunger Cycle: Pathways to Resilience in the Sahel, 2011