

DESERTIFICATION

# Early Warning and Agricultural Production Forecast Project (AP3A) Sahel Region



- CAPACITY BUILDING
- ENVIRONMENTAL MONITORING
- FOOD SECURITY
- NETWORKING



## Background and rationale

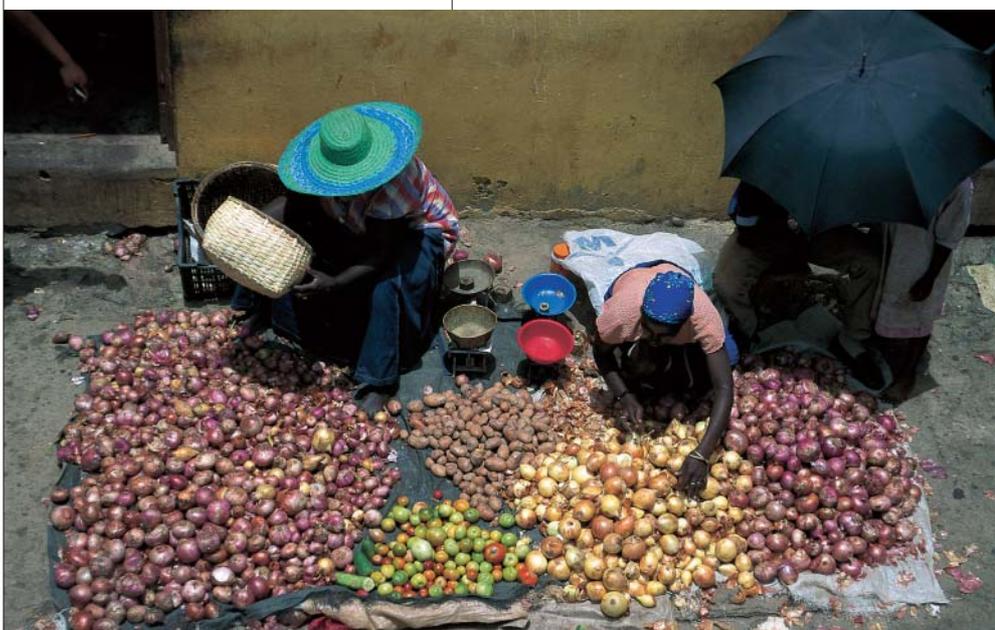
The pursuit of food security has stimulated Sahelian countries to develop and promote information systems, which focus in particular on current and structural vulnerability associated with food issues. This new impetus, which takes into account the social, economic and political contexts of Sahelian societies, is in line with the current trend towards the globalisation of information through new information and communication technologies. The Permanent Interstate Committee for Drought Control in the Sahel (CILSS) has given this approach a new lease on life by gearing it towards a more accurate identification of vulnerable zones and groups and information/planning products. Traditionally, early warning information systems aim to predict risk situations. They base their forecasts mainly on the climatic factor in the various geographical zones, through the use of agro-meteorological assessment models that enable the production of large-scale homogeneous information. However, the efficiency of these instruments has proved inadequate in the development of information

because of the socio-economic factors influencing food security. Therefore, a new framework had to be devised, building upon the experience of concerned Sahelian institutions and their corollary of terminology, methodologies and approaches. At regional level and in most countries, joint efforts

promoted by the Agrhymet Regional Centre and national institutions responsible for Early Warning Systems (EWS), progressed towards food situation information, harvest forecasting and support to decision-making based on reliable information. Thus, the systems were in a position to formulate predictions under different risk scales, built upon zonal division and population stratification (villages at risk, target groups, etc). More recently, the development of vulnerability analysis stemmed also from this shift in trend. Almost twenty years after the last severe famine that affected the Sahelian sub-region, the demand for information has been geared towards the prevention of local crises and the monitoring of regional trade in order to prevent the disruption of markets. However, the occurrence of new famines may seriously question development efforts in the region and in recent years new causes have emerged, which can seriously hamper food security in the area. Early warning systems must keep on evolving in order to master these new factors of disruption. The Early Warning and Agricultural Production Forecast Project (AP3A) is consistent with this context. It aims at the production of informatics systems based on the real characteristics of the different zones, which will enable decision-makers to take the regional dimension into consideration.



A thorough analysis will allow for the development of tools and information products for national institutions, and on this basis the needs and locations of development assistance and support to food production can be identified. At the same time, situational vulnerability analysts will be able to use these products as comparative baselines for their own analyses. AP3A is funded by the Italian Cooperation and implemented by the World Meteorological Organisation (WMO). CILSS, which is mandated by member States for all issues related to desertification, is the Project institutional counterpart; the *Centre Régional Agrhymet* plays the coordinating role and IATA provides technical and scientific backstopping. Recipient countries are CILSS member States: Burkina Faso, Cape Verde, Chad, the Gambia, Guinea Bissau, Mali, Mauritania, Niger and Senegal. The Project started in 1995 and the second phase is expected to come to a close in 2002. Total funds amount to almost 4,5 million euros.



## Goal, objectives and expected outputs

The Project's strategic objective is to develop methodologies geared towards the identification of zones as well as structural and situational risks, in the agricultural and pastoral fields. These methodologies are to be included in the Integrated System for Early Warning (ISEW), to enable territorial characterisation in terms of vulnerability and prediction of the potential risk conditions and their trend during the cropping season. At national and regional levels, ISEW should allow for improved orientation and should increase the efficiency of the institutions operating in national EWS. Expected outputs include the production of information tools and capacity building of Sahelian experts at regional and national levels. The Project approach has gained momentum from its position in relation to existing systems, by supporting and improving acquired achievements in the field of early warning and by guaranteeing their interaction and operation. It has also tried to reduce the technological gap existing between the regional and national levels. Such an approach calls for an information sharing system that meets international standards for access to relevant, accurate and complete data. This is a *sine qua non* condition for reducing risks. The access to data was an incentive factor enabling progress from a sectoral view of food security problems to a synoptic approach, which inspired the establishment of thematic databases in several fields including agriculture, climate and natural resources. As a result, tools and methodologies work better at various levels, meeting the traditional needs and stimulating new ideas. This approach intends also to strengthen holistic approaches and



increase the interest of the international community. Indeed, a network between all food security stakeholders, at national, regional and international levels, has been developed to improve database information quality and management. This is an indicator of the existing will at the regional level to establish synergies and to collaborate. Further, AP3A has made it possible to validate methodologies and tools set up at both regional and national levels and to ensure they are in line with national institutions requirements and needs.

## Implementation and results

The Project is coming to an end. It has achieved significant results that go beyond early warning systems, and which allow a vision of Sahelian development *vis-à-vis* the challenges of globalisation, regional cooperation and information. AP3A has resulted in early warning products for monitoring current situations and identifying risk zones, by taking into account the level of structural vulnerability both at national and regional levels. Such an approach has required improved centralisation and a better flow of information through the establishment of a database management system. It has also demanded the introduction of an information-based culture in national

technical services. Finally, current products now make it possible to monitor crops and pastures based on satellite data. Other themes have also been addressed by the Project. These relate to information from a data-access perspective, product dissemination in real time, and cooperation between national and international institutions with the actual support of decision-makers.

The Integrated System for Early Warning provides appropriate information on populations at risk on various spatio-temporal scales based on several interacting mechanisms. It is composed of four autonomous but interactive modular sub-systems. The existing functional relationships established between the sub-systems meet early warning objectives on one hand, and gear their utilisation towards an information system for managing natural resources on the other. The sub-systems are:

- ❶ The Socio-Economic Database Management System (DBMS), based on population, historical and agricultural statistics, and pastoral series, and the Climatic Databases, focused on onset and duration of growing season.
- ❷ The Territorial Analysis System based on a set of geographical information layers, including administrative unit boundaries, pastoral potential, soil maps, images etc., and the management at the territorial level of the data provided by the DMBS.

- Structural Vulnerability Mapping System (PRVS) consisting of a set of processors that point out, in a homogeneous format, the conditions of stability and instability and exceptional conditions of the diverse farming systems on various mapping scales (regional, national and sub-national).
- The Situational Analysis System, made up of various modules enabling the monitoring of the development of the cropping season and forecasting of production figures.

Tools and products were generally transferred to the national level, through in-service training and more formal capacity building events. Several training courses were conducted, targeted to the first users at national levels, with a view to effective utilisation. This approach undoubtedly makes it possible to sustain the whole system while contributing to the creation of a network of Sahelian expertise. However, it is important to stress that the efforts for knowledge transfer may be limited by the technological gap existing across the region.

The in-service training process required a much longer period compared to the process of methodological development and training. Therefore, even though technological advancements save a considerable amount of time in the development stage, this time is then invariably used up in the implementation phase.

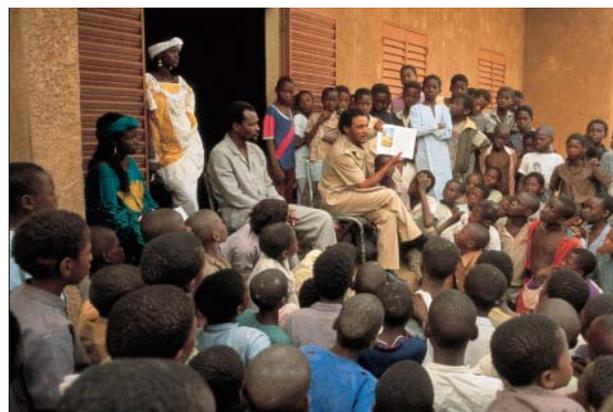
## Lessons learned

The Project has helped to show that the close link between food security and early warning in the Sahel does not depend only on endogenous factors, such as inadequate rainfall. It also depends on exogenous factors, such as the international cash crop market and social stability in the West African region. Thus, results obtained can be useful at the operational level insofar as they:

- provide appropriate information for assessing the agro-pastoral cropping season, monitor risk zones and prevent famines such as those experienced in the past;
- keep regional institutions in the international technical network and avoid their marginalisation;
- sustain an environment in the Sahelian sub-region conducive to technological development and know-how.



The experience and results of the AP3A Project can contribute to decision-making processes in relation to current and future issues of information on food security. This will serve to support the shift from the sectoral approach to the synoptic one, based on the method of convergence of evidences.



Indeed this reflection should take into account most countries' capacities to internalise produced tools, and reorient food security systems towards a development information system.

The current global information context also requires that substantive questions be raised on the availability and flow of information with a view to paving the way for a regional process. In addition, the current approach which aims to include new development stakeholders in the flow of information on food security, directly concerns the types of products required and the role CILSS and Sahelian societies should play in the common path towards sustainable development. Therefore, the challenge for CILSS to reduce poverty in Sahelian countries, lies in integrating into the information systems all the ongoing changes in Sahelian societies, in the international environment and in development issues.

Finally, one of the lessons learned during the Project strongly indicates that Sahel complexity, in particular the diversity and interaction of farming systems, requires a better understanding of the regional processes with regards to ongoing actions and environmental impacts. One of the most important aspects lies in the role technological innovation can play in supporting capacity building for regional development. On the basis of this lesson, the Project has resolutely undertaken a multi-sided transfer to the Sahelian countries.

