

**PROGRAMME AGRICULTURE –
GESTION DES RESSOURCES NATURELLES**
« Wula Nafaa »

**MONITORING, EVALUATION,
REPORTING, AND ANALYSIS SYSTEM**

AG/GRN Program Success Stories:

Technical Assistance Pays Dividends”

**The case of Environmental Monitoring &
Information Management in Senegal**

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1 INTRODUCTION

The Agriculture & Natural Resources Management (AG/NRM) Program¹ (USAID/Senegal No. 685-C00-03-00008-00), known locally as “Wula Nafaa,” is pleased to record how previous USAID assistance targeting the development of local technical capacity in Senegal is now helping the program to develop and improve its own activities in the related fields of information management and environmental monitoring relevant to monitoring and evaluation (M&E).

Wula Nafaa is a new USAID/Senegal initiative operating within SO-1 (Sustained increases in private sector income generating activities in selected sectors) and SO-2 (More effective, democratic, and accountable local management of local services and resources in targeted areas). It is executed by International Resources Group with assistance from three sub-contractors (Winrock International, CLUSA, and EROS Data Center). The program works particularly with local government officials (elected officers and those from technical services) as well as local communities and small enterprises to assist them in better understanding and benefiting from the move towards decentralized government in Senegal, especially as far as local and sustainable NRM is concerned. To this end the program has put in place a series of multi-year activities that seek to ensure the sustainable local management of NR by increasing the capacity of local government officials and improving the economic benefits accruing to rural populations and enterprises from sustainable NRM. These activities are supported by a number of transversal activities including policy analyses and the reduction of political barriers, information management, M&E, capacity building and so on.

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2 BACKGROUND TO PAST ASSISTANCE

USAID/Senegal via support to EROS Data Center² of the U.S. Geological Survey has provided considerable technical assistance and backstopping to the Ecological Monitoring Center³ (CSE) of Dakar, Senegal. The assistance, under the "Framework for Long-term Monitoring of Senegal's Natural Resources" via the "Community-Based Natural Resources Management Project" (USGS/USAID PASA # 685-P-00-94-00005-00), covered the period November 1993 to February 1999. It aimed to develop, test and build the capacity to monitor Senegal's dynamic natural resources over the past 30 years. Activities used current and historic remotely-sensed data starting from the 1960's, complemented by ground monitoring and field studies. The monitoring has provided a sound understanding of the long-term changes in the country's biophysical resources and sought to identify impacts of the human-dimension through changes in land-use patterns, agricultural practices and NRM techniques. The assistance introduced such technical innovations as aerial videography as well as strengthening capacity in the use of high-resolution satellite imagery for detailed mapping, monitoring change, time-series data analysis and GIS.

However, it should also be mentioned that U.S. government structures have been cooperating with the CSE from as far back as the early 1980s. For example, the "Mapping and Remote Sensing for the National Plan for Land Use and Development Project" (Contract # 685-0233-C-00-2013-00) cooperated with the earlier pilot project of CSE during the early 1980s while USGS trained the first CSE technicians in Arc-Info GIS software. Interestingly, Moctar Dièye, one of the original technicians is now leading the technical assistance and product development activities being provided by CSE to Wula Nafaa while the former CTA of CSE (1989-1993), Malcolm Marks⁴, is now heading-up the Policy, M&E and information management activities of Wula Nafaa in Senegal. Clearly what goes around comes around!

The history of CSE is in itself an interesting success story for international development. Previously a successful project it has transformed into a flourishing and semi-independent national structure. CSE was began in 1980 as a pilot project and then passed via three project phases funded by UNDP/Danida and the Government of Senegal. In 1993, after several years of institutional evolution it attained quasi private-sector status (actually an Association under the original French law of 1901) and has subsequently ensured its long-term technical sustainability and financial independence by offering technical services. CSE continues to grow in stature being recognized on the international stage as probably the foremost African structure dedicated to environmental monitoring and information

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management – a recognition that has seen it assisting many of the leading donor agencies in places as far apart as Botswana, CAR and Mauritania.

With considerable technical help and guidance from EROS Data Center, made possible by multi-year funding from USAID/Senegal, CSE has added considerably to its technical capacity and arsenal of environmental monitoring tools, especially those related to “less traditional” areas of remote-sensing such as aerial videography and time-lapse photographic monitoring.

3 CSE ASSISTANCE TO AG/NRM PROGRAM

As part of its M&E component, Wula Nafaa has developed contractual ties with CSE to provide a number of technical services. The most important of these are the development of a Program Information Management System (PIMS) as well as assistance with data collection relevant for certain of our baseline and annual environmental impact monitoring indicators and capacity building.

3.1 Information System Development

Wula Nafaa requires and generates large quantities of data/information related to the natural resources, agriculture, geography, socio-economy, enterprise opportunities/development and national policies of the regions in which it operates. In order to be able to efficiently stock, manage, retrieve and combine such data it is necessary to develop information management tools. During the first year of program operations, CSE is contracted to develop the PIMS that is to contain three major tools: a classic Geographic Information System (GIS), a Policy Information System (SIP) and databases concerned with program impact and performance indicators.

The GIS is being built around a range of baseline data from CSE's own national databases and these will be increased and improved as activities progress and relevant data is collected and added. The GIS is to operate both as a stand-alone entity (e.g., to produce on-demand maps such as the distribution and quantity of NRM products and opportunities, distribution of non-traditional agricultural products – as targeted by the program – distribution of markets, recorded land-use conflicts and resolutions, etc.) as well as being a tool for use by the SIP and databases.

The SIP is a novel development that aims to contain and offer information and documents relevant to policy issues that impact on decentralized access and NRM in Senegal. Before Wula Nafaa started activities in Jan. 2003, many government and non-government structures and projects had already undertaken considerable developments in the NRM policy field. Clearly, we do not wish to repeat earlier successful interventions in the same areas but rather leverage their success by adopting and introducing them to areas where they are absent. By linking the GIS to the SIP, it will possible, for example, to visualize the geographic distribution of policy interventions and advances in the regions targeted by the program. Furthermore, the SIP provides an ideal tool for stocking and accessing the large amount of information that already exists and an ambitious later development aims to move the SIP on to the Wula Nafaa website so that all interested parties may access this “virtual library”, again allowing leverage but this time of Wula Nafaa efforts.

The final component of the PIMS is a series of databases being developed in Access to serve as a tool for stocking, managing and accessing data collected on the program indicators that monitor progress and

impact. Database architecture is being developed around the physical structure of data collection forms developed for each indicator. This ensures that data entry is rapid, risk of error reduced and statistical analysis/data retrieval facilitated. Databases will also connect to the GIS so that geographically-referenced indicator data can be visualized, for example, in map format.

3.2 Environmental Data Collection

The program has put in place a series of M&E indicators to measure both its progress and impacts. CSE, in cooperation with EROS and Wula Nafaa, is using its environmental monitoring skills to assist the program in data collection for certain of the relevant impact indicators, providing baseline assessments and assistance with future data collection campaigns. CSE will particularly assist in collecting remotely sensed data related to bushfire occurrence – a theme that we consider of utmost importance if local management of natural resources is to be a success. From a management point of view we wish to determine if, in our regions, there exist “pyromania” villages, i.e. areas where bushfires are statistically more frequent than the norm and, if so, we plan to work with relevant partners (locally elected leaders, forestry personnel, schools, local radios, etc.) as well as our own program facilitators in an attempt to reduce the incidence of fires. CSE are able to call on their GIS to check fire records going back to 1989 and thus be able to provide a time series of 15-years of data for every single km² in our intervention zones.

3.3 Provision of On-demand Information

On an *ad hoc* basis the program is able to call on CSE for relevant geographically referenced information. For example, soon after activities began in Senegal, CSE produced detailed maps showing infrastructure, natural resources, agricultural lands, climatic data, administrative boundaries, etc. from which we were better able to select our current intervention zones. The process of intervention zone selection will be repeated as we move out into additional regions of Senegal over the next two years. Furthermore, CSE are available to assist individual program components and activities by developing specific products. For example, in our assistance to market chain strengthening, they are developing potential maps for *Morenga* cultivation based on ecological and climatic requirements of this tree species.

3.4 Capacity Building Activities

As a final element of assistance, and to show that the wheel has turned fully 180°, CSE are now using their accumulated skills – many obtained via USAID assistance – to help strengthen the capacity of elements of our own USAID-funded program. Not only is this assistance directed at developing the information management tools indicated above but also to increase the capacity of team members and of technicians from partner organizations such as the Water and Forestry Department and Regional Development Agencies.