

Chapter 5

A Decade of Lessons:  
**Policies and Choices**

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### IN BRIEF . . .

Overall, efforts to develop technologies for the Sahel have been disappointing. This is in large part because the environment and socioeconomic systems of the region are inadequately understood. Guidelines for future technology development, however, can be drawn from these disappointments. For the future, technology development must include a focus on solutions appropriate to the Sahel; increased farmer and herder input; a creative combination of indigenous and external research, technology, and management systems; more localized research strategies tailored to ecological and socioeconomic diversity in the Sahel; and special attention to the low-resource farmers and herders who comprise the majority of Sahelian agriculturalists. In general it must be realized that technology development, adaptation, and transfer will be slower and more complex than had been assumed. AID and other participants in the Club/CILSS framework are beginning to incorporate these lessons into their planning and activities.

Technology development, however, is only one part of development assistance. The past decade has also taught many lessons related to the importance of how assistance is designed and implemented, and how the policies of donors and recipients affect the outcome of development efforts. Chapter 5 examines characteristics that have contributed to the poor results of the past and opportunities for future efforts. Highlights of the chapter include:

- Four general institutional problems contributed to the poor results in the Sahel: the lack of effective participation by the intended recipients of the assistance; the inadequacy of a short-term, product-oriented approach; the complexity of project design; and the inappropriateness of much of the research conducted.
- Misguided Sahelian and donor policies are a further factor in the poor performance in the Sahel. Cereal pricing policies, artificial exchange rates, poor debt management, low investment in food crops, indiscriminate food aid, and a range of measures discouraging initiative have proven to be disincentives to increased food production and effective distribution. If agricultural strategies are to be effective, the broad economic policy environment in both Sahelian and donor countries must be consistent with development goals.
- Beyond technologies, modes of assistance, and policies, the multinational effort in the Sahel has suffered from a lack of clarity and agreement on the definition of food security goals and the optimal means to obtain them. Many fundamental issues, such as the balance between investment in rainfed or irrigated agriculture, have yet to be resolved.

## MODES OF DEVELOPMENT AND DEVELOPMENT ASSISTANCE

Our policy is that the point of aid is to eliminate aid,

-Thomas Sankara, President of Burkina Faso (90)

The experiences of the past 10 years have taught the importance of how technologies are combined and then applied in programs and projects. The methods used in designing and implementing development activities are as diverse as the participants involved. Within that diversity, however, several characteristics of the institutional actors have contributed to the poor results of the past decade. Four problems stand out: the lack of effective participation by those to whom projects were directed; the short-term, product-oriented project approach of most efforts; the complexity of project design; and inappropriate research.

### Participation: Leaving Out the Ones That Count

As happened elsewhere in Africa, development strategies in the Sahel were built on the assumption that technologies to increase small-scale farmer and herder productivity would come from outside those production systems. African governments and international donors alike saw traditional farmers and herders as inherently conservative, even backwards. They viewed traditional cultures as obstacles and their technologies as inefficient (67,103). But planners failed to appreciate the advantages of traditional systems and the systems introduced from Western conditions have caused problems (58). In retrospect, many experts view the lack of effective farmer/herder participation in all phases of project design as a significant factor in poor project results.

The lack of recipient input explains the inappropriateness of many technical approaches promoted in Africa (10,103). Who but farmers themselves could best have explained the rationality of their decisionmaking, their cultural value systems, village and farm level economies, and the diversity of patterns of social organization? Even where such input was sought, perceptual biases shared by most "ex-



Photo credit: George Scharffenberger

Local farmers and herders are experts whose knowledge often has not been tapped, and development assistance has been less effective as a result.

perts," foreign and African, often hid or distorted the realities of the poor (19). The traditional knowledge of farmers and herders regarding such things as natural forest systems, effective plant associations, and pasture characteristics was a valuable resource that was left largely untapped.

But development observers believe that the lack of effective participation has had a more fundamental negative impact beyond the lost opportunity for more accurate information. Experience in the Sahel and elsewhere points to the conclusion that the extent to which farmers and herders are involved in technology selection and development and the conceptualization, design, implementation, monitoring, and evaluation of projects greatly influences the likelihood of success (67,116). The failure to include Sahelians was a failure to build on their motivation, energy, creativity, demonstrated entrepreneurial skills, and proven resilience.

The disappointing results of the past can only be reversed if farmers and herders are given a more central and responsible role in project decisionmaking. The top-down, implicitly paternalistic underpinnings of many development

efforts in the Sahel need to be replaced with less hierarchical, more service-oriented structures and partnerships, According to an official of Burkina Faso's agricultural research institution: the farmers themselves should define the problems and suggest solutions. There is too much condescension, What is needed is to build a partnership between donors, national institutions, and farmers.

Creative methods need to be developed to improve the two-way flow of information between farmers and herders and development agencies (both Sahelian and donor) as well as means to implement what have been up until now largely rhetorical calls for increased farmer participation and responsibility. The community development approach of the 1960s and 1970s was both ineffective and ineffectively applied. Redefinitions of the role of the extension agent, increased farmer input in determining research objectives, and alternative participatory research methods integrating farmers as participants are all required (57).

Beyond information flows, the question of increasing farmer and herder responsibility in development projects is even more crucial and unquestionably more difficult, Logic and experience demonstrate that only when farmers and herders see their own interest in and feel "ownership" of projects can they be successful. This is especially the case in the realm of environmental protection where the divergence between perceived private interest on the part of farmers and herders and public good in the eyes of government or donor officials is great. Because rigid enforcement of conservation rules is impractical on economic grounds, the only means to reconcile the two is to change perceptions and support appropriate solutions through participatory approaches,

Achieving effective participation is highly problematic. Divergence between rural interests and those of urban classes; economic and social differentiation between rural households and within households; and conflicting interests between farmers and herders, different ethnic groups and different clans all complicate the task of organizing participatory develop-

ment models. And while many see the potential in better organized farmer and herder groups as effective partners for development (58), the political implications of better organized, more vocal farmer groups raise questions about whether the governments of most Sahelian States would be likely to accept such a change. Despite these challenges, a shift in responsibility is essential. As a Club/CILSS strategy paper observed:

Producers should cease being dependent, assisted persons and take their future fully into their own hands; by contrast, the development organizations should progressively limit their role to provide groupings with the assistance and services they require, while granting them more decisionmaking power (28).

#### Short-Term, Product-Oriented Project Approaches

Most donor-assisted efforts in the Sahel (other than those of the French) have been organized into discrete, short-term (2- to 5-year) projects. \* Objectives are commonly set (and reinforced through monitoring and evaluation) in terms of quantifiable results—in theory to indicate progress toward less tangible goals. A number of factors have converged to favor this type of programming including various institutional and political pressures (Sahelian and donor) for rapid, quantifiable results; the original emphasis on technology transfer for which this mode of assistance seemed appropriate; donors' desire to control use of their resources; and a desire for flexibility in the event that progress was unsatisfactory.

The nature of the development challenge in the Sahel is such that the goals and many objectives of the Sahel effort can only be achieved on the basis of a sustained, cumulative, long-term effort. Contrary to early assumptions, the Sahel effort has required more extensive adaptation and development of new technologies than originally assumed. It takes an average of

<sup>1</sup>Clubdu Sahel estimates put the percentage of total aid to the Sahel in nonproject assistance (e. g., technical assistance, research, scholarships, food aid, balance of payments, and budget support) at 34.1 percent from 1975 to 1983 (25).

10 years of continuous work to produce a new crop variety and another 5 to 10 years to gain its widespread adoption—a process poorly served by short-term project aid (45). While in practice many research and extension projects have been renewed or followed by similar efforts, there have often been significant delays and continuity has suffered. Other major effects of the short-term project approach include:

- ***Insufficient Data Collection/Analysis:*** Developing an understanding of year-to-year variations in rainfall and the seasonal nature of production systems requires extended periods of observation. Time constraints mean that insufficient field data are collected prior to final design,
- ***Lack of Systems Approach:*** Short timeframes and required quantifiable outputs encourage simplified models of farming systems that focus on the individual sectors rather than the relationships between them. In the field, this limits flexibility.
- ***Lack of Focus on Institutional Development:*** Short-term projects and evaluation based on quantifiable indicators encourage foreign technical assistance to take control and favor physical outputs over capacity-building goals. Rather than working through existing institutions, the tendency has been to add new organizational structures that are rarely sustainable following project completion.
- ***Inefficient Use of Training:*** Training components of many short-term projects have had key African technicians or managers leave as expatriate project personnel arrive, then return to take over later with little hands-on experience or support.
- ***Bias Against Sustainable Technologies:*** Short-term objectives and evaluation criteria bias technology choices toward quick production without consideration for long-term environmental or institutional sustainability.
- ***Increased Coordination Difficulties:*** The discrete project approach amplifies coordination difficulties and has tied up key Sahelian management and technical staff in responding to multiple and often overlap-

ping or inconsistent donor administrative and program demands (85,134).

The past decade has confirmed that it will not be easy to achieve Club/CILSS goals. “Technology transfer” has become technology development, much of it dependent on first building the basic knowledge base. Participatory approaches to development take time to organize and implement. The poverty of the majority of farmers and herders and their attitudes toward risk and innovation indicate the need for slow, gradual intensification of production systems. Efforts such as river basin development, because of cost and complexity, are inherently long-term. Sahel specialists agree that these long-term needs require programs and projects with a corresponding perspective. They feel that current project length and the various biases toward short-term, product-related results need to be changed to longer, more flexible programs with objectives related to broader, long-range impact and systems-based strategies. The long timeframe has implications for project financing as well. For example, longer payback periods will require increased grant or concessional elements of financing.

A related error in many Sahel project designs was to overestimate the capacity of Sahelian institutions. Shortages of managerial and technical skills, planning experience, financial control systems, and the ability to absorb recurrent costs translated into the inability of Sahelian institutions to either fulfill their roles within development activities or to sustain those efforts after a project’s end. In many instances, Sahelian roles in donor-sponsored projects involved the delivery of crucial component technologies and inputs such as extension advice, credit, mechanization services, fuel and maintenance for irrigation pumps, veterinary services, seeds, fertilizer, and crop protection services. The lack of effective delivery systems was among the principle reasons for poor performance of agriculture-related development activities. In many instances, assistance actually made weak institutions even less effective. The massive influx of aid and the de-

mands of multiple projects often overwhelmed the capacity of already weak administrative and technical services (4,127,134).

After reflecting on the lessons of the past, many experts consider the commitment to long-term development in the Sahel as a commitment to institution-building, i.e., to increasing the capacity of Sahelian institutions (formal, nonformal, governmental, nongovernmental, regional, national, and community) to take on the tasks of agricultural and rural development. Indeed, some consider the lack of more improvement in institutional capacity as the greatest failure of efforts in the Sahel (57). But institutional development is complex and poorly understood, particularly in the context of informal institutions at the village level. Institutional development requires learning through experience, and this requires both opportunity and time. It is poorly served by rigid or standardized formulas, short-term projects, disjointed project-specific training courses, or technical assistants who take over while Sahelians watch from behind.

Several Sahel development authorities point to the long-term institutional relationships between American universities and research institutions in India as being major factors in developing the capacities of Indian institutions to play the key role they did in the Green Revolution in that country. Though similar efforts were tried in Nigeria in the 1960s and are currently being introduced in Cameroon, they have not been a part of the Sahel effort. The language barrier places a major practical constraint on non-francophone donors such as the United States.

AID's support for the Central Veterinary Laboratory (CVL) in Mali is, however, an example of success in institution-building. Although AID support is continuing, the CVL's vaccine production service is now largely self-sustaining. It has taken over 12 years of ongoing support but is an example of the slow but sustainable progress that is possible with such a commitment. The lesson for the future is that institution-building—the long slow process of building capacity—must be a significant element of



Photo credit: U.S. Agency for International Development

AID's support for the Central Veterinary Laboratory in Mali has been long-term and it is now paying off because the laboratory is self-sustaining in vaccine production

all development strategies if Club/CILSS goals are to be realized.

### Complexity of Project Design

The problems of the short-term, discrete project approach are amplified when project designs are overly complex. First generation Sahel agricultural programs attempted to develop and disseminate combinations of interdependent technologies delivered to the farmer as "packages." But the package approach proved to be disappointing in the Sahel for several reasons: often some elements of the package were less well researched or even unavailable, the total level of resource investment (usually capital and labor) was only appropriate for the wealthier farmers, and the standardization of packages was poorly suited to the diversity of ecological and socioeconomic contexts (93,126). Projects tended to be "over-designed" in the guise of rigor. Assumptions, goals, and objectives were overly optimistic. Many designs were overly detailed and inflexible, which required unjustified levels of intervention in local systems and gave little al-

lowance for farmer initiative or change. Consequently, the proportion spent on technical assistance in total project costs has been excessively high. Often the result was expensive, top heavy, and difficult to administer projects predestined not to meet objectives. An AID livestock project is typical: \$13 million of \$17.5 million is devoted to foreign technical assistance.

The problems associated with the complexity of project design were multiplied in the so-called integrated rural development (IRD) projects that became popular in the mid-1970s. Promoted by the World Bank, IRDs attempted to address a broad spectrum of farmer needs more or less simultaneously: food and cash crop production, animal husbandry, forestry, health, education, water supply, community development, and others. Theoretically, it was an advance to recognize the diversity of concerns facing farmers, but the integration of the various components was never achieved. Inadequate analysis of socioeconomic data; narrow disciplinary perspectives of scientists working on the projects; and the fact that the responsibility for different components fell on different, often competing government agencies, combined to turn most IRDs into administrative nightmares. They became rural development smorgasbords, as an uncoordinated succession of extension agents, community development workers, and technicians vied for farmers' attention and scarce resources. Other donors, too, lacked clear and specific strategies and became overextended into multiple program, sector, and geographic areas (128).

The Sahel Development Planning Team summarized the results of development assistance projects in the Sahel this way:

... projects tended to result in an enlarged government superstructure; to require more skilled management staff than most countries had to offer; to foster myopic views of "progress" at the top (so many plows, so many bags of fertilizer delivered) and confusion at the farmer level (were debts to be repaid or not?); and to generally box agricultural development into a series of discrete efforts with artificial, often overly optimistic, timeframes, inhibiting rather

than promoting increasingly productive use of farmers' resources (126).

The challenge identified by past experience is thus to move to new modes of assistance more consistent with the nature of the Sahel and the long-range goals of food security, environmental stabilization, and economic growth. Alternatives that focus on broader goals and objectives for different economic sectors, in which several donors participate, are one option. An example is the current cooperation on policy reform. Other forms of longer term program assistance (e.g., budget support, food aid, long-term technical assistance, etc.) are also options to explore. Projects will continue to have an important role, but they should be based on effective Sahelian participation at all stages. They should be longer term, more flexible, and focused on increasing capacity and sustainability as well as production. In addition, they should make realistic demands of the managerial and resource capabilities of both Sahelians and donors.

### Making Research More Appropriate

Given the importance of research in the Sahel effort, it is important to determine how it should be organized to be more effective and how it can best integrate the lessons of the past decade. Many of those lessons have already changed some research goals to bring them more into line with Sahelian ecological, social, and economic realities. But other questions remain. How much research is justified? What are the research priorities? How do current research methods need to be modified? How should research be organized among the numerous institutions involved?

### How Much Research Is Justified and What Are the Priorities?

In general, the objective of research and development is to accelerate the rate at which scientific knowledge is transformed into site-specific technology thereby improving the tested menu of alternative technologies available to farm families (49).



*Photo credit: World Bank*

What kinds of agricultural research are most promising? Many authorities now seek to improve reliable local practices, such as these sorghum silos in Burkina Faso.

A major conclusion drawn from examining the experiences of the past decade is that the scientific knowledge base about the Sahel, its ecology, and its natural and human systems is inadequate. But financial resources for all development activities are likely to be limited for the foreseeable future, so it is crucial to decide how much fundamental research is needed and how much research should be devoted to applying the research results already available. Some experts believe that substantial technological breakthroughs are not possible for Sahelian agriculture and that resources would be better invested in the application of the few improved technologies that already exist. But many agree that the existing research findings, particularly in the social sciences, have not been adequately integrated into development programming and design. Most feel that a greater emphasis on research—both basic and applied—is essential.

Before research priorities can be set, overall development strategies have to be more clearly determined. Critical research areas include: im-

proved low-resource varieties and agronomic practices for millet and sorghum, water and soil management, agroforestry, food processing, animal nutrition, inland and coastal fisheries, and small-scale irrigation systems. The failures of the past indicate the need for more extensive social science research generally but particularly in participatory methods, farming systems, population dynamics, marketing, and extension techniques. And importantly, there is great need for a better integration of the social and physical sciences.

#### How Should Methods Be Modified?

The absence of effective farmer and herder participation in agricultural research is both a cause of failure and a missed opportunity. But moving beyond that general agreement to concrete methods for increasing farmers' roles in research is much more controversial. Defining research objectives, refining hypotheses on which research is based, suggesting possible solutions, and testing and adapting results are all areas for increased farmer and herder in-

put. Many experts feel that the focus of research must shift from the research station to the farm—a view for conducting research that is called the farming systems research (FSR) perspective. In addition to farmer participation, FSR has the benefit of including the “whole range of bio-technical and socioeconomic research and analyses which place at the center of the analysis, factors affecting the welfare of the farm family” (49). But FSR and participation are not necessarily synonymous. French researchers have used on-farm methods for decades in the Sahel but their success has been as limited as more traditional research approaches. Critics claim that such methods are not necessarily examples of participation, but can be examples of using farmers as research tools (19).

In the American version of FSR, farmers in theory have more flexibility and control but the actual implementation has been inconsistent. The interdisciplinary basis of FSR has also proven difficult to achieve in practice by scientists often unable to escape their individual disciplinary perspectives, FSR is slow and labor-intensive and therefore costly. When used as one component of a short-term project which seeks quantifiable results, the temptation too often has been to take control from the farmer. While more adapted to the diversity of Sahelian environmental and socioeconomic systems, findings tend to be location-specific. Though intellectually appealing, some question whether such a level of disaggregation in research is justified on economic grounds. In theory, FSR is designed to bridge the gap between research and the farmer—as a support to the role that under traditional agricultural development models is assigned to extension agents. The weakness of extension services in the Sahel and the tendency of many externally financed and managed FSR programs to be poorly integrated with national research efforts have resulted in FSR often falling between research and extension rather than bringing the two together,

Farmers in theory have input into the definition of research goals through the extension service, Extension services should be the link between farmers and research, But extension

services in the Sahel have been ineffective in this regard because of limited training, support, and supervision. Where extension has been used and supported, as in several of the cotton projects, success in bringing farmers and researchers together has been much greater (84). The much more challenging task of tapping into and supporting farmers’ own research, seen by many as an important facet of research, has yet to be adequately attempted in the Sahel.

#### How Should Research Tasks Be Divided Among the Many Research Organizations Active in the Sahel?

A multitude of actors are involved in research and agricultural training in the Sahel, and coordination is a problem (40). At least four International Agricultural Research Centers of the international agriculture research system are working in the Sahel (IITA, ICRISAT, ILCA and WA RDA).<sup>2</sup> Regional projects sponsored under various auspices (e. g., Organization of African Unity, CILSS) in topics such as integrated pest management, climatology, and food grain research and development are also underway, along with research efforts by individual Sahelian States. The French operate a branch of their own research network in the Sahel. Research in many donor-sponsored projects is conducted fairly autonomously from Sahelians. Important questions arise: Is the division of responsibilities between different levels of research and extension clear and is it optimal? How best can these efforts be coordinated?

A wise way to identify priority research needs is to work directly with farmers and herders. In most cases, this occurs through extension agents. Priorities are passed on to national researchers who, if they do not have the facilities to respond, in turn pass them on to the international centers, The international centers perform primary research, the results of which go back to national researchers for field testing and further adaptive research before being

<sup>2</sup>IITA is the International Institute for Tropical Agriculture. ICRISAT is the International Crops Research Institute for the Semi Arid Tropics. ILCA is the International Livestock Centre for Africa, WARDA is the West African Rice Development Association.

brought out by the extension agent to the farmer,

There is general agreement that, apart from the extension services, the national level research institutions are the weakest link in the chain. Some experts feel that greater in-country efforts by the international centers and regional groups are required at the country level to overcome this weakness. Others argue that resources should be devoted to building the capacities of the national institutions themselves because national researchers must be involved in or have the capabilities to perform basic research in order to be effective in adaptive research.

Sahelian and French scientists are generally more critical than U.S. scientists of the International Agricultural Research Center model and argue that investment in the international centers has siphoned resources from national institutions. They propose networking between national programs as an alternative means of building the "critical mass" of research efforts needed to achieve significant results. But the costs of building research capacity at the na-

tional level is high and many countries lack adequate management ability. Thus AID has based its strategy to support African agricultural research on building capacity in a limited number of institutions, each serving an ecological region. For the Sahel, AID has selected Senegal as the country whose research institutions would receive aid, assuming that its results will be adapted for other Sahelian States (122). Each of these approaches has validity.

The critic, 1 research needs for the Sahel and the resource constraints that research faces call for coordination among the various parties as they work to create models for research. The reality of each Sahelian State desiring its own research capacity, the long-term desirability of building local capacity, and the diversity of ecological conditions among and within countries are factors that argue against the practicality and effectiveness of focusing efforts in just one country or bypassing national institutions in favor of efforts by international research centers or independent research by donors.

## **POLICY DISINCENTIVES AND THE POTENTIAL FOR REFORM**

More appropriate technologies and better development methods are essential if future efforts in the Sahel are to be more effective than those in the past. But these alone will not be sufficient. According to the 1983 AID assessment of its Sahel program:

Overshadowing all good intentions were (and are) central government policies and philosophies which inhibit individual initiative, are disincentives to production, misallocate resources, improperly train, subsidize, urbanize, discourage trade, overregulate and misdirect development. . . . The effect was and is an environment which compromises and makes more difficult and expensive successful completion of critical primary sector development projects (128).

Most of the policies that reduced the effects of agricultural development efforts were manifestations of the centralized orientation of the

newly independent Sahelian States and the implicit urban bias of their government policies. They were built on highly centralized administrative and economic structures that were inherited at independence and were supported not only by the more politically vocal segments of society but, at least in the 1960s and 1970s, by much of the donor technical assistance the Sahel nations received.

### **Agriculture's Low Priority**

Following the then-popular theories of economic development, agriculture in the Sahel was viewed by the new governments (and their foreign advisors] as a source of support for industrialization and growth. Government monopolies controlled the purchase of export crops from farmers at prices often considerably below the world market price. The price

difference was used to provide the State with financial surpluses in hard currency. The so-called "stabilization" funds thus generated were de *facto* taxes on the agricultural sector used to finance government operations in industrialization and infrastructure development, or to subsidize prices for imported cereals consumed by the urban population. The proportion of government operating and investment budgets going into agriculture has been consistently below agriculture's 34.6 percent average share in gross national product (22). And within agriculture, a much higher proportion of support has gone into research, extension, inputs, and marketing for export and import substitution crops than to food crops.

African leaders have realized this inadequate public investment in agriculture as a major policy failure and have set a target of 20 to 25 percent of total public investment by 1989 (91,92). Among donors, agriculture's priority has also been low despite strategy statements to the contrary. Between 1975 and 1983, direct donor assistance to rainfed agriculture in the Sahel represented only 9.3 percent of the total (only half of which was for food crops) with an additional 7.6 percent going to irrigated agriculture and 6.9 percent to river basin development. Yet 22 percent of donor support went to food aid and balance of payments support. The value of the food aid provided was more than double the support for rainfed food crop production (25) (see table A-5 in app. A).

The use of government or parastatal agencies to provide inputs to Sahelian agriculture (e.g., credit, fertilizers, extension advice, and irrigation) has been another area where the real needs of the poor farmers and herders are given second priority to other interests. Parastatals' inefficient management and swollen personnel rosters have provided farmers and herders with ineffective support. Parastatals absorb large portions of the government and donor funds invested in agriculture. Farmers are charged for the services of these agencies through lowered commodity prices and direct fees, further reducing their returns and thus their incentive to adopt new methods or to increase production. For example, in one irriga-

tion project in Mali, the ratio of government workers to farm families has at times approached one to one. Farmers sometimes pay up to 20 percent of their rice harvest (e. g., 400 kg of rice per hectare with average yields of 2,000 kg per hectare) for services that some experts describe as "nothing." The remaining rice is sold to the parastatal agency responsible for the project at a fixed price below the market level.

### Cereals Policies

In the often volatile post-independence political climate, the major threat to regimes in power came from the urban population. Thus, the new governments concentrated services such as schools and health care facilities in urban areas. Low income and high unemployment in urban areas also encouraged governments to keep costs of living low to maintain political stability. This has translated into cheap food policies for the cities. Though some attempts were made to use local cereal production for this purpose,<sup>1</sup> throughout the 1960s and 1970s urban food supply was increasingly assured through subsidized imports, artificially high exchange rates, preferred customs treatment, and controlled prices. The low relative price of imports and changing preferences for wheat and rice have shrunk the demand for locally produced cereals.

The importance of improved cereal policies is clear, but the specifics of what those policies should be are less clear. Several nations of the Sahel (e.g., Senegal, Mali, Niger, and The Gambia) are taking steps to remove subsidies for imported cereals and flour, and to increase or do away with fixed prices for locally produced grains. In Burkina Faso and Mali, cereal marketing boards are being reorganized. Whether these measures will ultimately increase demand for local grains is uncertain. High production levels during the 1985 to 1986 season have created low prices in Sahelian grain markets, and

<sup>1</sup> In Mali, forced cereal deliveries were tried while elsewhere there were attempts to fix prices and enforce government purchasing monopolies. The latter had little effect due to the inefficiencies of the purchasing entities and the ingenuity of farmers to avoid them.

Sahelian governments do not have the financial resources to maintain high producer prices. Continued urban preferences for rice and wheat and the volatility of the residual market for millet and sorghum are likely to limit significant increases in demand and thus will continue to limit incentives to farmers.

### Food Aid and Export Subsidies

Other nations' policies also contribute to lower demand for Sahelian cereals. The agricultural policies of major cereal exporters (especially production and export subsidies) (15) and high levels of food aid are factors in lowering demand for domestic cereal production. In the Sahel, food aid has provided as much as 5 percent of aggregate cereal grain supply even in higher rainfall years. In 1985, this rose to 20 percent. The extent to which food aid directly competes with locally produced grain is debated, but indirectly, its long-term presence in local food markets reinforces changing tastes for cereals either not grown (wheat) or inefficiently grown (rice) in the Sahel. Though studies have tried to determine the impact of food aid, their conclusions are ambiguous and there has not been a comprehensive study of food aid effects specifically in the Sahel (63,78,129). The potential for harm, however, indicates a need for careful, Sahel-specific study and particularly for care in determining how much food aid is appropriate and how it should be used.

This problem is difficult to address politically. Commenting on the contradictory effects of food aid on long-term development, the 1983 AID evaluation of its Sahel program observes that:

While most concede that these imports [of food aid] are dangerously distorting to the domestic cereals sector and that they help create dependency, their short-term utility frequently prevails over desired independence (128).

AID has been slow to systematically address the potential disincentive effects of food aid. For example, in belated response to the 1979 Bellmen Amendment to Section 401(b) of Public Law 480, AID has recently provided its field missions with guidelines to assess issues of

price disincentive and availability of storage for food aid (121).

As with other areas of policy reform, a multinational approach to food aid as is currently being attempted under Club du Sahel auspices is probably the most promising effort possible (27). Improved monitoring and more effective early warning systems being organized collectively by donors and Sahelians are required not only to determine urgent need when it does arise but to minimize overreaction and resulting disincentive effects.

While food emergencies must be determined on a local basis, they should be responded to in the context of national or regional strategies. In situations of established need, food aid should be the last recourse. A first step toward mobilizing support of this principle is cautious donor responses to "triangular" food aid, where donors provide cash to purchase surplus food in other portions of the same country, region, or elsewhere in Africa (27). This would provide incentives to African farmers and facilitate the establishment of broader cereal markets in the region. Though major donors have expressed some support for this approach in emergencies, they have much less enthusiastically accepted the use of "triangular" food aid to cope with ongoing structural food shortages.

### Encouraging Effective Marketing and Removing Constraints on Private Initiative

It is necessary to remove marketing constraints if farmers are to take advantage of increased prices. Many Sahelian marketing monopolies for export crops are being dismantled or restructured. Possible improvements in marketing systems to increase local economic activity include: transportation (particularly rural road systems, removal of restrictions on private transporters, and improvement of water-based transport where appropriate); market information systems; development of cooperatives; and storage facilities. Many authorities favor removing subsidies on agricultural inputs such as fertilizer and agricultural machinery

because they see these as inefficient and costly. In several Sahelian countries, such subsidies have been reduced or eliminated but the result has been a sharp decline in input use. Other experts, pointing out the need to reduce farmer risk if sustainable, intensified production changes are to occur, favor the short-term continuation of selective subsidies (16). They feel that subsidies on designated inputs will result in more specific and quicker responses than less focused increases in producer prices.

Various other constraints to private initiative could also be removed. Reduced government controls on cereal marketing could be extrapolated to a broad range of potential private sector activities affecting agriculture and rural development--e.g., agricultural input distribution, credit, transportation, and local processing [1 25]. The spontaneous success of private millet grinding operations illustrates the potential of the small-scale private sector when controls are absent. The extent to which such activities should be "liberalized" or "privatized" and the current capabilities of the private sector to take them over are subject to considerable debate. Yet general agreement exists on the benefits to be gained from lessening restrictions on independent economic operators, be they individuals, formal cooperatives, or less formal producer groups.

#### Land Tenure and Regulation of Access to Natural Resources

Reforms in land tenure and other legal and informal systems determining access to and control of natural resources are policy questions needing better analysis. A major constraint to effective analysis of the impact of land tenure and resource access is the lack of knowledge of the traditional rules and customs that are often more influential in determining use patterns than formal laws. Evidence of rapid changes and of disruption in what may have been the environmental balance in these traditional systems as the result of drought, the growth of the market economy, the introduction of new public domain laws, and increased population pressures underline the urgency of these aspects of policy. Programs to encourage

farmers and herders to invest in upgrading the fertility of their land, to plant trees, or to begin community controlled fuelwood plantations or natural brush regeneration projects are influenced by these questions of future access and ownership. Equitable methods for determining rights to land in irrigation projects, and for compensating those who lose access to land due to the construction of irrigation systems, are particularly crucial as river basin development plans proceed. These are complex problems both technically and politically. They will require different answers for different land uses, and land reform programs should be designed carefully so they do not create new inequities.

#### Fiscal and Institutional Reform and Recurrent Costs

Sahelian governments' support for the agricultural and rural development sectors has been undermined by fiscal crises and institutional weaknesses. Overstaffed civil services, ineffective management, corruption, outdated revenue laws, and inefficient tax collection systems have combined with general economic decline to increase government deficits from 1.4 to 12.6 percent of Gross Domestic Product in 1975 to between 9.6 and 22.0 percent in 1984 (22). Technical assistance to help Sahel governments improve their revenue systems and encourage them to tackle the sensitive task of reducing government staff are essential parts of future donor assistance.

Donor attention to the question of recurrent costs, a further important contribution of the Club/CILSS process, has highlighted the negative impacts of donor assistance on Sahelian fiscal health and has increased sensitivity to the still controversial subject of how much aid can be successfully absorbed by a country, the so-called "absorptive capacity" for aid (4). Since recurrent costs are one important factor affecting absorptive capacity, most donors have responded by agreeing to fund some recurrent costs (125). However, some experts caution that such a practice creates a "delusional system that can never be financed by domestic resources" (45). Recurrent costs should be

financed only if the Sahelian institutions realistically can be expected to take them over in the long term.

#### Limitations of Policy Reform

Policy reform in the Sahel is a necessary but still insufficiently understood precondition necessary to carry out the strategies envisioned under the Club/CILSS framework. While the need for an economy less encumbered by government regulation and monopolies and the need to increase incentives to farmers are generally accepted by most Sahel specialists, the details of what exactly should replace current policies and how those incentives should be structured is controversial. To be effective, they must be based on careful analysis of data rather than abstract theories or ideology. Microeconomic data and analysis of Sahelian production systems and of the linkages between macrolevel policies and microlevel responses are inadequate. Within countries, the impacts of particular policy changes are likely to be different on different groups (6,45). The diversity of economies across the Sahel means that reform programs will have to be carefully tailored to each individual situation. Group interests, often powerful ones, are at stake and the political risks are considerable. The extent to which the private sector can be expected to take over

many of the functions currently being performed by governments and parastatals must be realistically assessed. Where appropriate, private sector development and support activities may be necessary to ensure that such roles are fulfilled effectively,

The lack of more active African participation in the process of policy reform analysis is a missed opportunity to share perspectives on the need for specific reforms and is a constraint to those reforms being ultimately adopted. Reforms determined by external donors and forced on Sahelian governments lead to minimal commitment, yet strong commitment is essential to sustain the reform process in the face of inevitable political resistance,

Policy reform strategies are not panaceas. They are necessary but not sufficient conditions for the type of future envisioned for the Sahel under the Club/CILSS framework. Policy reforms must be carefully integrated with broad strategies. Within broad policy directions, there are many choices to be made that will determine the ultimate impact. It makes little sense to develop strategies for agricultural development calling for significant increases in Sahelian research and extension programs if those programs are to be gutted by budget cutbacks or policy reform,

## BEYOND THE LESSONS: CRITICAL ISSUES TO BE ADDRESSED

While reflection on the lessons learned from the past decades has helped create consensus on what issues and broad directions for the future are most important, there is much less agreement on the relative importance to be given each component, on how the parts relate to each other, and on how those general directions should be translated into specific actions. The early stages of the Club/CILSS effort often gave precedence to the mobilization of resources over the setting of priorities,

Almost a decade into the "contract for a generation, the issues have become clearer. The

reality that resources are limited—environmental, technological, managerial!, and especially financial—means that important choices will have to be made. The choices made today will have implications reaching far into the future. Selecting one option may effectively eliminate others. Proposals for massive river basin development along the Senegal and Gambia Rivers, for instance, involve major environmental and economic choices that could well foreclose the possibility of returning to previous production systems. The remainder of this chapter will be devoted to highlighting a few of these outstanding critical issues,

## The Balance Between Irrigation and Rainfed Agriculture

The priority to be given to the development of irrigation is perhaps the most crucial issue to be resolved as the Club/CILSS program enters its second decade. Though providing far less than requested by Sahelians, donors nonetheless have invested nearly \$1.8 billion in irrigation and river basin development since 1975 (25). But donors must now consider what portion of future investment is appropriate for irrigation and how irrigation investment should be allocated between different irrigation approaches.

The catastrophic drought from 1968 to 1973 sparked calls to develop the Sahel's considerable irrigation potential to "drought proof" the region. Although estimates vary, the irrigation potential of the Sahel is considered to be as high as 2.3 million hectares. Only 75,000 hectares were under controlled irrigation in 1977 (30). With such potential for expansion, Sahelians and many donors felt that increased irrigation was vital to attain food security and possibly create surpluses for export.

Experience with irrigation over the past decade, and particularly with large-scale schemes, has been disappointing (30,125). Costs for bringing new land under irrigation have been high (as much as \$10,000 per hectare) even without counting the costs of the major engineering works that would be required for future expansion. Operating costs have been higher than anticipated, in large part because of inefficient management by parastatal agencies. Productivity of irrigated areas has been highly variable but generally is lower than expected. Water management has been poor, engineering designs sometimes faulty, and maintenance often nonexistent. One study found that for every hectare of new land going into irrigation almost as much land was being withdrawn, mostly due to improper management (30). Original cost-benefit calculations assumed two crops per year, but this has proven difficult to attain. Expansion of irrigation also has created substantial socioeconomic disruption (e.g., concentration of land rights, loss of access to land for

women, loss of water and pasture access for herders, the loss of traditional flood recession farming, and the problems associated with large resettlement schemes) and has given rise to fears of probable negative environmental impacts (e. g., increased water-borne disease; possible destruction of fish, wildlife, and plant communities; salinization and waterlogging of soils) (76).

Given the potentially mushrooming costs and low productivity of irrigation efforts so far, some critics suggest that the considerable resources going into irrigation might be better used to address the constraints of dryland agriculture. Irrigated cereals production received almost three times more donor assistance than rainfed cereals production from 1975 to 1983, even though 95 percent of cereal production comes from dryland farming or traditional irrigation systems (25). Critics point out that, given the nature of the Sahel's major watersheds, even irrigation will be subject to the effects of drought. However, proponents of higher irrigation investment, including most Sahelian governments, still see irrigation as a key element in food security (22). They counter that the limited potential for significant technological advance in dryland agriculture and the ever-present factor of recurrent drought make irrigation the only solution for avoiding continual dependence and cyclical tragedy. They feel that the technological basis for improved performance of irrigation already exists and that the less formidable tasks of improving management of irrigation systems and reducing social and environmental costs can be addressed. Irrigation, they point out, is a slowly maturing investment. The poor performances of the past indicate the need for patience and more determination if Club/CILSS goals are to be met.

The management issues, particularly in choices between different approaches to irrigation, are key elements in the debate over what priority should be given to irrigation. Small-scale irrigation schemes are receiving growing attention as a means of overcoming the limitations of large-scale approaches (83,116). Although still modest in their productivity, small-scale approaches using simple pumps and even

manual water lifting devices are seen by many as cost-effective because the overhead costs of massive engineering works are avoided and management problems are reduced. Others point out, however, that the movement toward small-scale approaches does not in itself solve all the problems of larger schemes and in fact may have problems of its own. Engineering problems exist in scaling down known irrigation technologies while the problems of coordinating water use for a multitude of small users are complex. While most agree that large irrigation schemes have been unsuccessful, many feel that the problem is less one of project scale than management scale. Poorly managed small-scale irrigation projects also have failed.

Over the past decade, many Sahelian farmers adopted a wide variety of simple irrigation systems using wells, recessional and flood plain flooding, and permanent and seasonal swamps. But these traditional African forms of irrigation have been largely ignored by Western donors. For instance, little effort has gone into improving the 250,000 hectares currently under recessional and swamp irrigation (60). Also, the Sahel's considerable yet still insufficiently explored groundwater resources remain largely untapped.

The answers to questions regarding irrigation's priority in overall Sahel strategies cannot at this point be resolved. Experience over the past decade has raised sufficient doubts about the economic, social, and environmental viability of proposed large-scale irrigation and river basin development approaches to indicate the need for considerable caution before proceeding. The comparable costs and probable benefits of alternative irrigation approaches and investment in dryland agriculture are equally uncertain. The promising potential of smaller scale systems requires focused investigation to provide policy makers with much clearer information.

### Food Production and Export Crops

Similar sets of issues and choices surround the development of rain fed agriculture. Of particular importance is the optimal balance be-

tween investment in cereal crops and in export or import-substitution crops. Experts agree that both colonial and immediate post-independence agricultural strategies were biased in favor of export crop production—a bias that most Sahel observers agree has inhibited progress in expanding traditional cereal production. Certainly redressing the imbalance between food and export crops is important, but few experts see it as a simple question of switching totally from one to the other. What should be the optimal mix?

Many authorities argue that a strong role for export crops in agricultural strategies is still justified. Following economic principles of comparative advantage, they theorize that Sahelian countries could have access to more food by developing export crops or other products' in which the Sahel is relatively more productive and then using export receipts to purchase the food needs that are unfilled by local production. They point out that the largest and fastest growing portion of the "food gap" is actually rising demand for wheat and rice and these are grown in small quantities and relatively inefficiently in the Sahel. Expansion of irrigated rice production is particularly' uneconomical given the high costs of production relative to rice's price on the world market,

The fact that agriculturally based exports account for 14 to 83 percent of total foreign exchange earnings in various countries in the Sahel and that food imports are an important part of total imports means that increased export production in the Sahel can help meet food security and also increase total foreign exchange earnings (see table 5-1).

The current debt crisis has turned increased foreign exchange earnings (and the reduction of foreign exchange costs) into a vital part of strategies for short- to medium-term financial survival. Increasing foreign exchange earnings is also required for successful implementation of strategies to improve food production. Important inputs to intensify agricultural production (fuel, fertilizer, equipment, and irrigation

<sup>60</sup>Other possibilities include the expansion of mining, fisheries, livestock production, or tourism.



Photo credit: World Bank

Peanut production shaped the history of the Sahel and remains a major source of exports. Debate regarding the relative balance between food and export crop production focuses on crops such as peanuts.

**Table 5-1.—Agricultural Exports and Imports  
as a Percent of Total, 1983**

|                    | Agricultural exports<br>as a percent of<br>total exports | Agricultural imports<br>as a percent of<br>total imports |
|--------------------|--|--|
| Burkina Faso . . . | 830/0  | 19 <sup>7</sup> /0                                       |
| Cape Verde . . .   | 19   | 29   |
| Chad . . . . .     | 63   | 10   |
| The Gambia . . .   | 54   | 31   |
| Mali . . . . .     | 77   | 25   |
| Mauritania . . . . | 14   | 42   |
| Niger . . . . .    | 21   | 12   |
| Senegal . . . . .  | 29   | 27   |

SOURCE Food and Agriculture Organization, 1985 *Country Tables Basic Data on the Agricultural Sector* (Rome" 1985)

infrastructure, etc. ) presently have to be imported. Balancing its call for greater emphasis on food production, the World Bank's influential work, *Accelerated Development in Sub-Saharan Africa*, encouraged African States to intensify efforts to diversify and increase agricultural production for export (153).

However, strategies with high export crop components should be approached with some caution because of the deterioration in the international market for the principal Sahelian agricultural exports. For example, peanut

prices have been low generally and during the last cropping season the world price for cotton dropped drastically. The potential is limited for major diversification into other more profitable or more reliable export production. While no one argues for complete self-sufficiency, critics of the World Bank prescription argue that export-biased strategies result in continued high dependence on forces beyond the control of each country and therefore high risk (12). The use of straight cost/benefit analysis to determine rates of return does not sufficiently account for the "dependency" factor. While it is true that world cereal supplies, at least for the medium-term, appear to be sufficient to fill the gap between Sahelian food production and consumption and that food aid is likely to remain available, Sahelians believe that too great a reliance on external sources for food reduces their independence and increases vulnerability. The high priority they give to irrigation is largely a product of that perspective. The assertion that demand for millet and sorghum is largely residual due to growing preference for wheat and rice can also be challenged. Improved methods for processing and storing millet and sorghum, and an end to subsidized prices for wheat and rice, could increase demand for local commodities.

The issue of optimizing investment strategies between food crops and exports is further complicated by the fact that in reality the two production systems are often highly linked. Peanuts are both an export and food crop. In most cases, cereal and export crops are grown by the same households and thus are integrated into single management systems. Intercropping of export and food crops is often practiced. Programs to develop one affect the other. In southern Mali, for example, the after-effects of fertilizer use on cotton has significantly raised the yields of the cereal crops grown in rotation with cotton. Throughout the Sahel, farmers involved in successful intensification programs on export crops appear to use better agronomic prac-

tices and have better yields on food crops than those who do not take part in those programs (20). Investment choices between food and export crops must therefore be based on a much more thorough understanding of household production systems as well as more explicit agreement on overall goals.

### Strategies for the Livestock Sector

Efforts to improve the productivity of Sahelian livestock systems over the past decade have been largely unsuccessful (46,58,67,130). As a result, major donors such as the United States and the World Bank are evaluating those experiences. The United States has concluded that there is little that can be done to improve existing pastoral systems (125). Even though it is a priority to Sahelians, AID is limiting new programming in the livestock sector.

How much investment in the livestock sector is justified? The lack of success in past livestock programs and an emerging recognition of higher land-use efficiency in traditional transhumant systems (8) have led many experts to agree with Club du Sahel officials in their statement that: "it is perhaps unreasonable to look for greatly increased production from Sahelian herders" (37). They point to how little is known about current systems, particularly pastoral systems, and their complex social and cultural underpinnings.

But what really is the problem: a lack of knowledge or a lack of application of the knowledge that is already there? In most donor research strategies, livestock have been given low priority (58). Yet livestock is the source of livelihood for up to one-fifth of the Sahelian people, and it contributes 22 percent of Gross Domestic Product (125). Thus the livestock sector cannot be ignored,

Developing livestock strategies can be complex because of the diversity of livestock systems in the Sahel. The problems and opportunities for livestock development among

extensive pastoral systems are very different from those of sedentary animal husbandry systems further south. Development of strategies for the former is hampered by a lack of agreement on the relationship between pastoral livestock production and environmental degradation. While experts agree on the importance of optimizing range management as part of environmental strategies, there is considerable disagreement on the extent of current degradation, its causes, and preferable solutions. Most believe that total herd size is increasing above the present capability of remaining natural pasture to sustain them. Their solutions tend to focus on programs to decrease herd size in the Sahel zone by increasing off-take rates, by encouraging migration to the south, and by integrating livestock into crop production systems (130). They also seek to improve the management of grasslands and water resources through a wide range of activities (e.g., improved forage crops, water management on pasture land, reseeding using natural systems, fencing) but these latter projects have largely failed.

Some authorities focus on traditional grazing rights as a “tragedy of the commons” argument where free access to communal land encourages abuse by the individual herder (97). These claims are countered by those who argue that traditional systems of water and graz-



*Photo credit: World Bank*



*Photo credit: U.S. Agency for International Development*

Livestock, such as goats, sheep, and cattle, are an important feature of Sahelian agriculture but many questions remain regarding effective assistance to herders.

ing rights did in fact control access but the problem is now the disruptions to those systems caused by the spread of cultivation, political interference, and the establishment of semipermanent public-access watering points (67). Although a return to previous management systems is unrealistic, decentralized systems where herders control rangeland and water are seen as the best alternatives (69). Others see improved animal health and marketing possibilities as the best means to increase the productivity and reduce the negative environmental impacts of livestock.

The current confusion over what should be done in the pastoral subsector has convinced many that the greatest potential lies with encouragement of increased mixed farming systems in higher rainfall areas (27,50). Sociocultural factors and animal health and nutrition constraints are key obstacles to expanded and more productive mixed farming. Animal nutrition is particularly problematic given the reduced grazing areas and lower nutritional value of grasses in the higher rainfall areas. These zones are where tsetse fly and other animal health problems are also greatest. Success in projects encouraging mixed farming activities has so far been limited, but increased numbers of cattle are being purchased by farmers. Given the potential benefits to both livestock and crop production (improved forage, animal power, improved soil fertility, etc. ) under the more intensified management systems, proponents feel that such strategies should be the principal focus for future livestock programs.

Other important questions regarding overall livestock sector strategies remain largely unanswered. How much emphasis should be placed on small ruminants versus cattle? How much on meat production versus milk production? These options have implications not only on total production and productivity of the livestock sector but also on who will benefit most. How should livestock development be integrated into a broader strategy of resource management? Several experts feel that governments and donors should reserve the northern sections of the Sahel for extensive pastoral systems (148) while concentrating crop intensifying production activities further south.

The importance of Sahelian livestock systems is undeniable. But the donor programs have so far failed to give it much priority or sufficient resources. A more concerted emphasis on livestock, on the development of specific strategies for the diversity of systems under which animals are produced, and the integration of those strategies into overall food security strategies would appear essential in the pursuit of Club/CILSS objectives.

### Population Programs: The 50 Million People Question

A further critical issue to be addressed in the Sahel is that of population. The demographic realities are sobering. If current rates of increase continue, by the year 2000 the Sahel will have 50 million inhabitants, nearly double what it had in 1973. Growth of this magnitude challenges food production tremendously. In Senegal, for example, it is estimated that development of the nation's entire irrigation potential over the next two decades would do little more than keep up with the food needs that result from national population growth.

Are the high population growth rates a cause of hunger in the Sahel? Although few experts see population growth as a primary cause of the African crisis, high population growth rates do put great pressure on Sahelian countries to expand food production, employment, and income (61). In some areas high growth rates have led to reductions in fallow periods, and increased the cutting of trees and brush for fuelwood, thus contributing to environmental degradation. Growing populations also strain the capacity of governments to provide health, education, and other services. In times of drought, large populations are particularly at risk.

But to a great extent, population growth rates are an outcome and not a cause of the Sahel's social and economic realities. They are the products of low productivity and poverty. Although reduced over the past two decades, child mortality rates in the Sahel remain among the highest in the world. Children provide a high

proportion of agricultural labor. The importance of labor as a constraint in many agricultural production systems and the obligations of children to care for their parents in old age combine to reinforce high fertility patterns. In some urban settings, traditional customs and values that had acted to restrain fertility rates are breaking down as societies face rapid social transformation. High fertility rates are associated with high infant and maternal mortality. They also affect women's well-being and productivity.

Many of the population-related problems in the Sahel are largely problems of high rates of urban population growth—not enough jobs, not enough services, and the growing demand for imported foods. In the medium and long term, however, unless population growth slows or agricultural technologies advance sufficiently, the capability of rural agriculture to feed the people of the Sahel will be exceeded on a much wider scale than today.

Attempts to address the population issue face several constraints. Disagreements exist between the perspectives of donors and Sahelian officials on the nature of the population issue. Many Sahelians believe that the importance of labor in Sahelian agricultural systems makes high population growth essential to increased production, i.e., each new child might represent a new mouth to feed but he or she also represents two hands to work. They feel that the best way to lower population growth rates is to attack poverty. There is evidence, however, that these attitudes are slowly changing. Several Sahelian countries were among those who adopted the Kilimanjaro Program of Action on Population in 1984 which called for ensuring the availability of family planning services to all. Both the Lagos Plan of Action and a recent CILSS/CEA report highlight the constraints of high population growth rates. In The Gambia and Mali, family planning activities have been implemented in urban areas, though with modest results (22), and Burkina Faso is in the process of considering a major population initiative (105).

Still, the Sahel has a long way to go. Modern contraceptive methods are practiced by less

than 1 percent of the population (147). The lack of success so far is largely due to a poor understanding of socioeconomic, cultural, and religious dimensions of the issue. Data on fertility patterns and on reasons for fertility decisions necessary for program development are severely lacking. Education for both men and women is a likely starting point (142). But reaching agreement on what the specific role and priority of population programs should be in overall strategies will require a concerted effort of both Sahelians and donors,

### Production and Equity

Many of the critical issues to be addressed in the Sahel relate to a debate in development theory which contrasts strategies for increased production with those for increased equity. In the 1970s, dissatisfaction with the "trickle down" approach to development, where growth generated by leading industrial sectors was assumed to eventually increase general welfare, resulted in calls for more poverty-centered approaches. The desire for a new focus led to alternatives that called not only for growth but growth with equity. Embodied in the "New Direction" legislation for U.S. foreign assistance and in the World Bank's espousal of the "basic human needs" approach, the focus was on the poorest and least advantaged. Not only was it suggested that equity objectives were not inconsistent with growth but that indeed, a focus on equity might even be an optimal strategy for accelerating growth. Many of the strategic issues currently facing the Sahel come down to choices between options that are related to the debate between growth of production versus reductions in poverty. Should Sahel strategies focus on geographic areas or groups with the greatest potential for higher production? Or should they instead be directed toward the poorest and most vulnerable? And to what extent are the two approaches mutually compatible?

### Geographic Area

What geographic strategy is best—drawing a defensive "Maginot Line" against desertification in the Sahel or abandoning the most se-

verely affected sections of most Sahelian States and focusing on the better rain fed areas (105). The former strategy would focus resources on environmental protection and restoration to halt desertification and work to develop agricultural and livestock technologies for the low rainfall zones. Some experts feel that people in more severely affected areas may be more receptive to innovation because of the urgency of their situation (7).

Others, however, are skeptical. Not only are the technical and logistical challenges in the northern regions likely to be costly and complex, but the pace of environmental change is fast and technologies are not productive enough for farmers to outpace declining productivity (74). The costs of concentrating efforts in the better-watered southern parts of Sahelian countries are considerably lower and the potential for short to medium increases in production are greater.

But what about the large numbers of people in the north? To benefit from new technology, can they or will they move to the south? For those who will not or cannot resettle, what will be their fate? Irrigation offers some potential because many of the better irrigation possibilities are in the north. But there is an equity-related aspect of the irrigation versus rainfed agriculture argument. Even if the maximum area of land were brought under irrigation, it could accommodate only a portion of the total rural population. How will the food security of the rest be covered in years of poor rainfall? And what of equity? Ratios of investment to production over the past decade have been 60 times higher for irrigation than for rainfed agriculture (25). Is such a disparity justified?

#### Should Assistance Be Aimed at Rural Subgroups?

If so, which ones? The past decade has shown the existence of a higher level of socioeconomic differentiation in the Sahel than had been assumed. Some people feel that the successful technologies of the past decade have benefited the better-off groups while having little or possibly negative effects on the poorest segments of rural society. The absolute poverty of most

farmers and herders has meant that even low-cost techniques have been within the means of only a small minority. If the poorest are to be "targeted" it will require a further scaling-down of technology and, in some cases, programs designed specifically for particularly disadvantaged groups.

But does targeting the poorest work? Many experts say no, that the potential for increasing yields among the poorest farmers is very small. Low cost, improved technologies are not available nor likely to be developed. The poorest farmers are already too vulnerable and should not be asked to increase their risk through innovation. Thus some experts believe that small farmer strategies should continue to be geared toward the middle range of farmers who, still poor by most standards, are the only ones who have the means and the security to innovate. Encouraging these farmers, while allowing poorer farmers to continue with existing technologies, would increase total production and also bring indirect benefits to poorer farmers, such as part time employment on the farms of the innovators (84). Special attention to the poorest or any other group is unlikely to result in increased production if it is not based on a careful assessment of their ability and potential to use effectively the increased resources. Many experts feel that targeting does not work because the more powerful are able to win back the advantage through other means.

In the case of women, however, the experience of targeting has been at least partially successful. Studying eight large agricultural development projects in the Sahel, Kathleen Cloud (23) has concluded that:

Both equity and efficiency are served by projects that take explicit account of men's and women's roles in agricultural systems and design realistic ways of providing them with productivity increasing resources.

A broader study of aid programs for the World Bank comes to the same conclusion (17).

To be more effective, targeting can be indirect. Choices in research for crops that are produced and consumed by the poor offer opportunities to focus resources on poverty-

millet and sorghum as opposed to cotton, goats and sheep as opposed to cattle, and milk production as opposed to meat production. A focus on food processing technologies would have a potentially large impact on women. In policy reform, too, choices made in the specifics of price decontrols, in the scale of private sector enterprise to be supported, in land tenure laws, grazing rights, and fuelwood taxes have differential impacts on different socioeconomic groups and these can be used to reinforce an equity or antipoverty strategy. Better data and improved methods for social cost/benefit analysis of specific policy reforms—which groups gain and lose—could help ensure that policy reform in fact does have positive impacts on the poor.

### Issues and Priorities

Many issues remain to be addressed as development strategies change to reflect the lessons of the past decade. Each issue is associated with a broad range of opinion. Many of these differences of opinion occur because we lack adequate knowledge about the Sahel and about the development process.

But for many of the issues, the different opinions on how to proceed reflect differences in objectives. On the Club/CILSS goal of “food self-sufficiency, surface agreement between donors and the CILSS states masks subtle but significant differences. Those differences in

turn lead to divergent responses to such basic issues as the relative priority given food versus export crops or irrigation development versus rainfed agriculture. Similar confusion has resulted because different donors set different objectives to meet major goals. At what level is the objective of “food security” to be applied? Is food security primarily an issue for the growing urban population or is it interpreted to refer to all Sahelians, including rural people in years of drought. How are growth and equity to be balanced?

Whether all those involved agree or not, choices will be made. Who will make these choices? On what basis and in what institutional context will they be made? Will the unique regional cooperation among Sahelians and the international dialog between donors and Sahelians be a major factor in shaping them? The progress made so far in clarifying the issues of what needs to be done is remarkable. But the process of addressing the remaining issues will set the stage for future success or failure and will determine the shape of the Sahel of tomorrow.

Sahel experts are frank about the mistakes of the past and insistent on the need to learn from those mistakes. Adjustments in strategy are already taking place. But they must also address a host of questions and issues that so far have been left unanswered.