

Agro-meteorological Early Warning to Reduce Agricultural Vulnerability to Climate Change : The Experiences of PARBCC in Benin

The agricultural sector in Benin is strongly dependent on the climate. In recent decades, extreme climate variability has threatened the food security of rural populations, with agricultural yields in perpetual decline and crop losses increasing due to extreme weather. To reduce the vulnerability of small hold farmers who are most affected, a research effort known as PARBCC, led by the NGO “Initiatives pour un développement intégré et durable (IDID-ONG)”, has facilitated rural access to agro-meteorological forecasts and advice by establishing an early warning and agro-meteorological information system (SPIAM).

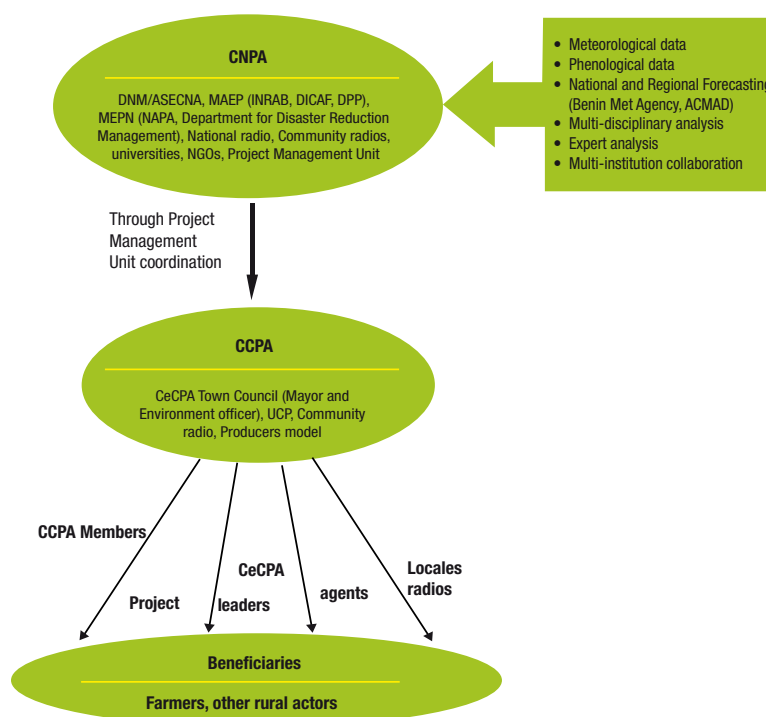


Figure 1 : Diagram of the SPIAM system

Early warning and agro-meteorological information system

The SPIAM is composed of a national early warning and agro-meteorological interpretation committee (CNPA) and local-level communal early warning and climate change adaptation committees (CCPAs). The CNPA includes several institutions with a focal point that regularly monitors activities. Based on data from the monitoring network of the Agency for the Safety of Aerial Navigation in Africa and Madagascar (ASECNA); bulletins provided by the Meteorological Service of Benin and the African Centre of

Meteorological Application for Development (ACMAD) in Niger; and crop and weather observations gathered on the ground, the CNPA develops, validates and releases a fortnightly newsletter from the beginning to the end of the crop season. Extracts, mainly containing advice to farmers, are sent to the CCPA.

The information is disseminated through local radio, the local extension service and farmers involved in pilot tests.

Participatory action research and SPIAM enhancement

In accordance with the methodological principles of participatory action research (PAR), a participatory evaluation was conducted at CCPA and producer levels to make the system more efficient. At each level, participants rated the level of services received and their own performance. For example, the CCPA was evaluated in relation to services provided to producers while producers were evaluated on their use of the information received.

The criteria and indicators used for evaluation included those defined by the project team in its monitoring and evaluation system and others related to the perceived level of reducing farmers' vulnerability to climate risks.

The farmers evaluated these criteria and indicators at three different stages of project implementation: (i) at the beginning of the project (baseline); (ii) after the first round of PAR, when the early warning system (Figure. 1) was implemented (first evaluation); and (iii) after improvement of the early warning system by the pre-assessment of farmers and revision of newsletters (second evaluation). Various adjustments helped to improve the system as a whole, taking into account feedback from the field to gradually improve the content of newsletters (Figure 2).

Evaluation results from farmers suggest a gradual improvement of the system over time, due to the participatory and multi-level monitoring process (Table 1).

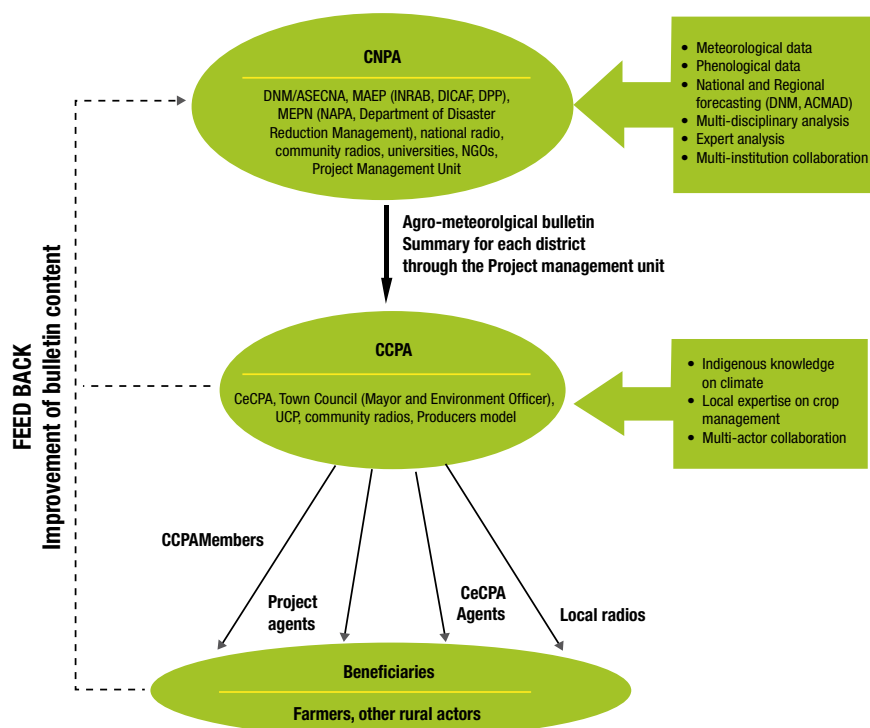


Figure 2: The SPIAM integrating multi-level feedback and local knowledge

Regarding the frequency of receipt of advice, the improvement stems from the fact that the project went from bimonthly to monthly dissemination of information. However, farmers would have liked a ten-day frequency, to enhance the usefulness of such information by

enabling them to better plan their fieldwork.

As for the distribution channels, the active involvement of community radio stations and extension agents was an important element in improving delivery of advice. However, the broadcasting

Table 1: The project performance over time based on monitoring, evaluation and adjustment of the early warning system in southern and central Benin

Criteria	Baseline situation	1 st Evaluation	2 nd Evaluation
Capacity and relevance level of project activities			
Advice frequency	1	2	2
Dissemination means	1	2	3
Who disseminates	1	2	4
Advice relevance	1	3	4
Level of beneficiaries' capacity building			
Vulnerability to longer dry season	1	2	3
Vulnerability to high winds	1	2	2
Vulnerability to excessive rainfall	1	2	3
*Scale of assessment from 1 to 5			

frequency needs to be increased to three days at least, and broadcasting hours expanded to reach farmers both morning and evening.

In terms of the **relevance of advice**, the content of the newsletters focused mainly on crop management, while information on climate risk

management was deemed low. Nevertheless, this information would help producers minimize losses should these risks occur.



Farmers of Kpomasse (Atlantic) assessing the impact of early warning on agricultural activities in July 2009 (Photo: PARBCC)

Testimonials reveal the following examples of the impacts of **capacity building** of producers in the use of agro-meteorological information :

- Prompt harvesting of mature crops to reduce the risk from sudden flooding or delayed planting of commonly-sown crops in flood plains limits losses due to excess rainfall;
- Using new crop calendars proposed by the project has helped improve yields. By sowing at the right time, farmers had successfully endured pockets of drought, early cessation of rain and excessive rains at crop season end.

The co-learning process at various levels (national, regional and local), supported by a periodic assessment of needs and impacts at the beneficiary level, enhances farmers' abilities to adapt to climate change.



A meeting of the CCPA in Ketou (Plateau) to assess the performance of the early warning system in March 2009 (Photo: PARBCC)

Recommendations

What emerges from this co-learning process is that access to agro-meteorological information clearly helps to build the capacity of farmers and reduce their vulnerability to climate change. In addition, it proved necessary to take into account local knowledge to adjust forecasts and advice to the specific realities of each area.

Furthermore, ten-day rather than monthly information will help farmers to plan their activities and monitor the crop season better. To reach out to more farmers, the dissemination of information must be primarily supported by local radio and undertaken in local languages.

The recommendations made by all stakeholders in the second evaluation, toward improving the early warning system for the 2010 agricultural season, are summarized as follows:

1. The Ministry of Agriculture should integrate and continue the early warning system.
2. CCPAs should be institutionalized as a tool for community capacity building and adaptation at the municipal level.
3. Radio broadcasts should be used to disseminate advice on a ten-day frequency for better monitoring of crops.

These recommendations provide a basis for continuous improvement of the early warning system. ■

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