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PERFORMANCE AUDIT REPORT

BURKINA FASO

**AGRICULTURAL RESEARCH PROJECT
(Credit 1896-BUR)**

AND

**AGRICULTURAL SERVICES PROJECT
(Credit 1979-BUR)**

June 24, 1999

Operations Evaluation Department

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Currency Equivalents

Currency Unit = CFAF

US\$ 1.00 = CFAF 319.01 (1989)

US\$ 1.00 = CFAF 511.55 (1996)

Abbreviations and Acronyms

CAMES	Conseil Africain et Malgache d'Enseignement Superieur (African and Malagasy Council for Higher Education)
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo (International Maize and Wheat Research Center)
DVA	Department of Extension
ICRISAT	International Center for Research in the Semiarid Tropics
IITA	International Institute of Tropical Agriculture
INERA	Institut d'Etudes et de Recherches Agricoles (Agricultural Research Institute)
IRAT	Institut de Recherches Agronomiques Tropicales et des Cultures Vivieres (Tropical Agriculture and Foodcrops Research Institute)
IRBET	Research Institute for Tropical Biology and Ecology
IRSAT	Research Institute for Applied Science and Technology
IRRI	International Rice Research Institute
ISNAR	International Service for National Agricultural Research
NGO	Nongovernmental organization
PAPEM	Points d'Appui de Prévularisation et d'Expérimentation Multiple (Multilocational Experimentation Sites)
SAFGRAD	Semiarid Food Grain Research and Development
SAGA	Social and Gender Analysis Program
SOFITEX	Societe des Fibres et des Textiles (Fiber and Textile Parastatal)
SPAAR	Special Program for African Agricultural Research
USAID	United States Agency for International Development
VEW	Village Extension Worker
WARDA	West African Rice Development Association

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Operations Evaluation

June 24, 1999

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

**SUBJECT: Performance Audit Report on Burkina Faso
Agricultural Research Project (Credit 1896-BUR)
and Agricultural Services Project (Credit 1979-BUR)**

Attached is the Performance Audit Report (PAR) for two Burkina Faso projects: the Agricultural Research Project (Cr. 1896-BUR) and the Agricultural Support Services Project (Cr. 1979-BUR). The Agricultural Research Project was approved for a credit of US\$17.9 million on April 19, 1988, became effective on December 29, 1988, and closed, fully dispersed, on December 31, 1996, two years and nine months later than the original closing date. The United States Agency for International Development, the Royal Netherlands Government, the European Union and a number of other donors supported the research system over that period. The Agricultural Support Services Project was approved for a credit of US\$42 million on January 17, 1989, became effective on May 26, 1989, and closed, fully disbursed, on December 31, 1998, three years after the original closing date.

The *Agricultural Research Project* was planned as the first five years of a fifteen-year program to develop the agricultural research system of Burkina. The project objectives were to: strengthen the capacity of national agricultural research, to plan, execute and evaluate research programs; to improve the balances and linkages between individual research programs by emphasizing multi-disciplinary, system oriented research; and, to strengthen the links between the research and extension services. The components were: (i) improvements to the network of research centers; (ii) staff training and technical assistance; (iii) equipment, vehicles and supplies; (iv) funding for interaction with extension.

The project was successful in facilitating the development of the agricultural research system of Burkina Faso by supporting physical and human capital formation and supporting operating costs. The research system now has a cadre of capable researchers, who can plan, execute, and evaluate. A National Agricultural Research Strategy was developed and approved by the Government in 1995. INERA, the research entity, still needs to improve their ties to the extension service, to farmers, and to the networks of researchers in other countries. As an acknowledgement of the achievement, Burkina has been selected as a research pole to lead and coordinate research in natural resources for the rest of the Sahel.

However, the project had a number of weaknesses. At the design stage it did not draw sufficiently on outside experience in dryland research. The Bank, using its comparative advantage of international experience, could have offered more in this area. The project was insufficiently aggressive in pursuing the potential gains in dry land agronomy. In both the Research and Agricultural Services Projects there was inadequate projection of financial sustainability and reflection of the findings in project design and

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long term strategy. Supervision of the Research Project was, at times, weak on the agronomy side - there was a period of two years during which there was no agronomist on the missions. Research/extension linkages remained weak and fragile.

The ICR rated outcome as satisfactory, sustainability as uncertain, institutional development as substantial, Bank performance as satisfactory, and Borrower performance as satisfactory. The audit rates outcome only marginally satisfactory mainly on the grounds of the concern about design and dryland technical prioritization, the weak focus on results at the farm level, and weak research extension linkages. The audit agrees with the other ratings.

The *Agricultural Services Project* was designed as the first phase of a long-term program. The objectives were: to improve the impact of agricultural and livestock extension; to strengthen animal health services; to strengthen adaptive research programs; and, to provide functional literacy training which was seen as a major constraint to progress in technology transfer. Components included: reorganizing and strengthening extension institutions; adaptive research; strengthening livestock and veterinary services; functional literacy programs; mass communication; training, studies, and M&E; and, project management.

The project expanded the Training and Visit system of extension in Burkina Faso. Impact studies indicate significant increases in adoption. While the audit doubts some of the higher adoption and yield claims, there is no doubt there were significant impacts arising from the project. A decentralized extension management system was developed and extension staff numbers and skills increased under the project.

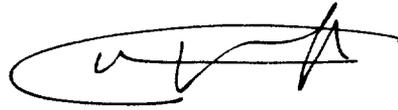
Notwithstanding some significant progress, the project exhibited a number of weaknesses. On the technology front, as with the Research Project, the drier areas strategy was weak. The T&V system was of questionable relevance - a top down system with limited flexibility. The design did not adequately address and rationalize two other types of extension and adaptive research interventions which continued in parallel. The project significantly increased staff numbers and does not appear to be financially sustainable. At the time of design, while it was probably inevitable that the extension system was going to need substantial donor funding for some time, there was no analysis of the longer term financial impact and no phase-out strategy to map out a transition to sustainability.

The ICR rates outcome as satisfactory, sustainability as likely, institutional development as substantial, Bank performance as satisfactory, and Borrower performance as satisfactory. The audit rates outcome as only marginally satisfactory mainly due to concerns about financial sustainability and relevance of the T&V system to the underlying constraints at the time. Sustainability is rated as unlikely because of the scale of the financial demands and modest expectations of cost recovery. Institutional development is rated modest on the grounds that, although some of the structures and processes established are important, it was too much oriented towards a top down system. Bank performance is rated unsatisfactory, although only marginally so, mainly due to the concerns about design and, again, the failure to adequately address the financial sustainability issue. Borrower performance is rated satisfactory.

The two projects offer six main lessons. First, the design of research and extension projects encompassing dry areas should draw substantially from international drylands experience.

Second, strong agronomy skills are needed in supervision in this fast moving field. Third, in projects supporting the expansion of public services, which are difficult to reverse, financial sustainability and cost recovery options should be carefully analyzed. Fourth, in research projects with substantial infrastructure components and potential problems with keeping staff in remote locations, trade-offs between buildings and transport/subsistence costs should be carefully weighed. Fifth, rural markets and infrastructure and strong farmer's organizations are important to rapidly introduce new technologies. Constraints in these areas warrant supporting analysis during project preparation even if simplicity of design dictates that they should be picked up through other interventions. Sixth, extension-research linkages can be improved with respect to both quality and sustainability if the incentives for both researchers and extension agents in the relationship are adequately addressed.

Attachment

A handwritten signature in black ink, consisting of a large, sweeping initial letter followed by several smaller, connected strokes.

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This report was prepared by Mr. Ridley Nelson (Task Manager) and John Sanders (Consultant), who audited the project in January to March 1999. William Hurlbut edited the report. Geri Wise and Helen Watkins provided administrative support.

Principal Ratings

AGRICULTURAL RESEARCH PROJECT (CR. 1896-BUR)

	<i>ICR</i>	<i>PAR</i>
Outcome	Satisfactory	Marginally Satisfactory
Sustainability	Uncertain	Uncertain
Institutional Development	Substantial	Substantial
Borrower Performance	Satisfactory	Satisfactory
Bank Performance	Satisfactory	Satisfactory

AGRICULTURAL SERVICES PROJECT (CR. 1979-BUR)

	<i>ICR</i>	<i>PAR</i>
Outcome	Satisfactory	Marginally Satisfactory
Sustainability	Likely	Unlikely
Institutional Development	Substantial	Modest
Borrower Performance	Satisfactory	Satisfactory
Bank Performance	Satisfactory	Unsatisfactory

Key Staff Responsible

AGRICULTURAL RESEARCH PROJECT (CR. 1896-BUR)

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
Appraisal	Daniel Moreau	David Steeds	
Midterm	Marie-Helene Collion	Salah Darghouth	
Completion	Turto Turtianen	Jean-Paul Chausse	Hasan Tuluy*

* Director, the Country Officer position was abolished in November 1996.

AGRICULTURAL SERVICES PROJECT (CR. 1979-BUR)

	<i>Task Manager</i>	<i>Division Chief</i>	<i>Country Director</i>
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Preface

This is the Performance Audit Report (PAR) prepared by the Operations Evaluation Department (OED) covering two Burkina Faso projects: the Agricultural Research Project (Cr. 1896-BUR) and the Agricultural Support Services Project (Cr. 1979-BUR). The Agricultural Research Project was approved for a credit of US\$17.9 million on April 19, 1988, became effective on December 29, 1988, and closed, fully dispersed, on December 31, 1996, two years and nine months later than the original closing date. The United States Agency for International Development, the Royal Netherlands Government, and the European Union conducted parallel operations. The Agricultural Support Services Project was approved for a credit of US\$42 million on January 17, 1989, became effective on May 26, 1989, and closed, fully disbursed, on December 31, 1998, three years after the original closing date.

The PAR is based upon a review of the Implementation Completion Reports (ICR), Staff Appraisal Reports (SAR), project files, interviews with Bank staff and with Burkinabe. An OED mission visited Burkina Faso in January 1999 as part of a Country Assistance Evaluation and discussed the projects with various stakeholders.

The ICRs for the two projects were satisfactory and thoroughly explored most of the issues, although they did not attempt to rework the economic analysis. The rationale for this audit was that technology and dissemination were important priorities for the rural sector in Burkina Faso, and that it was essential to cover this part of the rural sector for OED's Country Assistance Review.

Copies of the draft PAR were sent to the relevant Government officials for their review and comments. Their comments are reproduced in Annex A.

1. Introduction

Background

1.1 Agricultural development in Burkina Faso historically has concentrated on two major regions: the high rainfall Southwest and the semiarid Central Plateau. During colonial times, development efforts in the Southwest focused on building up cotton exports. After independence in 1960 productivity increased substantially—cotton yields quadrupled between the mid-1960s and the mid-1980s. Moreover, other crops also benefited from the higher input levels and the development activities supporting cotton. In the 1980s, maize yields increased significantly and sorghum yields increased moderately.

1.2 In the Central Plateau, which accounts for most of the land area and includes the majority ethnic group, the Mossi, increasing population pressure on a fragile land base led to a breakdown of the traditional fallow system. As in other countries in this zone, high production risk and low cereal prices were a disincentive to using purchased inputs. Increases in agricultural output therefore depended largely on expanding into more marginal areas, resulting in declining average yields. Poverty incidence and malnutrition increased. Out-migration to the coastal countries, to the higher rainfall regions to the south, and to Ouagadougou was high.

1.3 By the mid-1980s, 40 percent of Bank lending to Burkina Faso had gone to 15 agriculture projects, including forestry and livestock. Most of those projects were aimed either at further improvement of the cotton or rice sectors in the Southwest or at poverty alleviation on the Central Plateau with integrated rural development activities. Preparation of the Research Project was very protracted: the first work was done in 1982, but effectiveness did not occur until the end of 1988. The Agricultural Services Project followed later, being prepared in 1987 and becoming effective in 1989.

1.4 The CFA devaluation of January 1994 was a significant economic event. It was expected to help project performance by restoring competitiveness of domestic agricultural and livestock products and thus increasing demand for improved technologies.

Agricultural Research

1.5 INERA, the Burkinabe National Institute for Agricultural Studies and Research,¹ was created in the early 1980s. In 1985, its researchers identified eight program priorities in the following order: farming systems; soil/water/plant relationships; livestock production; sorghum, millet, and maize; annual oil seeds and grain legumes; horticulture, root and fruit crops; rice; and cotton. Cotton and rice, the two crops on which there had already been the most success, were relegated to the bottom of the list. The premise for this new priority was that by focusing on farming systems, and the interaction of soil, water, and plants, technical progress could be made in the semiarid regions. Forestry research was handled by another public agency, IRBET²

1.6 Organizationally, INERA and IRBET were part of the Ministry of Higher Education and Scientific Research.³ Above both of them was the National Center for Scientific and

1. Institut d'Etudes et de Recherches Agricoles

2. Institut de Recherches en Biologie et Ecologie Tropicale

3. Ministère de l'Enseignement Supérieur et de la Recherche Scientifique

Technological Research (CNRST),⁴ which controlled their accounting and approved all spending and program implementation decisions. Since these institutes were part of the educational establishment, their performance criteria were similar to those of a university, principally degree and publications rather than performance related to results at the farm level.

1.7 Burkina Faso was a center of international and regional agricultural research activities in the 1980s. IITA and ICRISAT, and many NGOs were active in the country. A wide range of innovations were being tested on the experiment stations and on farms for semiarid regions.

1.8 In the mid-1980s, INERA had three agricultural experiment stations, two on the Central Plateau and one in the Southwest. Kamboinse concentrated on farming systems and soil/water/plant relationships, Saria on cereals, and Farako-Ba on cotton and rice. Three new stations were added under the project to diversify into other products and regions, particularly the North and East, which had been neglected by the research system. In 1986, INERA had 50 professional staff, including five Ph.D.'s, 11 M.S.'s, and one B.Sc. IRBET professional staff included three Ph.D.'s. To adequately cover the essential research programs, a further 16 expatriates worked in INERA and 3 in IRBET. An objective was to replace these expatriates with local staff, so there was a substantial demand for increased national human capital investment.

Agricultural Extension

1.9 Extension was the responsibility of the Ministry of Agriculture and Livestock Resources. Throughout the 1970s and for most of the 1980s, extension operated through 11 decentralized regions (reorganized to 12 regions in the late 1980s). In the late 1980s, before the Agriculture Services Project began, the extension service employed 1,300 people, 949 of them extension workers. Hiring was done locally and the agents generally had little formal training in extension. Besides the traditional extension techniques, Burkina adopted the system of regional adaptive research and extension poles, an idea imported from Senegal. Twenty regional adaptive research sites were distributed throughout the country. These PAPEMS⁵ did experiments with adaptive technologies, training for extension and farmers, held field days to demonstrate the latest technologies, and did seed multiplication. They were very poorly funded, however, and only 13 had even minimal infrastructure.

1.10 A new training and visit (T&V) extension system, which promised to simplify and organize the extension workers and provide them with more technical backup, was introduced with Bank support in 1985 in a pilot project. This ran for four years before the Agricultural Support Services Project began. The components of the T&V system were:

- Regular extension visits to farmer groups,⁶
- The creation of a category of subject matter specialists trained by researchers, who then trained the village extension agents
- Regular supervision of extension staff at all levels
- Fixed work plans and specific responsibilities.

1.11 ***Livestock and Animal Disease.*** Burkina Faso in the late 1980s had 3 million cattle in 30,000 separate herds, 2 million sheep, and 2.5 million goats. Livestock was 25 percent of the value of agricultural GDP and 20 percent of the value of all exports. A mid-1980s outbreak of

4. Centre National de la Recherche Scientifique et Technologique

5. Points d'appui de Prévulgarisation et d'Expérimentation Multilocale

6. The single farmer visit extension system had been used previously.

Rinderpest, a serious disease considered to be under control in most of the world, created a demand for modernized veterinary health facilities and services in the country. Livestock services were dispersed among several public sector organizations. A parastatal supplier of veterinary supplies, ONAVET, was engaged in wholesale distribution of drugs and supplies.

1.12 **Literacy.** Burkina Faso had a literacy rate of less than 15 percent (lower for women) in the 1980s. Literacy training was considered critical to making the farmer groups functional in representing farmers, handling inputs, and marketing produce.⁷ Programs to improve literacy were under the jurisdiction of the Ministry of Farmers' Cooperative Action (MACP).

2. Objectives and Design

Agricultural Research Project

2.1 This was designed as the first phase of a 10- to 15-year development plan. Objectives for this phase were:

- To strengthen and consolidate the capacity of national agricultural research (including livestock and forestry) to plan, execute and evaluate research programs responsive to farmers, fitting in with government policies and paying attention to other research in neighboring countries and international institutes
- To improve balances and linkages among research programs
- To strengthen the links between research and extension services.

2.2 The components of the project were:

- Improvements to INERA's basic network of research centers especially the physical infrastructure
- Short- and long-term technical assistance and staff training. There was a training goal of 31 person courses for the two institutes in the World Bank loan. Money was also to be provided for specific staff hiring
- Operating and maintenance costs such as equipment, vehicles, and supplies
- Funding for the periodic training of extension staff, especially the subject matter specialists.

2.3 Initial design was carried out with the assistance of ISNAR (the International Service for National Agricultural Research) but it was then taken further by the Bank and borrower in final preparation and appraisal. The design was consistent with standards of the time but was somewhat top-down, with limited stakeholder consultation. There was limited content that was new or forward-looking. It did not draw sufficiently on the experience of other organizations working in Burkina or on the extensive global experience in dryland agronomy (such as work in a number of countries with tied ridges)⁹. It had a number of more specific weaknesses. First, as noted by the ICR, the objectives should have been stated in a way that they could have been more

7. The government at the time had previously staged two literacy operations that were planned like military campaigns and involved large numbers of trainers over a short period.

8. Ministère de l'Action Coopérative Paysanne

⁹ The borrower has commented that representatives of international institutions were actively involved in determining research priority themes. The audit would still argue that few new directions emerged.

readily monitorable. If researchers had been required to identify and measure their output from the beginning, it would have improved focus and prioritization and there would have been more incentive for the use of M&E. (The successor project has appropriately emphasized impact, measuring yields, and strengthening the monitoring unit from the beginning.) Second, as evident in the components listed, this research project was predominantly designed to provide physical and human capital and did not directly and explicitly support the identification of priority technologies that could be promoted and give quick credibility to the new institutes. The Bank could have contributed more during project design to assisting identification of specific priority research areas to give better technical direction beyond simply the focus on process change.

Agricultural Support Services Project

2.4 The project was described as constituting the first phase of a long-term program aimed at strengthening agricultural services. The objectives of this project, which was designed to be supportive of the research project, were:

- To improve the effectiveness and impact of agricultural and livestock extension services in transferring technology to farmers
- To strengthen animal health services and adaptive research programs
- To provide functional literacy training to farmers thereby enhancing their ability to participate more directly in technology generation and dissemination.

2.5 The components of the project were:

- Reorganization and strengthening of national regional and provincial extension institutions
- Adaptive research
- Functional literacy programs
- Strengthening of livestock services and veterinary supply distribution
- Improvement of mass communication
- Development of training programs
- Studies and pilot operations and monitoring and evaluation
- Project management.

2.6 The initial project design included the input of FAO, but it was further developed by the borrower and the Bank. As with the Research Project, stakeholder consultation was limited, but this was consistent with standards at the time. The follow-on project currently under preparation which will be based on a community approach proposes to take this much further. The main concern about design is that the project introduced a rigid top-down approach to extension. There was limited responsiveness to specific regional problems in the design and insufficient flexibility in the T&V visitation schedule. Little provision was made for feedback from farmers. Other donors were not happy with the rigidities of the T&V system and partly for that reason did not collaborate in financing. In the midterm review, Bank staff did identify the rigidities and the lack of real farmer participation and, following this midcourse correction, more farmer participation was built into the program. But the midterm review became preoccupied with an extension processes debate rather than what was needed, which was a substantial refocus on technologies and a concern with getting other emerging support services constraints—mainly the input markets

(seed, inorganic fertilizer, and credit)—working better. Overall, the extension effort concentrated too much on the process of delivering the message and too little on the message itself¹⁰.

2.7 The design offered few real incentives for research and extension staff to build stronger ties. Given the substantial differences in professional skills between the two cadres, creating the interaction required more than meetings and training. Better definition of project results for research and extension, including some carefully and mutually selected farm-level targets, would have helped collaboration between the services by setting a common goal. The failure to design objectives with output goals for the target regions was a weakness in project design.

2.8 At preparation, there was insufficient synthesis of what was known about semiarid agriculture from developed and developing countries to help direct priorities for adaptive testing and extension. The Bank, with its worldwide experience, was in an excellent position to help on this.

2.9 With respect to livestock systems, no innovations for improving services to transhumants were developed from the earlier pilot project designed to do that. However, flexibility was shown during implementation in a push for the privatization of veterinary services, which became a significant feature in the later part of the project.

2.10 While the initial project design did not include a significant gender component other than the literacy elements, both Bank and borrower demonstrated flexibility during implementation. Following a 1992 report on the role of women in agriculture a consultant was hired to develop an Action Plan. Thereafter, three women were hired at the center and a woman at senior management level for each region. The borrower elaborates that a further 10 women were hired at senior level as part of the implementation of the national action plan for providing access for women to agricultural services.

2.11 Finally, the SAR contained no projection of the borrower's financial capacity to maintain the much-expanded extension service once the Bank terminated its contributions. Even accepting the need for heavy donor support for the sector for some time, some attempt at a phased progression toward financial sustainability should have been made, as well as some accommodation within the design to the projected financial capacity of the borrower.

3. Implementation

Agricultural Research Project

3.1 An essential element, recognized in the design of both projects, was the need for the dissemination of technology findings and the need, less recognized in the designs, for the feedback to researchers from farmers. Notwithstanding the establishment of Monthly Technology Review Meetings, the effectiveness of extension feedback into research was weak and not sustained. As noted in the ICR for the Agricultural Services Project, efficiency of the linkage was diminished by lack of decentralized annual consultation workshops to identify research themes and review findings.

¹⁰ The borrower notes that the view on the rigidity of the system should be qualified and that it was related to the lack of flexibility of the T&V system itself. But this is, in fact, the point the audit is making here.

3.2 With hindsight, the project was taken to the Board too early before procurement was sufficiently advanced. Start-up workshops on procurement and works management and earlier resolution of the emerging construction issues would have helped. Infrastructure creation, a principal project component, was poorly planned and presented problems from the outset as evidenced by the 15-month delay in start up and the fact that some works are still not completed. Construction of civil works at research stations and HQ started 15 months behind schedule. The large number of duplicating agencies, especially the need for CNRST to approve everything, created delays. These problems were persistent enough that they remain issues for a follow-on project. More thorough preparation, including procurement scheduling bar charts (CPM), might have allowed project designers to foresee the problem and anticipate it in project design and phasing. Better initial consulting support from architects and engineers could also have avoided a number of problems. The borrower put considerable pressure on the Bank to use local instead of international consultants in these areas. In acceding to this, the Bank lost sight of the quality objective. A principal problem, was that, with scattered sites, such projects presented complex technical specification and aggregation challenges, yet research staff were new to Bank procedures, and sometimes also to their own procedures. This problem has been common in Bank-financed research projects. Specifications and procurement should have been given more attention during project preparation. In the end, physical structures were completed at two headquarters and seven stations of INERA and equipment was procured.

3.3 Later in the project, the borrower had trouble staffing the new stations at Di, Kourare, and Katchari because they were far from major urban areas. The response to this problem was to create regional teams, some of whom maintained residence outside of the region. This flexibility demonstrated commendable responsiveness by the borrower to problems as they were identified, but it also highlighted the weaknesses in the initial planning since this had been a common experience in Africa and was arguably foreseeable even at the time. Some alternative infrastructure and transport package might have been considered. Field research can be done on farmers' fields with no buildings or research station land at all.

3.4 The development of an auditing system for INERA experienced implementation delays and evidence from the files suggests that it consumed large amounts of Bank staff supervision and became a source of considerable frustration for both sides. The auditors had indicated qualifications in a number of audits, but gradually these were resolved. A new system was finally implemented but close to the end of the project.

3.5 The promotion and incentive structure in INERA and IRBET posed particularly difficult institutional problems. This was first flagged in the midterm review of 1992. The CAMES system was oriented to universities stressing degrees and publications ¹¹. In 1998, the number of publications required for full time researchers was changed and credit was given for extension and development type activities in the same way that university professors got credit for teaching. Unfortunately, this modest but significant change in incentives took six years to gain acceptance and implementation.

3.6 During the second half of implementation there was more attention to the substantive research issues, where increased Bank attention appropriately was put into areas where Bank technical personnel had international experience. For example:

- An experienced consultant in experiment station management was contracted.

¹¹ The borrower feels that evaluation of researchers never posed any institutional problem. The audit feels that it did because the incentives to produce were not sufficiently aimed at research outcomes.

- A consultant supported national staff in initiating the evolution of the INERA Farming Systems and Soil/Water/Plant programs into a natural resources program ¹² in 1993; this was formalized in the 1995–96 review of the research system.
- A reorganization of the research system was completed in 1995–96. IRBET was eliminated and forestry research was incorporated into INERA, which then became the Environmental and Agricultural Research Institute. A new agency IRSAT, covering applied science and technology was created from the old energy institute and it was made responsible for food science and agricultural machinery. This institutional evolution was facilitated by the Bank's operational inputs. A successor Bank project to the research and services projects will incorporate these two additional areas of research indicating that the projects did provide useful lessons.

Agricultural Support Services Project

3.7 A nationwide agricultural extension system with a central directorate and 12 regional directorates was established and operational by the end of the project. The ICR describes this as a decentralized system but the term decentralized implies a degree of local accountability. What was established is more accurately characterized as a deconcentrated system. By 1997, the system was being implemented by 1,007 village extension workers, 521 district-level extension agents, 213 animal health services agents, 127 literacy and cooperative education services agents, and 120 subject matter specialists. There were, in addition, 12 regional research development unit heads, each reporting to a regional director, and three research and development workers on each of the 17 PPEMs. Thus, the designed organization and human resources were largely put in place. Nine PPEMs were constructed under the project, eight were rehabilitated, and all were equipped. Two impact studies were carried out, but the first was too early to pick up much of the potential project impact. The second study done in November 1997 on a sample of 191 households across 8 regions indicated adoption rates by contact group members ranging from about 60% to 80% and about 20% to 60% for non-contact farmers. However, M&E data show a more modest average 30% adoption, with most occurring after 1993/94 when contact groups were reduced in size. Relatively weaker performance in livestock technology was a feature of both projects. This was partly due to the desire of the livestock (veterinary) service to remain distinct from agricultural extension so that coordination of approach during project preparation proved difficult – a common status-related problem in many countries¹³. The dryland extension effort largely got stuck in low input, low yield effect, technologies. Impacts on farmer welfare in these areas was small ¹⁴. Nevertheless, these low input technologies will provide a base for further more intensive improvements.

3.8 Management was very weak during the first years of the project, mainly because managing staff were not assigned full-time to the project. This suggests weak ownership at that

12. The Bank's Special Program for African Agricultural Research initiative for the Sahelian countries and successes with the introduction of the mud and stone dikes led to Burkina Faso becoming a center of development in the Sahel for natural resources.

¹³ The borrower comments that this is too simplistic. The audit agrees that there were other reasons and agrees that one explanation was that extension tools were inappropriate for livestock operations, something that has been observed elsewhere.

¹⁴ The borrower notes that farmers cannot afford higher input technologies. The audit accepts the need for a menu which includes low cost technologies but believes that a wider menu could have been attempted.

point. This was corrected following the midterm review, when a Project Coordination Unit was created.

3.9 During the pre-project period and into the first year, numbers of VEWs declined from 1,005 in 1985/86 to 839 in 1990/91, but they rose again during the project period to 1,007 in 1997. Considering that the public budgetary allocation at the start of the project was barely sufficient to cover salaries, there was a scale and financial sustainability issue that was never addressed at appraisal, the assumption apparently being that donor support would be needed long-term.

3.10 Training was provided to about 300 VEWs under the project and extension managers were provided 74 overseas training tours. No comparison of staff skills before and after the project training was carried out. However, in 1990 about 75% of VEWs had either a Technical Diploma or Certificate.

3.11 The construction of livestock posts, vaccination pens, a virology unit, and regional laboratories was delayed by a year because of difficulties during the bidding process. As in other components, the quality of construction was often poor. Better quality control mechanisms and training would have helped to ensure a higher level of quality.

3.12 To facilitate the provision of livestock drugs and feeds, at midterm the Bank began pushing to create an enabling environment for the emergence of the private sector. Substantial progress was made in privatizing veterinary services in the western region where farmers were used to paying for inputs. ONAVET, the parastatal that formerly distributed veterinary products, was liquidated.

3.13 The gender element grew over the project period. As transparency problems persisted in the MACP's handling of the functional literacy component, most of the remaining funds were shifted into a fund, initiated at midterm, for providing credit to rural women administered by the extension service. This showed commendable implementation flexibility. The lending to women was made in small loans with a revolving fund through women's groups. CFA500 million was lent to 18,000 women for small rural business activities with close to 100 percent repayment claimed leaving an active revolving fund. Once recognized, implementation adapted well to the emerging concern about gender. The project adapted and staffed the office for the promotion of women's activities with 12 professionals and covered the operating costs. The percentage of women in contact groups rose from 10 percent in 1991 to 25 percent to 30 percent in 1997. Towards the end of the project, and following project closure, further very promising progress has been made with the Social and Gender Analysis (SAGA) program addressing particularly training based on local culture, the roles of household members, and the roles of extension within the social framework.

3.14 The ICR finds performance of M&E satisfactory, but some evidence suggests that efficiency could have been better. A Working Group review of the project in 1992 suggested that lower expenditure on enumerators and transport and more on quality training for analysts would have been more efficient.

4. Outcomes

Agricultural Research Project

4.1 Yield gains during project implementation were concentrated in the Southwest region, where substantial progress was made with new cultivars and improved agronomic practices. Doubling of on-farm yields was claimed for new technologies in both upland rice and maize. The audit found these plausible. Significantly, both crops benefited from ties to international research organizations (IRRI, WARDA, IRAT, CIMMYT, and IITA). Six new cultivars each of rice and cowpeas and five of maize were developed or adapted during the project period.

4.2 The institutional objective, which was the most important in the project appraisal report, was largely achieved. The training program met its target of covering 31 trainees, and other parallel programs added 28 more. Local managers and researchers largely replaced the expatriate staff. By 1998, there were 95 national researchers, 78 of whom had doctorate, masters, or other advanced degrees compared with 45 at the start of the program. The training component of the program under both projects received strong support from the borrower.

4.3 Planning, management, and research prioritization were important project objectives. With respect to planning, the output of strategic documents produced in the last five years and the increased funding from donors is a testimony to a considerable increase in confidence and capacity in this area. Management remained weak, however, partly due to the lack of management skills of staff who had been trained essentially as researchers. The limited focus on impact and results in research program prioritization presented a further handicap for inexperienced managers due to lack of clarity of objectives.

4.4 INERA and the extension service made a much smaller contribution to outcomes in the lower rainfall regions. The concentration on the low-cost, low-risk, and low-yield increasing technologies (bunds, water-harvesting structures, compost heaps, zai,¹⁵ and increased use of crop residue) by extension did not have significant and widespread impacts on aggregate yields of food crops¹⁶. No comprehensive ex-post economic analysis was attempted for these areas, which would have been particularly useful for understanding the private and public cost/benefit and risk relationships, however, one analysis of the marginal returns to the bunds found a rather modest return of 8%, consistent with a low output, medium input, low risk type of technology.

Agricultural Support Services Project

4.5 A deconcentrated extension system with a central directorate and regional directorates was established and became operational during the project period (see the earlier point made about the difference between decentralized and deconcentrated). A T&V system was established. *Coverage*, defined simply as those living in a village receiving extension advice through contact groups, increased from 40 percent at the start of the project to 66 percent after the project. At the end of the project 5,500 of the 8,377 villages in the country were covered by extension. The

15. Traditional technique of digging holes for water retention (cut-holes) into which is put manure with cereals or legumes planted in them.

¹⁶ The borrower argues (see Annex on Borrower Comments) that importance was assigned to semi-arid regions and feels that the low cost, low risk approach was correct. The audit still argues that, while low cost, low risk approaches are important for a menu of technologies, not enough was done to push the yield envelope. We accept that more is now being done in this direction under the new Strategic Plan.

number of contact groups increased from 8,500 to 13,000 for crop production and from 2,000 to 5,000 for livestock production.

4.6 Total staff numbers in extension increased by about 80 percent to 2,289 from the 1,300 reported at the initiation of the project. By the end of the project, there were 1,007 village extension workers, 120 subject matter specialists, and 702 supervisors, together with some other supporting categories. The increase in number of subject matter specialists and supervisors was much greater than the increase in VEWs.

4.7 The educational level of the agents was improved with regular monthly training, and 300 VEWs were trained at Matourkou Training School.

4.8 Extension personnel and research scientists jointly undertook monitoring of on-farm research and the station research in the PPEMs until the termination of the Bank-financed research program in 1996. Thereafter, neither the research nor the extension service valued this interaction sufficiently to fund it themselves. This is indicative of one aspect of the sustainability problem.

4.9 Two impact studies have been done on this project, the first reported 29 percent higher yields for participants in the contact groups and a 91 percent marginal IRR for the T&V system. While the audit did not have sufficient new data to re-estimate these, there are major questions about the counterfactual. Some technologies were already being diffused when the original T&V pilot program began. That the pilot undoubtedly accelerated this introduction makes it difficult to disentangle the impacts.¹⁷ However, the T&V program deserves credit for recognizing the potential of these technologies.¹⁸

4.10 The second impact study reported in 1997 that there were substantial differences in adoption of a series of practices between farmers inside and outside the contact groups. If the levels of adoption and the 25 percent to 30 percent yield increases reported were representative, some evidence of aggregate effects on yields country-wide should have started to become evident. There are not measurable effects on aggregate yields country-wide to corroborate sample findings.

5. Ratings

Agricultural Research Project

5.1 The Agricultural Research Project was broadly *relevant* insofar as improved technology was, and remains, important to achieving agricultural development in Burkina. However, relevance at the strategy and component level was less evident. The design of the project gave too little attention to farm-level results generally, the semiarid areas particularly, and the lessons of experience globally. The project was largely *effective* in reaching its stated objectives, although construction quality was often poor. The *efficiency* of the project is less clear because it is difficult to assess in the absence of any economic analysis covering the project. The yield

17. See V. Bindlish and R.E. Evenson, "The Impact of T&V Extension in Africa: The Experience of Kenya and Burkina Faso," *World Bank Research Observer*, 12:2, August 1997, 183-201. While there remain questions about attribution and methodology, the T&V system probably was reasonably effective initially in the higher potential situations.

18. One methodological concern is that there were other Bank, NGO, and other bilateral donors promoting new technologies. Hence, there may be an understatement of the costs of extension as represented by the T&V variable.

increases associated with cotton, rice and maize suggest the high economic rates of return often found with agricultural research, but the association of these yield gains with investment in research in this period is not clearly established and these gains are in the higher rainfall region and irrigated zones. The weaker program in the semiarid areas raises questions about the failure to incorporate knowledge from other regions of the world on the potentials of dryland agronomy. Maximizing returns to research is important, but governments also have equity objectives and the audit finds the research strategy to be too conservative for the semi-arid regions.

5.2 With respect to the efficiency of the infrastructure investments, three stations were probably sufficient for Burkina. The additional stations allowed for differences in soils and population densities/ infrastructure, but their cost was high, especially in light of the difficulty of getting staff to stay in the remoter locations. A more cost-efficient strategy would have been to draw in more findings from outside the country and to put resources into improved transportation and more regional trials. Agricultural experiments on farmers fields are possible with no buildings and no land investments of any kind, simply adequate transport and operating costs.

5.3 Overall **outcome** is rated **marginally satisfactory**. While the project had significant institutional and training achievements, it was weak in the critical area of dryland agronomy and emphasized research processes rather than research results. Project implementation was better than project design, particularly in the later stages, when the project approach was characterized by increased flexibility and Bank technical contribution. Even during implementation, however, there were significant weaknesses. For example, in the early years, supervision missions often lacked important specialists. For two years, during a critical project phase, no agronomist at all was on a supervision mission, which is a serious concern for an agricultural research project. This reinforces the assessment that the focus was more on construction, institutions, and processes than on the substance of research and its likely on-farm impact.

5.4 The audit agrees with the ICR assessment that **sustainability is uncertain** (there appears to be some inconsistency of standards here between this ICR rating and the “likely” rating given on sustainability for the Agricultural Support Services Project). Other donors remain interested. However, the heavy dependence on outside donors is a matter for concern, and both the borrower and the Bank need to carefully analyze the level of future commitments to ensure that they remain realistic within the likely future government budget envelope.

5.5 The audit agrees with the ICR that **institutional development** impact was **substantial**. Institutions and associated processes are now significantly stronger.

5.6 Both **Bank and borrower performance** are rated **satisfactory**, although, were it available, a marginally satisfactory rating would have been given due to the weakness of project design regarding dryland agronomy.

Agricultural Support Services Project

5.7 The *relevance* of the project as designed was partial at best. The five most fundamental problems at the time for the Burkina Faso technology dissemination system were: lack of incentives for staff to respond to farmers’ needs; insufficient public funding to sustain even the extension service that existed; weak linkages between research and extension; bias toward the higher-potential areas; and limited technical and managerial skills. The project effectively addressed only the last of these five. The ICR notes, and the audit agrees, that the relationship with the Country Assistance Strategy was not clearly pointed out in the Staff Appraisal Report. Ignoring for the moment the wider question of relevance, the *effectiveness* of achieving what the project set out to do was satisfactory. Most of what was intended in the design was eventually

achieved after considerable delay. The *efficiency* is difficult to assess. The first impact study was premature for attributing causality. The second, on a small sample, did indicate significant gains in terms of yields and income. If these were widely representative, as the contact group data suggests they were, then the economic returns in the range 85 percent to 185 percent estimated in the government's completion report would be plausible. However, the audit mission did not find evidence in the field for such high and widespread productivity gains, which at those levels should have been highly visible. However, aggregate yield data do not appear to reflect such gains except for cotton, maize, and rice, and, except for rice, these gains are difficult to associate with the project.

5.8 Overall **outcome** is rated **marginally satisfactory**, indicating that the project achieved most of its major relevant objectives but with some shortcomings. As with the Agricultural Research Project, design was weaker than implementation. The project imposed a rigid top-down extension methodology with a number of weaknesses and poorly matched to the financial capacity of the borrower. However, a number of elements including Subject Matter Specialists, regular visits, better definition of targets, and better supervision, were improvements on what had existed and would be desirable elements of any organizational endeavor.

5.9 **Sustainability** is rated **unlikely**, compared to the ICR rating of likely. Even by the standards of the time, inadequate projection of the likely financial scenarios was undertaken at appraisal. The ICR notes that the project was not expected to be financially sustainable and that Burkina Faso, which depends upon foreign assistance for a substantial share of its recurrent expenditures, cannot be expected to sustain the project at the present time. While this complex and difficult issue reaches well beyond the project itself, a substantial increase in recurrent costs was designed into the project and that level of recurrent expenditure appears unsustainable without long-term donor support. More specifically, beyond veterinary services, the management of the extension service seems to have given little thought to cost recovery. The audit does not agree that the five developments (privatization of veterinary services, training of village vaccinators, extension assistance to farmers, revolving funds for motorcycles, and support for farmers' organizations) stated by the ICR as paving the way for financial sustainability are sufficient to give confidence. Extension needs to be weaned at a more rapid rate from dependence upon Bank and other donor support and probably scale of services needs to be rationalized. The audit found no evidence yet of a comprehensive phased strategy for moving in this direction.

5.10 **Institutional development** is rated **modest**, indicating that the project increased the country's ability to effectively use human, organizational and financial resources to a limited extent. In some respects it could be rated substantial, but there are questions about the relevance - whether the approach was the appropriate form of institutional change to introduce, even by the standards of the time. Thus, there are institutional opportunity issues to be considered - the counterfactual. Nevertheless, some of the institutional structure and processes put in place would still be appropriate for other extension approaches in the future.

5.11 **Bank performance** is rated **unsatisfactory**, although, were it available, a marginally unsatisfactory rating would have been chosen. The following contribute to the rationale for this rating: (a) the design and implementation did not give sufficient attention to experience elsewhere, especially to technologies beyond the low-cost, low-risk, low-yield technologies for the semiarid regions; (b) the design imposed a rigid extension methodology; and, (c) the design generated significantly increased recurrent expenditure commitments and there was no analysis of this financial issue or accommodation within the design toward longer-term financial sustainability.

5.12 **Borrower performance** is rated **satisfactory**, although in some respects marginally so. The grounds for the difference between Bank and borrower rating is that some of the above performance concerns are more directly attributable to the Bank, with its wider international experience, than to the borrower.

6. Findings and Lessons Learned

6.1 A general problem related to both the Research and Services Projects raised by Burkinabe with the audit mission was that they felt they were being micro-managed by the Bank. An example given was Bank pressure to revise the performance criteria in INERA. The Burkinabe position was that the Bank should have focused on output and less on the institutional means to achieve it. The audit does not feel it has enough evidence to assess the merits of the institutional organization issue in this case, although it agrees with the general proposition that a results-based focus across both projects would have given better definition of objectives and measurement of performance, and would have helped to reduce the heavy focus on means and the relative neglect of results.

6.2 In the Agricultural Services Project, not until the midterm review was the essential dilemma of design raised, that there was not one extension and linkage methodology being practiced but three—T&V, Farming Systems, and the PAPEM approach. The project, in addition to implementing the T&V system, strengthened the PAPEMs with infrastructure, supplies and equipment, training and technical assistance. Both PAPEMs and the Farming Systems program had on-farm trials with extension staff demands. The T&V system, however, attempts to be exclusive by demanding a large number of regular farmer group meetings. While there may have been a good case to retain the essential elements of the three overlapping systems to create a more effective whole, this called for some fundamental redesign of the three systems, which did not take place until the partial attempt at midterm.

6.3 The essence of the midterm critique for the Agricultural Services Project was that not enough of the Farming Systems methodology was being followed. However, since T&V was generally felt to be working (although data were limited), and since most agreed with the creation of the technical specialists and with managing and institutionalizing farmer contact, an opportunity was lost for some creative redesign, and no major changes were made.

Issues for the Future

6.4 The Burkinabe have built up a functioning research establishment in INERA, and many remaining operational problems are being addressed in a successor project currently being implemented. But INERA has so far missed an opportunity to make a significant impact on semiarid agriculture and on poverty. When water can be made available, semiarid agriculture often has advantages over higher rainfall zones such as lower disease and insect incidence (as has been demonstrated in Israel, Australia, the Iberian peninsula, California and other regions). So the potential in semiarid Burkina should not be underrated. The potential for gains is not just dependent upon irrigation. Dryland agronomy—with various techniques for water retention—can also make a large difference in crop yields when combined with inorganic fertilizers and new cultivars. Furthermore, the demand growth for the traditional cereals from these areas can be expected to rise as economic growth leads to dietary transformation toward livestock products. With this dietary shift, feed grain demand growth elsewhere has been so rapid (over 5 percent annually) that most developing countries have been unable to meet the demand without imports. While imports is an option where comparative advantage dictates, transport cost wedges give

local producers an edge. Current strategy does not yet appear to accommodate this future scenario.

6.5 Looking to the more intensive commodities for the future, a number of niche crops, such as fruits and vegetables, are sufficiently profitable that Burkinabe research and extension services can be contracted by farmers. This and veterinary services are the areas for the initial moves into privatization and reduction of the public burden. Rapid output and productivity growth is possible here and the niche crops can be an important income supplement. For the traditional cereals, livestock, and natural resource management, the public sector will need to continue support.

6.6 With respect to extension, there are a number of challenges for the future including: (a) to shift from traditional extension to rural information systems; (b) to shift from supply-driven to demand-driven; (c) to shift from seeing extension as a conduit for messages to a network among stakeholders; (d) to shift from simply transferring technology to a broader function of transferring technology, mobilizing and helping organizing farmers, and educating and building capacity; (e) to shift from a teaching emphasis to a learning emphasis; (f) to rationalize to a financially sustainable scale.

6.7 Other important components of an improved future private sector environment include legal protection of contracts, credit, and support for farmers' organizations.

6.8 Land policy issues may also be important. With the new land laws, urban bureaucrats and wealthier urban residents may emerge as the primary beneficiaries of research and extension, particularly given the already existing services bias away from the more remote locations. Discussions with borrower staff indicate that the extension service is planning a dual strategy to service this new group as well as their traditional farmer clients. There will be a need to focus the scarce public resources predominantly on the poor and to support the privatization of services for new higher income entrants.

Lessons

6.9 The following are the main lessons from both projects:

- The design of research and extension systems should draw substantially from international dryland experience and should develop a range of menu choices that go beyond low input approaches to include the more intensive options also.
- In agricultural research projects, it is particularly important to use strong agronomy skills regularly in supervision; apart from enabling adequate project review, this offers the potential to inject new global knowledge throughout the project period in a fast-moving technical field.
- In projects supporting the expansion of public services, which are difficult to reverse, financial sustainability and cost recovery options should be carefully analyzed.
- In research projects with substantial infrastructure components and potential problems with keeping staff in remote locations, trade-offs between buildings and transport/subsistence costs should be carefully weighed.
- Rural markets and infrastructure and strong farmers' organizations are important to rapidly introduce new technologies. Constraints in these areas warrant explicit analysis during project preparation even if simplicity of design dictates that they should be picked up through other interventions.

Extension-research linkages can be improved if the personal incentives for both researchers and extension agents in the relationship are adequately addressed. Simply having more training or holding more meetings is not enough. Furthermore, researcher and extension agent must have clearly defined joint goals related to farm level output.

Basic Data Sheets

AGRICULTURAL RESEARCH PROJECT (CREDIT 1896-BUR)

Key Project Data (amounts in US\$ million)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	18.8	18.8	100.0
Loan amount	17.9	17.9	100.0
Cofinancing	--	--	--
Cancellation	--	--	--

Cumulative Estimated and Actual Disbursements (in US\$ '000)

	CY88	CY89	CY90	CY91	CY92	CY93	CY94	CY95	CY96
Estimated Annual	2,500	3,500	2,700	2,800	2,500	2,100	900	500	400
Estimated Cumulative	2,500	6,000	8,700	11,500	14,000	16,100	17,000	17,500	17,900
Actual Annual	-	1,903	802	3,237	3,143	3,068	2,422	4,230	1,183
Actual Cumulative	-	1,903	2,705	5,942	9,085	12,153	14,575	18,805	19,988
Actual cumulative as % of estimate	0	32	31	52	65	75	86	107	112

Date of final disbursement: December 24, 1996

Project Dates

	Original	Actual
Identification	na	1983
Preparation	na	1984-85
Appraisal	na	12/86
Negotiations	na	07/87
Board Approval	na	04/19/88
Credit Signing	na	05/23/88
Credit Effectiveness	08/21/88	12/29/88
Mid-term Review	by 06/30/92	04/92
Credit Closing	03/31/94	12/31/96

Staff Inputs (staff weeks)

Stage of Project Cycle	Planned SWs	Actual SWs	Actual US\$'000
Preparation	--	78.0	-
Appraisal	--	99.0	169.2
Negotiations through Board	--	24.0	45.3
Supervision	--	199.0	355.4
Completion	12.5	--	--
Total	12.5	400.0	614.4

Mission Data

	<i>Date</i>	<i>No. of persons</i>	<i>Specialization Skills</i>	<i>Implementation Status</i>	<i>Develop. Objective</i>	<i>Types of Problems</i>
Identification	no formal	n.a.	--	na	na	na
Preparation	05/82	1	A	na	na	na
Pre-appraisal	09/86	2	A, AE	na	na	na
Appraisal	12/86	5	A, AE, ARS, L, AgS	na	na	na
Supervision 1	01/90	1	A	2	2	P, F
Supervision 2	07/90	2	A, AE	2	2	P, F
Supervision 3	03/91	2	A, AE	2	2	NI
Supervision 4	04/92	1	A	2	1	NI
Supervision 5	11/92	2	AgS, PA	1	1	NI
Supervision 6	07/93	3	AS, PA, AE	2	1	F
Supervision 7	03/94	3	AgS, PA, AE	2	1	NI
Supervision 8	08/94	4	ARS, RDS, AgS, AgEco	S	S	F
Supervision 9	02/95	2	ARS, AgS	S	S	NI
Supervision 10	12/95	4	ARS, AgS, IMS, RD	S	S	P
Supervision 11	02/96	4	ARS, IMS, RDS, A	S	S	a/
Completion	01/97	5	RDS, ARS, A, IMS, AgS			

a/ Combined with pre-appraisal of a follow-on project; no supervision report prepared.

Key to specialized staff skills:

A = Agriculturalist; AE = Agricultural Economist; AgEco = Agricultural Ecologist;
 AgS = Agricultural Services/Extension Specialist; ARS = Agricultural Research Specialist,
 IMS = Infrastructure Management Specialist; PA = Principal Agriculturalist; RD = Research
 Development Specialist; RDS = Rural Development Specialist; L = Lawyer; AR = Architect.

Key to types of problems: F = Financial; NI = None Identified; P = Procurement.

Other Project Data

Borrower/Executing Agency: Government of Burkina Faso

FOLLOW-ON OPERATIONS

<i>Operation</i>	<i>Credit no.</i>	<i>Amount (US\$ million)</i>	<i>Board date</i>
Ag. Services I	Cr. 1979	42.0	01/17/89
Agric. Sector Adjustment Loan	Cr. 2381	28.0	06/09/92
Food Security	Cr. 2414	7.5	07/09/92
Ag. Services II	Cr. 2974	41.3	07/01/97
Private Irrigation	Cr. 3161	5.2	01/12/99

AGRICULTURAL SERVICES SUPPORT PROJECT (CREDIT 1979-BUR)

Key Project Data (amounts in US\$ million)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	44.9	46.6	103.7
Loan amount	42.0	43.5	103.6
Cofinancing	--	--	--
Cancellation	--	0.3	--

Estimated and Actual Disbursements (in US\$M)

	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Appraisal estimate	0.0	1.0	5.0	12.0	20.0	27.0	33.0	38.0	41.0	42.0	42.0
Formally revised	0.0	4.5	5.5	10.4	16.3	20.9	27.3	31.5	37.9	40.4	42.0
Actual	0.0	4.5	5.5	10.4	16.3	20.9	27.3	31.5	37.0	42.2	43.5
Actual as % of formally revised	100.0	452.0	100.0	100.0	100.0	100.0	100.0	100.0	97.6	104.5	103.6

Date of final disbursement: June 11, 1998

Project Dates

	Original	Actual
Identification (Executive Project Summary)	na	03/11/87
Preparation	na	03-10/87
Appraisal	na	11/87
Negotiations	na	11/88
Board Approval	na	01/17/89
Signing	na	01/28/89
Effectiveness	04/28/89	05/26/89
Mid-term Review	na	03/22/92
Credit Closing	12/31/94	12/31/97
Project Completion	n.a.	03/98

Staff Inputs (staff weeks/US\$)

Stage of Project Cycle	Actual SWs	Actual US\$
Preparation to Appraisal	56	101,668
Appraisal	74	131,659
Negotiations through Board Approval	26	52,887
Supervision	354	544,270
Completion	10	25,000
Total	520	855,484

Mission Data

	<i>Date</i>	<i>No. of persons</i>	<i>Specialization Skills</i>	<i>Performance Rating: Implement. Status*</i>	<i>Performance Rating: Develop. Objective*</i>
Through Appraisal	n.a.	n.a.	n.a.	n.a.	n.a.
Appraisal through Board approval	n.a.	n.a.	n.a.	n.a.	n.a.
Supervision 1	1989	2	Agriculturist	2	1
Supervision 2	01/90	2	Agriculturist	2	1
Supervision 3	03/90	2	Agriculturist	2	1
Supervision 4	06/90	2	Ag. Extension	2	1
Supervision 5	03/91	2	Agriculturist	2	1
Supervision 6	04/92	6	Agric/Finances	2	1
Supervision 7	09/92	2	Agriculturist	2	1
Supervision 8	02/93	2	Agric/Economist	2	1
Supervision 9	12/93	3	Agric/Finances	2	1
Supervision 10	08/94	3	Agriculturist	2	1
Supervision 11	03/95	3	Ag. Extension	2	1
Supervision 12	10/95	2	Extension/Finance	2	1
Supervision 13	01/96	2	Extension	2	1
Supervision 14	06/96	4	Ag/Extension/Finance	2	1
Supervision 15	09/96	3	Agric/Finance	2	1
Supervision 16	02/97	3	Ag/Economist/Finance	2	1
Supervision 17	12/97	4	Agric/Finance	2	1
Completion	02/98	2	Agric/Finance	2	1

*Performance ratings: 1 = highly satisfactory; 2 = satisfactory.

Other Project Data

Borrower/Executing Agency: Government of Burkina Faso

<i>FOLLOW-ON OPERATIONS</i>			
<i>Operation</i>	<i>Credit no.</i>	<i>Amount (US\$ million)</i>	<i>Board date</i>
Agric. Sector Adjustment Loan	Cr. 2381	28.0	06/09/92
Ag. Services II	Cr. 2974	41.3	07/01/97

Comments from the Government

Translation

MINISTRY OF SECONDARY AND HIGHER
EDUCATION AND SCIENTIFIC RESEARCH

BURKINA FASO

GENERAL SECRETARIAT

Ouagadougou

Ref. No. _____/MESSRS/SG/CNRST/DG

Mr. Gregory Ingram
Chief, Sector and Thematic Evaluations Group
Operations Evaluation Department
c/o World Bank Resident Mission in Burkina Faso
Ougadougou

Dear Mr. Ingram:

I am very pleased to have had the opportunity to read the Performance Audit Report for the Agricultural Research Project , covered by Credit 1896-BUR.

It is gratifying that this report reached the same conclusions as those contained in the Implementation Completion Report. In particular, I am pleased to note that both the Bank and the Borrower have indicated their satisfaction with the project's performance.

Nevertheless, I wish to transmit herewith a number of comments on the report.

Sincerely yours,

Prof. Lava Sawadogo
General Secretary

On behalf of the Minister

Annex A

MINISTRY OF SECONDARY AND HIGHER
EDUCATION AND SCIENTIFIC RESEARCH

BURKINA FASO

NATIONAL CENTER FOR SCIENTIFIC AND
TECHNOLOGICAL RESEARCH

**COMMENTS ON THE PERFORMANCE AUDIT REPORT
FOR THE AGRICULTURAL RESEARCH PROJECT**

Page 4

2.3 The paragraph states that initially the Project was designed to be organized from the top down, with limited consultation between the parties involved. The report maintains that this approach allowed for few new or long-term elements and that the Project did not draw sufficiently on the experience of other organizations working in Burkina Faso.

This analysis needs to be better balanced, inasmuch as the Planning Committee in place at the time did in fact conduct an inventory of existing research and extension activities before the priority themes were recommended. Representatives of international institutes and centers for advanced studies – including ICRISAT, IITA, and CIRAD – were actively involved in determining the priority themes.

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3.5 It is not entirely accurate to state that the promotion and incentive structure in INERA and IRBET created difficult institutional problems. The evaluation of researchers never posed any institutional problems in the CAMES system. While acknowledging the system's relevance to the national system (COSCINA), the researchers complained that they had to work under more draconian conditions.

We consider it incorrect to state that it took six years of repeated pressure from the Bank for CAMES to agree to review the criteria for evaluating researchers. The subject has always been a topic of discussion within CAMES, and researchers from Burkina Faso led the debate.

Annex A

3.6 We find it strange that the report states that a respected French soil scientist (Bank consultant) initiated the evolution of the INERA Farming Systems programs.

This assertion ignores all the efforts by national researchers who participated both in teams from international institutes working in Burkina Faso and in INERA programs following the restructuring of the national research system.

The idea of combining research on production methods with research on soil/water/plant interactions was recommended by evaluation teams from both programs. It is not fair to attribute the idea to a single scientist, i.e., the Bank consultant.

Page 11

4.1 The report states that six new cultivars of rice and of cowpeas and five of maize were introduced during the project. However, these cultivars were not merely introduced; the cultivars were developed or adapted by national scientists.

4.4 The report makes reference to INERA's minimal contribution in the semiarid regions. This is more a matter of lack of information. The research conducted in the Yatenga on water-saving techniques and the multi-year, multi-site experiments carried out under the food crop fertilizer project clearly illustrate the degree of importance assigned to semiarid regions.

Moreover, low-cost, low-risk technologies do not necessarily result in low yields. In the regions in question, the approach taken by INERA is, on the contrary, a well-reasoned one. Indeed, the limitations of the production-focused ("*productiviste*") approach have been amply demonstrated.

However, we would agree with the Bank that human resource capacity issues made it impossible to conduct more detailed analyses.

Page 13

5.1 The assertion that inadequate attention was paid in the project design and execution phases to results achieved on farms, in semiarid regions in particular, and to the lessons drawn from international experience, is open to question.

Page 17

6.4 The report states that thus far INERA has missed the opportunity to do more for semiarid agriculture. We believe that the audit mission was not sufficiently familiar with the GRN/SP programs in the Sahel and the northwest. Thanks to the new Strategic Plan

Annex A

for Agricultural Research, these programs are moving ahead with activities launched under the first phase of the Agricultural Research Project.

**COMMENTS ON THE PERFORMANCE AUDIT REPORT (May 18, 1999)
CONCERNING THE AGRICULTURAL SUPPORT SERVICES PROJECT
(Credit 1979-BUR)**

The Performance Audit Report for the Agricultural Support Services Project (Credit 1979-BUR) was received and examined by the Ministry responsible for supervising that project.

The following are the main comments emerging from the discussions:

Comments on the content of the report

- Page 2, Agricultural Extension, para 1.9: The report makes no reference to the pilot “Training and Visit” experiments that the World Bank carried out and financed in Burkina Faso; specifically, in the following five agricultural regions: Center-West, Boucle du Mouhoun, Hauts-Bassins, Southwest, and Center-East.
- Page 5, para. 2.6: [TN: Page 4 of the English-language version; this page was omitted from the copy of the report provided as background.] *Concerning the rigidity of the system.* This view should be qualified. The source of the problem was less the inadequacy of the training provided for grassroots workers (*agents de base*) in order to prepare them for their tasks as extension agents (*agents de vulgarisation*), than a lack of flexibility in the T & V programs. In addition, the training programs were the outcome of a dialogue that has constantly been maintained between the extension services and the farmers, even if it cannot be said that such consultations amount to an exhaustive joint diagnostic study of the issues.
- Page 6, para. 2.10: [TN: Page 5 of the English-language version.] It must be noted that 12 women were hired at senior level as part of the implementation of the national action plan for providing access for women to agricultural services.
- Page 9, para. 3.7, next-to-last sentence: [TN: Page 7 of the English-language version.] This is a consequence of the socioeconomic context, because the farmers cannot always afford the inputs and other materials necessary for developing their land. As regards stock raising, it would be very simplistic to try to explain the performance of livestock technology in the two projects on the basis of “...*the desire of the livestock (veterinary) service to remain distinct from agricultural extension...*” Under the Agricultural Support Services Project, there was increased involvement of livestock agents in extension work. One of the explanations for the poor performance was that the extension tools were inappropriate for livestock operations.
- Page 10, para. 3.11: [TN: Page 7 of the English-language version.] There are certainly some shortcomings in the quality of construction, but this should not be regarded as a major problem. There is enough domestic expertise to provide for quality control over construction.
- Page 12, para. 4.8: [TN: Page 9 of the English-language version.] Since the research and extension services were not revenue-generating, they could not fund on-farm research or research in the PAPEMs.

Annex A**OVERALL CONCLUSIONS**

The Agricultural Support Services Project was designed and implemented in the wake of the OTRVA (*Opération Test de Renforcement de la Vulgarisation Agricole*: "Test Operation for Strengthening Agricultural Extension"), the purpose being to organize extension activities. Consequently, the Project itself did not include any output-oriented objectives, but was intended instead to support the Ministry of Agriculture and Livestock Resources in achieving production objectives.

When assessing the outcomes of projects, and particularly those relating to extension, other factors affecting returns should be taken into account. For example, fertilizers, agricultural equipment, agricultural credit, rainfall, and other meteorological imponderables are factors essential to guaranteeing optimum output.