

TECHNICAL REPORT

# Mali Trade Capacity Needs Assessment—Subsector Analysis



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# Contents

<b>1. Introduction</b>	<b>1</b>
<b>2. Synthesis of Principal Findings</b>	<b>3</b>
Organization of the Private Sector	3
Barriers to Cross-Border trade	4
Delays in Payment	4
Air Transportation	5
Lack of Finance	5
Non-Price Competitiveness	6
High Cost and Lack of Reliability of Public Utilities	7
High Cost of Land Transportation	7
Market Information	8
<b>3. Rice</b>	<b>8</b>
Recommendations	9
Trade Opportunities and Market Access Requirements	10
Trade Regimes and Institutional Capabilities	12
Production and Processing Constraints	14
Marketing and Trade Facilitation	15
Regulatory Environment and Competitiveness	16
Implications of Expanded Trade for Growth and Poverty Reduction	16
<b>4. Coarse Grain Cereals</b>	<b>17</b>
Recommendations	17
Trade Opportunities and Market Access Requirements	18
Trade Regimes and Institutional Capabilities	20
Production and Processing Constraints	20

## Contents (continued)

Marketing and Trade Facilitation	21
Regulatory Environment and Competitiveness	22
Implications of Expanded Trade for Growth and Poverty Reduction	23
<b>5. Livestock and Livestock Products</b>	<b>25</b>
Recommendations	25
Trade Opportunities and Market Access Requirements	26
Trade Regimes and Institutional Capabilities	27
Production and Processing Constraints	28
Marketing and Trade Facilitation	30
Regulatory Environment and Competitiveness	31
Implications of Expanded Trade for Growth and Poverty Reduction	31
<b>6. Oilseeds</b>	<b>33</b>
Recommendations	33
Trade Opportunities and Market Access Requirements	34
Trade Regimes and Institutional Capabilities	36
Production and Processing Constraints	36
Marketing and Trade Facilitation	38
Regulatory Environment and Competitiveness	39
Implications of Expanded Trade for Growth and Poverty Reduction	39
<b>7. Horticulture</b>	<b>41</b>
Recommendations	41
Trade Opportunities and Market Access Requirements	42
Trade Regimes and Institutional Capabilities	43
Production and Processing Constraints	44

## Contents (continued)

Marketing and Trade Facilitation	45
Regulatory Environment and Competitiveness	46
Implications of Expanded Trade for Growth and Poverty Reduction	47
<b>8. Green Beans</b>	<b>49</b>
Recommendations	49
Trade Opportunities and Market Access Requirements	49
Trade Regimes and Institutional Capabilities	50
Production and Processing Constraints	51
Marketing and Trade Facilitation	51
Implications of Expanded Trade for Growth and Poverty Reduction	52
<b>9. Mangoes</b>	<b>53</b>
Recommendations	53
Trade Opportunities and Market Access Requirements	53
Trade Regimes and Institutional Capabilities	55
Production and Processing Constraints	55
Marketing and Trade Facilitation	56
Regulatory Environment and Competitiveness	57
<b>10. Potatoes</b>	<b>59</b>
Recommendations	59
Trade Opportunities and Market Access Requirements	59
Trade Regimes and Institutional Capabilities	61
Production and Processing Constraints	61
Marketing and Trade Facilitation	63
Regulatory Environment and Competitiveness	64

## Contents (continued)

Implications of Expanded Trade for Growth and Poverty Reduction	64
<b>11. Shallots</b>	<b>65</b>
Recommendations	65
Trade Opportunities and Market Access Requirements	65
Trade Regimes and Institutional Capabilities	66
Production and Processing Constraints	66
Marketing and Trade Facilitation	67
Regulatory Environment and Competitiveness	68
Implications of Expanded Trade for Growth and Poverty Reduction	68
<b>12. Tomatoes</b>	<b>69</b>
Recommendations	69
Trade Opportunities and Market Access Requirements	69
Trade Regimes and Institutional Capabilities	70
Production and Processing Constraints	70
Marketing and Trade Facilitation	72
Regulatory Environment and Competitiveness	73
Implications of Expanded Trade for Growth and Poverty Reduction	73
<b>13. Tiger Nuts</b>	<b>75</b>
Recommendations	75
Trade Opportunities & Market Access Requirements	75
Trade Regimes and Institutional Capabilities	76
Production and Processing Constraints	76
Marketing and Trade Facilitation	77
Regulatory Environment and Competitiveness	77

## Contents (continued)

Implications of expanded trade for growth and poverty reduction	77
<b>14. Gold Mining</b>	<b>78</b>
Recommendations	78
Trade Opportunities and Market Access Requirements	79
Trade Regimes and Institutional Capabilities	79
Production and Processing Constraints	80
Marketing and Trade Facilitation	80
Regulatory Environment and Competitiveness	81
VIII. Implications of Expanded Trade for Growth and Poverty Reduction	81
<b>15. Agribusiness</b>	<b>83</b>
Recommendations	83
Trade Opportunities and Market Access Requirements	83
Trade Regimes and Institutional Capabilities	84
Production and Processing Constraints	85
Marketing and Trade Facilitation	85
Regulatory Environment and Competitiveness	85
Implications of Expanded Trade for Growth and Poverty Reduction	85
<b>16. Textiles, Clothing, and Handicrafts</b>	<b>89</b>
Recommendations	90
Trade Opportunities and Market Access Requirements	91
Trade Regimes and Institutional Capabilities	94
Production and Processing Constraints	95
Marketing and Trade Facilitation	96
Regulatory Environment and Competitiveness	97

## Contents (continued)

Implications of Expanded Trade for Growth and Poverty Reduction	98
<b>17. Electricity</b>	<b>99</b>
Recommendations	99
Trade Opportunities and Market Access Requirements	99
Trade Regimes and Institutional Capabilities	100
Production and Processing Constraints	101
Regulatory Environment and Competitiveness	102
Implications of Expanded Trade for Growth and Poverty Reduction	104
<b>References</b>	<b>107</b>

## Contents (continued)

### ILLUSTRATIONS

#### Tables

Table 1. Rice Production, Imports, and Availability (thousand metric tons)	12
Table 2. Coarse Grain Production, Exports, and Availability (thousand metric tons)	19
Table 2a. Marketing Budget for Shea Nuts and Shea Butter	38
Table 3. Source and Destination of Mali's Horticultural Product Exports	42
Table 4. Area and Production for Horticultural Products (1997/98)	48
Table 5. Producer Prices for Green Beans (CFA francs/kg)	49
Table 6. Costs of Production and Marketing for Potato Producers (1996/97)	62
Table 7. Costs of Handling and Marketing at Wholesaler Level	64
Table 8. Costs of Handling and Marketing Potatoes at Retail Level	64
Table 9. Shallot Production and Marketing Costs in the Office du Niger (1996/97)	67
Table 10. Budget of Tomato Production and Marketing Costs	72
Table 11. Reference Price Calculation for Application of WAEMU Common External Tarif	85
Table 12. Financial Projections for Proposed Sugar Project	86
Table 13. Shadow Price Calculation for Sugar Imports to Mali	87
Table 14. World Cotton Fiber Production and Exports, 2001/02 (1000 metric tons)	91
Table 13. EDM Price/Cost Analysis	104

#### Figures

Figure 1. Mali's National Electricity Grid	102
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# 1. Introduction

The structural adjustment programs initiated at the beginning of the 1980s radically transformed the economy of Mali, which, up to that point, had relied almost exclusively on cattle, cotton, and some mineral exports to generate foreign exchange. With liberalization of the economy and devaluation of the CFA franc in January 1994, Mali's competitiveness improved substantially, thus encouraging the nation to diversify its exports and export markets. But a number of basic constraints to expansion of exports—both within and outside the region—remained. These constraints need to be identified and the capacity of Mali to participate in regional and overseas trade needs to be strengthened.

The subsector analyses that follow are one element in a broader Trade Capacity Needs Assessment in Mali, being conducted by the authors of the present report and an Integrated Framework team led by the World Bank. The analyses here cover the following subsectors: rice, coarse grain cereals, livestock, oilseeds, fruits and vegetables, gold mining, textiles and garments, agribusiness, leather products, other light manufactures, handicrafts, cultural products, and electric power. They are preceded by short synthesis of principal findings, which brings together some of the common elements found in the sub-sector analyses. It also offers some suggestions as to approaches that might be taken for building trade capacity which do not fit neatly into any particular sub-sector analysis.

The analyses have been structured within a framework that fits the concept of a value chain, or *filière*, flowing from the final market, back through marketing and processing, and ultimately to production. The framework provides information of particular relevance for the broader assessment. Not all items in this framework have been completed, in some cases because information is missing, which needs to be acquired at a later stage, and in other cases because there is nothing specific that can be said at the level of the subsector compared with broader findings that apply across all sectors. However, when in doubt, we have erred on the side of greater inclusion of identified trade capacity building needs in at least the more important subsectors so that these needs will find their way into the broader analysis.

It is neither possible nor desirable to include in this analysis all the crops, regions, production and processing activities, and market channels. Rather we have concentrated on where the greatest potential lies for expanding trade and what the most important requirements are for this expansion to take place. Broader coverage is available from other sources, such as the recent agricultural sector assessment undertaken for USAID (Abt Associates, 2002).



## 2. Synthesis of Principal Findings

This section provides a synthesis of principal findings that are common to two or more of the various sub-sectors. The objective is to identify from the sub-sector analyses areas that should be studied more carefully in the broader trade capacity needs assessment. The focus is particularly on the constraints inhibiting the expansion of Mali's regional and external trade and how these constraints might be overcome.

### ORGANIZATION OF THE PRIVATE SECTOR

One of the major needs for greater trade capacity is organization of the private sector and enhancement of the capacity of those organizations to promote regional and external trade. This requires the ability to identify market opportunities, assess what is needed to take advantage of these opportunities, lobby government to create an environment conducive to exploiting these opportunities, monitor progress in creating this environment, and promote Malian exports in regional and external markets. Although some of these activities should be taken by individual firms, there is likely to be a significant quasi-public role that should be played by collective private sector organizations, which know their sub-sectors much better than government officials involved in export promotion. A critical question, however, is how the donors and partner governments can assist these organizations while still maintaining incentives for the private sector to take the initiative and to assure sustainability over the longer term.

At present there are a number of private sector organizations at the local, national, and regional levels that are involved with trade. These organizations differ in terms of their sources of funding and degree of autonomy from government. Some, such as the Chamber of Commerce and Industry and the Permanent Assembly of Chambers of Agriculture du Mali (APCAM), are funded at least in part by government and tend to be less assertive than they could be in their lobbying and other efforts to influence government policy. Other organizations, such as the *Agence pour la Promotion des Filières Agricoles* (APROFA), are largely supported by donor funding, often as part of a project, leaving their long-term sustainability in question. Still others are private professional associations, which are, in general, financially very weak and often depend on the use of office and other facilities offered by the president or executive secretary.

These organizations vary with respect to their degree of representativeness in the sectors involved. For example, the Chamber of Commerce and Industry tends to be dominated by traditional traders whereas the West African Enterprise Network (WAEN) is made up largely of relatively young, well educated entrepreneurs who tend to be involved mostly in services. Sometimes within a given sub-sector, two or more professional associations compete with each other, as in the fruit and vegetables sub-sector.

Another example, in the livestock sector, is the National Coordinating Committee (NCC). Although chaired by the FEBEBVIM, this organization tends to be an inter-agency group within

government rather than an organization which involves active participation by the private sector. Efforts are being made to establish other NCCs in cereals and in fruits and vegetables, but it is too early to tell what role these will play vis-à-vis other organizations such as the *Observatoire du Marché Agricole* (OMA), which is the Malian branch of the *Système d'Information du Marché* (SIM), and the *Coordination Nationale des Organisations d'Exportateurs du Secteur Agroalimentaires du Mali* (CONOESAM)), which is the Malian branch of the *Réseau des Organisations des Exportateurs du Secteur Agroalimentaire de l'Afrique de l'Ouest* (ROESAO).

What is clear is that all these private sector organizations find it difficult to attract sufficient funding from their members to carry out the activities that they should be undertaking. The potential financial base of support is too small and the needs too great. One alternative would be to include funding for them as a line item in the government budget, but this reduces their autonomy. Another is to provide more donor funding, but this decreases their sustainability. Still another is for them to sell their services on a contract basis, but this decreases their ability to play a quasi-public role. In the end, perhaps the best solution will involve all three sources in addition to member dues.

### BARRIERS TO CROSS-BORDER TRADE

One of the most important constraints on regional trade is the informal barriers that exist, especially to truck transport but also to movement of people. These are often imposed by the police and local authorities, ostensibly for security reasons but in practice often simply to extort payment. Not only does this result in substantial cash expenditures but also it leads to long delays that are costly in terms of time and reduced ability to take rapid advantage of market opportunities. In the past there have been as many as 30-40 checkpoints between Bamako and Abidjan, mostly in Côte d'Ivoire. Though this number has since been reduced somewhat, the payments may still amount to as much as 10-15% of the value of the shipment, and delays can be from 4 to 24 hours.

Because of the high cost of these barriers and the frustrations experienced by traders and transporters, the Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS), which has been given responsibility for promoting regional trade integration in West Africa, organized a meeting in Bamako on April 9-10, 2000 for the purpose of establishing an Observatory of Abnormal Practices in Cross-Border Trade. "The idea was that the collection and dissemination of detailed information regarding illegal delays and payments would help to discourage these and to induce governments to intervene. The Observatory was to be based in Ouagadougou, and information was to be disseminated by radio and other means... [Other actions considered] include establishment of a regional freight exchange, creation of frontier markets to facilitate border crossings, reduction in the number of control posts, placement of control posts of bordering countries next to each other to reduce delays, revision of road transport regulations, reduction in import tariffs on trucks, establishment of a computer system for monitoring truck movements so as to eliminate the need for customs escorts and convoys, and use of laser technology to detect contraband." (Stryker, 2002b, pp. 17-18) These actions are all deserving of support.

### DELAYS IN PAYMENT

Another problem inhibiting trade within West Africa and overseas is long delays in receiving payment from importers. Monetary transfers from overseas may take up to three weeks and there is

little assurance that they will even arrive. Within the region, traders report delays sometimes of up to two or three months. It is not even a question of exchanging currencies, because delays can be that long even within the CFA zone. As a result, most payments are in cash, which is both risky and costly.

This problem was identified by the West Africa Enterprise Network as critical in the mid-1990s, but little has been done to resolve it. At a Bamako workshop in March 2001, which was organized as part of the World Bank's West Africa regional strategy, private sector representatives expressed particular concern regarding the need to integrate the financial sector, including the development of a well functioning regional payments system among banks and a good clearing system among currencies, as well as harmonization of government policies regarding currency clearing arrangements, bank supervision, prudential regulation, and taxation of financial services. This topic will be discussed further at a meeting of the Private Sector Forum on Regional Integration, which is to take place in mid-2002 (Stryker, 2002b, pp. 18-19).

### AIR TRANSPORTATION

A major problem, which has plagued the horticultural sector especially but could also have an important adverse impact on exports of meat and other high value products, is that of air transportation. For years, the cost of exporting products from Bamako by air has been disproportionately high because of charges assessed on other airlines by Air Afrique, which runs the airport. The situation seemed to have ameliorated somewhat with both Sabena and Air France carrying cargo to Europe on their passenger plans, but following the tragic events of September 11, 2001, Sabena went bankrupt and Air France became hesitant to carry air freight because of the security risk involved. As of February 2002, exports of green beans were being seriously impacted by lack of cargo space.

The problem is not just one of insufficient air freight space but also the failure of exporters to organize and consolidate shipments so as to have sufficient bulk to make it profitable for the airlines to carry the freight. In addition, there are likely to be increased costs in the future resulting from the need for improved security.

Some improvement in the air freight situation may come from another quarter. In early 2001, the ministers of aviation from West and Central Africa adopted a three-year program for liberalization of the air transport sector. This was a follow-up to ministerial decisions taken in October 1998. In addition to eliminating existing restrictions and opening the sub-sector to competition, the program also calls for the creation of an independent regional regulatory agency (Stryker, 2002b, p. 16).

### LACK OF FINANCE

Traders and exporters complain frequently about lack of access to finance. Although the largest economic operators are able to obtain working capital relatively easily, many others have to finance their trading operations with either their own capital or that borrowed from family or friends. As in many other African countries, commercial banks are reluctant to take risks after years in which the banking sector was close to ruin because of bad policies and pressures from government.

To some extent credit can be obtained from the decentralized rural savings and credit funds that exist in Mali, but this is more appropriate for the collection stage than for downstream marketing and

trade. Nevertheless, many of these funds are quite successful, and it is worthwhile to promote their financing of marketing activities and to try to link them more closely with the commercial banking sector.

Over the longer run, financial capacity will have to be developed further along with the capacity to trade. This will involve post-shipment and pre-shipment working capital, as well as medium-and long-term lending to build production capacity. It will also involve use of various financial instruments, such as letters of credit, bills of exchange, insurance, and forward purchasing of foreign exchange. Until, the financial system is able to provide these services at low cost, economic operators are likely to have to rely to a significant extent on their own resources and on trade credit, i.e., credit furnished by buyers and suppliers.

The problem is that under conditions of competition in the global market, trade credit is the exception rather than the rule. For example, in a well developed market, rather than the buyer financing directly a shipment of clothing from the supplying country, that buyer is more likely to establish a confirmed, irrevocable letter of credit with its bank, which can be used by the exporter to obtain financing from its bank in the supplying country. Because of the lack of development of the financial system in Mali, however, such a mechanism is seldom used.

One interim solution is for there to be a consolidation of activity among a few larger exporters who have solid reputations and are able to put up the collateral required to obtain bank financing. These exporters can, in turn, extend credit upstream to their suppliers. Although this is not ideal over the longer run, because of the potential for monopoly exploitation, it nevertheless may be the only way in which the financial market for trade can first be developed.

### NON-PRICE COMPETITIVENESS

Except for standardized bulk commodities, export competitiveness depends on a whole series of non-price dimensions, in which Mali at present does not do very well. These include product quality, timeliness, packaging, health and phytosanitary standards, and meeting product specifications. Sub-sectors in which these are particularly important are livestock products, fruits and vegetables, agribusiness, and textiles, clothing, and handicrafts. Improvements here will involve the introduction of better information flows via improved information and communications technology (ICT). It will also require better organization of the sub-sector filières so that information at the demand end is transmitted speedily and accurately back to those who are further up the marketing chain.

There is some likelihood that improvements will require consolidation of functions at the level of the exporter, who is in closest touch with the market. In a more developed economy, where information flows are good, scale of operations is substantial, transactions costs are low, and competition is high, there is more scope for specialization of functions along the value chain. Thus there may be many layers of activity between the producer and the exporter involving design, advertising, marketing, collection, warehousing, inspection, brokerage, insurance, freight forwarding, and other operations. In Mali, because information flows are poor, scale of operations is small, transactions costs are high, and competition is low, this specialization is less likely to take place. Unless exporters are willing to take on some of these functions, at least until the value chain becomes well established, there are likely to be important gaps that will prevent Malian exports from being

competitive. Consolidation of activity under a few larger exporters is also likely to assist development of trade finance, as described in the previous section.

An important issue related to non-price competitiveness is the role that the public and private sectors should play in establishing and enforcing norms and standards. At present, the two government agencies responsible for this are the *Direction National des Industries*, in the Ministry of Industry, Trade, and Transport, and the *Direction National de la Réglementation et du Contrôle*, in the Ministry of Rural Development. These agencies need to be assisted by the private sector, which has a much more intimate knowledge of what the norms and standards should be than does the public sector. On the other hand, the public sector has an important role to play in establishing standards related to human and animal health and to plant protection.

### HIGH COST AND LACK OF RELIABILITY OF PUBLIC UTILITIES

Probably the most important constraint on production and processing has been the high cost and lack of reliability of public utilities in Mali, especially electrical power and telecommunications. At one time, electrical power was either rationed through phased brownouts or else was subject to sudden and unforeseen failures, which were extremely costly to manufacturing and agro-industrial processing firms. One alternative was for firms to invest in diesel generators or other auxiliary sources of power, but this was expensive and was insufficient to power some types of enterprises. The situation has improved somewhat in the last year or two, with investment in new generation equipment, but rapid increases in demand continue to threaten to outstrip supply. With power from the Manantali Dam coming on stream, the situation should improve for awhile, but this is an area that needs to be overseen carefully. The chapter below on electrical power provides substantially more information on this sub-sector.

Telecommunications is another very important public utility to support trade capacity. The problem has been high cost and long delays in access. The situation in Mali has been aggravated by the public monopoly conferred until recently on SOTELMA. This monopoly is being partially broken up, and SOTELMA is to be privatized in 2003. Incoming Internet connections are currently liberalized, though SOTELMA continues to have a monopoly over outgoing transmission. Cellular phone operations have until recently been monopolized, though a second license to a private company is being issued.

### HIGH COST OF LAND TRANSPORTATION

Transportation costs faced by Malian traders and exporters are very high. In the case of truck transportation, several factors converge to induce these high transport costs: old condition of the fleet; high import duties and other taxes on trucks, spare parts, and fuel; and poor road conditions (Barry and Tall, 1999). There are also serious problems with the railway to Dakar, including long delays and high costs. These transportation problems are particularly serious, given Mali's landlocked location, which puts it at a disadvantage vis-à-vis its coastal neighbors under the best of circumstances.

## MARKET INFORMATION

Partly because of the high cost of transportation to the sea, Mali's comparative advantage in many areas lies with regional rather than overseas trade. This means that it is very important for exporters to have good market information on prices, quality, availability, and other variables in order to take advantage of opportunities for trade that may exist for only a short period. Some of this information is acquired informally from friends and relatives, but for markets to function efficiently, there is a need for a more systematic mechanism for gathering and disseminating market data.

One such mechanism is the *Système d'Information du Marché* (SIM), which was initially established in Mali with financing from USAID and was subsequently expanded to include training and equipping of similar units in a number of other neighboring countries. Despite its proven usefulness, by the end of the 1990s, the SIMs were having financial difficulties as a result of the lessening of foreign assistance despite efforts by local governments to pay some of the recurrent costs.

At a regional conference on agriculture in West Africa in February 2000, there was agreement that the SIMs of the individual countries should be linked together in a West African network (APCAM/USAID/OMA-PASIDMA-CAE, 2000). The *Observatoire du Marché Agricole* (OMA), the SIM in Mali, was proposed to take the lead. In addition to assembling and distributing data on regional market prices, the network would also distribute information to private operators on regulatory changes, availability of products and inputs, world market prices, sources of finance, freight charges, conditions of transportation routes, availability of transport, contacts, meetings, trade fairs, etc. Financing was to be achieved by inserting a line item in each participating member's public budget; charging fees for special studies, surveys, and certain other types of information; contributions from the private sector; and appeals to donors. In addition, the conference recommended that the SIMs be granted administrative and financial autonomy from government. This effort to build trade capacity is deserving of donor support, but this must be offered in a way that is conducive to long-term sustainability in the absence of that support.

## 3. Rice

Mali has an excellent potential to become the major supplier of rice within West Africa. A combination of market liberalization, technological improvement, and investment in irrigation infrastructure has resulted in a high degree of intensification and yield improvement in the Office du Niger, where about one-half of Malian rice is grown. The potential for expansion of irrigated cultivation in the Office is very considerable—up to as much as 250,000 hectares, which at current yields would mean production of close to one million tons of milled rice per year. This could easily be absorbed into the West African market.

The major constraint on achieving this potential is the lack of any viable institutional structure for financing long-term private investment in irrigation infrastructure. Other problems relate to the

absence of secure title to the land within the Office du Niger, poor quality of processing, absence of access to cheap electrical power, high costs of transporting rice and inputs, delays in payment due to slow bank transfers, and numerous informal barriers to cross-border trade. There is also a need to strengthen the institutions associated with collecting and disseminating market information and professional associations involving rice traders.

Institutional structures to support rice exports are weak. A good market information exists but suffers from inadequate funding. There is no very strong national professional association devoted to rice, or even to cereals, though there is a regional association to which a number of cereals traders belong.

## RECOMMENDATIONS

The following are the major recommendations for the rice subsector:

- A feasibility study should be undertaken regarding the viability of establishing a non-bank financial institution for the purpose of financing medium and long-term private investment in the Office du Niger. Among the options that should be considered is that of combining this institution with the financing mechanism being studied within the context of the National Rural Infrastructure Project, currently being financed by the World Bank. Details of this study are in Stryker (2002a).
- Various options should be explored regarding titling of land in the Office du Niger and which of these options is acceptable from the perspective of a newly established agency for furnishing farmers with medium and long-term loans for the purpose of investing in equipment and irrigation infrastructure in the Office. The consequences of each of these options for obtaining equity capital, loans, authority to issue bonds, and loan and bond guarantees needs to be assessed.
- The efforts of the USAID/SEG Centre Agro-Entreprise (CEA) project to evaluate rice processing equipment and techniques so as to improve the quality of rice being marketed, and for making this information widely available to the private sector, should be continued and strengthened as necessary to meet West African market requirements. Market studies should be conducted outside of Mali to see the extent to which the rice being processed is of acceptable quality in these markets.
- A feasibility study should be undertaken for building the infrastructure required for providing electrical power to all of the Office du Niger areas in which rice production and processing is currently taking place and is likely to take place within the next ten years.
- Given the important benefits that would accrue to the Malian economy from reduced transportation costs, serious consideration should be given to reducing customs duties and other taxes, including the excise tax on fuels, on utility vehicles, spare parts, fuel, and other consumables used in the commercial transportation industry.
- Steps should be taken to speed up bank transfers between West African countries. This is a major item on the agenda of the West Africa Private Sector Forum meeting scheduled to take place in June 2002.

- The efforts being initiated by CILSS and the National Coordinating Committees to establish an Observatory for the purpose of gathering and disseminating information regarding informal barriers to cross-border trade should be strongly encouraged (Stryker, 2002b).
- The two quasi-public institutional structures that are most likely to support Malian rice exports within the region are the *Observatoire du Marché Agricole* (OMA), which is the Malian branch of the *Système d'Information du Marché* (SIM), and the *Coordination Nationale des Organisations d'Exportateurs du Secteur Agroalimentaires du Mali* (CONOESAM)), which is the Malian branch of the *Réseau des Organisations des Exportateurs du Secteur Agroalimentaire de l'Afrique de l'Ouest* (ROESAO). These institutions should be strengthened from the perspective of trade capacity building, though care must be taken to avoid subsidizing them too heavily. Instead they should depend to a large extent on member dues and on fees received for services performed. In the case of OMA, the organization should be made financially and administratively independent of the Government of Mali.
- There is a need for a regulatory structure concerning the importation and distribution of phytosanitary products.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

Malian rice production has seen remarkable growth since the beginning of the 1990s because of many factors, including liberalization of paddy, rice, and input markets under the Cereals Market Restructuring Program (PRMC; proliferation of small rice mills and hullers, leading to a substantial decline in processing costs; public investment to develop and rehabilitate irrigation infrastructure, especially in the Office du Niger; development of new and higher-yielding rice varieties; adoption of new production techniques such as transplanting; and devaluation of the CFA Franc, which raised the price of rice all over the West African market. These factors led to unprecedented productivity gains, resulting in a marked reduction in unit costs and a substantial improvement in competitiveness of Malian rice within the West African region (Barry, Diarra, and Diarra, 1998 p. vi).

Nowhere is this more evident than in the total water control irrigation system in the Office du Niger, which produces about one-half of all the rice grown in Mali.<sup>1</sup> Over the past two decades, the total area under irrigation increased from 35,181 hectares in 1982-83 to 52,995 hectares in 2000-01. Even more important, average yields of paddy grew from 1.6 metric tons per hectare in 1982-83 to 6.1 mt/ha in 2000-01. The result was almost a six-fold increase in production from 56,500 mt in 1982-83 to 325,300 mt in 2000-01 (Stryker, 2002a, p. 1).

The area that has been developed thus far in the Office du Niger is much less than that which could potentially be cultivated—at least 250,000 to 300,000 hectares based on existing availability of land and water (Stryker, 2002a, p. 1). This would be enough to satisfy Mali's own needs and supply a

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<sup>1</sup> For a detailed discussion of rice cultivation systems within and outside the Office du Niger, as well as the history of rice cultivation and marketing in Mali, see the recent USAID Agricultural Sector Assessment (Abt Associates, 2002) and the EAGER/Trade report (Barry, Diarra, and Diarra, 1998). As far as production is concerned, here we concentrate on the constraints inhibiting expansion of irrigated cultivation in the Office du Niger because this is where any exportable surplus is likely to be generated.

growing West African market, currently estimated at more than one and one-half million tons (CAE/Chemonics, 2001).

An analysis undertaken in the late 1990s suggests that Mali generally enjoys a marked comparative advantage in rice production and marketing over both its own territory and much of Côte d'Ivoire, Guinea, and Senegal, though Malian rice is not competitive in the large urban centers of the coastal countries due to high transportation costs between production areas and coastal markets. Since this study was conducted, Mali's comparative advantage in rice within the region has strengthened because of the weakening of the euro in relation to the dollar, the currency in which most West African rice imports are quoted.

The prospects for sustained competitiveness of Malian rice are excellent. The most promising consumption markets appear to be those of Côte d'Ivoire, where rice is the preferred staple food for the middle class. The rising middle class in Ghana is also shifting its consumption away from maize, roots, and tubers to rice, which will create an important market in years to come. Markets in Guinea and Burkina Faso have the advantage that they are close to Mali so transportation costs are lower. Senegal is also a potential export market, but most consumers prefer cheap broken rice, so only the high end of the market should be targeted. Accessing this market, however, will depend on improving the transport infrastructure between Mali and Senegal.

Despite this comparative advantage and the remarkable record of success in the Office du Niger, Mali has yet to generate a substantial rice surplus. Per capita consumption of rice has been growing as rapidly as production. Table 1 presents data showing trends in Mali's rice supply and demand. It is evident that both rice production and rice consumption (measured by availability) have increased strongly over the past decade or so. Thus, even though Mali has a comparative advantage in rice exports within the region, production has not increased sufficiently in relation to consumption to take advantage of this potential. Currently rice consumption is estimated at about 54 kilograms per head per annum. With total cereals consumption averaging something on the order of 230 kg/head, there is room for a continued rise in per capita consumption of rice in the future, especially as Mali becomes increasingly urbanized (FEWS NET, January 2002, p. 4).

The major constraints inhibiting Mali from taking advantage of the opportunity afforded by the vast production potential of the Office du Niger lie primarily on the side of production. However, there are also problems related to marketing and trade. For example, there is a need to upgrade the quality of rice processing to be able to export within the region. There are also issues associated with the fact that rice production in Mali is highly seasonal and the cost of storage is high. An alternative to storing rice is to export during and after harvest and to compete with imported rice within Mali during the rest of the year. The precise point in both space and time at which Mali's rice would compete, in this case, with imported rice in West Africa depends on a number of factors, including relative demand and supply within Mali and the cost of transportation and storage.

**Table 1. Rice Production, Imports, and Availability (thousand metric tons)**

Crop Year	Production		Net Imports (2)	Chg Stocks (3)	Availability
	paddy	rice (1)			
1989-90	338	210	2		212
1990-91	282	175	118		293
1991-92	454	282	46		328
1992-93	420	261	32		293
1993-94	428	266	1		267
1994-95	469	291	33		324
1995-96	463	288	59		347
1996-97	614	381	68	29	478
1997-98	576	358	48	37	443
1998-99	718	446	65	-5	506
1999-2000	727	451	58	-19	490
2001-02 prev	840	522	20	11	553

SOURCE: FEWS NET

Notes:

- (1) Assumes rice/paddy yield of 62.1%
- (2) Imports minus exports. Export data are very unreliable but exports generally are not very large compared with imports. Figure for 2000-01 is a forecast.
- (3) No data are available on change in stocks before 1996-97. Generally these changes are less than 5% of production.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

The governments of most countries of West Africa have, at least until recently, vigorously controlled rice trade because of the commodity's strategic position as an important urban consumer good. There is also a desire to protect what is often high-cost investment in irrigated production. Under the UEMOA customs union, which formally went into effect in January 2000, rice should circulate freely within the union. Furthermore, the plan is for other countries within ECOWAS but currently outside the customs union to join it within the next few years. This should result in a large duty-free market for Malian rice exports within the union and some degree of protection from imports originating outside the union resulting from the Common External Tariff of 20 percent plus other smaller import taxes totaling 2.5 percent.

### Institutional Capabilities

#### *Système d'Information du Marché (SIM)*

The *Système d'Information du Marché* is a mechanism for collecting and disseminating market information. It was initially established in Mali with financing from USAID. Subsequently, it was expanded to include training and equipping of similar units in a number of other neighboring

countries (Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Niger, Senegal). Aside from collecting and disseminating market information, the SIMs have also recently been active in collecting information from markets on the experience of traders and truckers with illegal barriers to road transport. Donors provided initial financing, but by the end of the 1990s, the SIMs were having financial difficulties as a result of the lessening of foreign assistance. Local governments then picked up some of the recurrent costs of the SIMs, but this funding has not always been adequate. Nevertheless, there is widespread agreement that the SIMs play a very important role in supplying the information that is required for regional integration and that some mechanism must be devised to assure adequate funding.

At a regional conference on agriculture in West Africa in February 2000, there was agreement that the SIMs of the individual countries should be linked together in a West African network (APCAM/USAID/OMA-PASIDMA-CAE, 2000). This would require a way of centralizing the information that is collected; close collaboration with other regional institutions such as CILSS/FERAP, UEMOA, AGRHYMET, and the *Institut du Sahel*; equipping the SIMs with information and communications equipment; and linking the SIMs via the Internet. The *Observatoire du Marché Agricole* (OMA), the SIM in Mali, was proposed to take the lead. In addition to assembling and distributing data on regional market prices, the network would also distribute information to private operators on regulatory changes, availability of products and inputs, world market prices, sources of finance, freight charges, conditions of transportation routes, availability of transport, contacts, meetings, trade fairs, etc.

Financing was to be achieved by inserting a line item in each participating member's public budget; charging fees for special studies, surveys, and certain other types of information; contributions from the private sector; and appeals to donors. In addition, the conference recommended that the SIMs be granted administrative and financial autonomy from government.

### ***Réseau des Organisations des Exportateurs du Secteur Agroalimentaire de l'Afrique de l'Ouest (ROESAO)***

Until recently, there was no national federation linking the many rice and other cereals trader associations established at the local level in many areas of Mali. The *Réseau des Organisations des Exportateurs du Secteur Agroalimentaire de l'Afrique de l'Ouest* (ROESAO) was recently established as a regional network of national exporter associations bringing together both subsectoral professional associations and individual economic operators seeking to export agricultural and food products within West Africa. After sponsoring an Agricultural Forum in West Africa in the late 1990s, the network has remained in operation and appears to be an illustration of the private sector finding solutions to the difficulties of regional trade.

The national associations under ROESAO may become actively involved in dispute resolution at the border, intervening with customs agents and other authorities in order to ensure that appropriate duties and procedures are being followed. When they are in ROESAO countries other than their own, exporters can receive business services from the local chapter. National associations also offer marketing and sales services, providing market information on buyers and serving as marketing agents for the nominal fee of 1-2 percent per sale arranged by association staff.

The ROESAO branch in Mali, *Coordination Nationale des Organisations d'Exportateurs du Secteur Agroalimentaires du Mali* (CONOESAM), includes a number of cereal traders. It receives some support from donors, but also collect from its members an inscription fee of 5,000 CFA francs and annual dues of 50,000 CFA francs from both individuals and groups. CONOESAM also receives some income from the commissions of 1 or 2 percent charged on sales arranged by CONOESAM on behalf of its members.

The national associations of ROESAO have integrated their market reporting with the market information provided by the SIMs. The regional network is coordinating this activity so that price information is available to any member from all West African markets.

## PRODUCTION AND PROCESSING CONSTRAINTS

In order for increases in production to outstrip those in consumption, Mali will have to invest substantially more in irrigated rice production, especially in the Office du Niger, where the greatest potential lies. Yet even though private sector investment in the secondary and tertiary infrastructure is financially profitable, irrigated land has not expanded very much (Stryker, 2002; Barry and Diallo, 1999).

One of the most important constraints to developing this potential is the availability of financing. Although donor support is available for developing the primary irrigation system, there is a reluctance to go beyond this to include development of irrigation at the secondary and tertiary levels, as well as leveling of land and other steps required to prepare the land for cultivation. There is a sense that this ought to be undertaken by the private sector. In fact, the Government of Mali has made this division of responsibility its official policy insofar as private investment is concerned (République du Mali, 1999, p. 35). Facilitating private investment will require attracting foreign direct investment or developing the financial institutions capable and willing to make long-term loans to private investors. In the past, this has not been easy, but efforts are currently afoot to create such an institution (Stryker, 2002).

One alternative to expanding the Office du Niger's irrigated area would be to increase the amount of double cropping, with the second as well as the first crop planted to rice. At present, less than 25 percent of the land in the Office du Niger is being double cropped, and where there are two crops, the second is usually in fruits or vegetables, which have a relatively high value in relation to rice and use less water. Given these advantages, and the generally high profitability of growing fruits and vegetables, there is little reason to encourage increased rice production via this route.

Following the introduction of the small-scale mills and hullers in the Office du Niger in the early 1990s, the overall quality of processed rice declined. The broken content of processed rice was high and the rice was often mixed with dirt and other foreign elements. Thanks to the Market Information System that provides price information for different rice qualities, more care has been given to handling rice prior to processing, and investments have been undertaken in sifting processed rice to separate broken from whole rice which fetches a premium.

Despite these improvements, the quality of Malian rice has, until recently, still been inadequate to meet the standards demanded by consumers in Côte d'Ivoire. Most of this quality deficiency relates to production and processing. The quality of milled rice is influenced by the problem of variation in the humidity content of paddy, which varies from farmer to farmer, due to the lack of

synchronization in paddy cultivation and harvesting. The result is either excessive breaking of rice in milling, if the humidity is too low, or failure to remove all the husk, if humidity is too high. Rice quality is also affected by the type of machinery used to process paddy into rice and to sort it once it has been milled. The performance of different machines has recently been evaluated by the USAID/SEG Centre Agro-Entreprise (CEA) project, the information is being made widely available to the private sector, and training is taking place in how best to process paddy into rice. This activity should continue (Abt Associates, 2002, Vol. II, p. 35).

One problem faced by rice millers and hullers in the Office du Niger is lack of access to reliable and cheap electrical power. Given the vast potential of the Office for increasing rice production and processing, as well as other activities likely to be generated by the additional demand for goods and services resulting from increased incomes, there is a serious case that can be made for electrification of the Office. This will not only assist rice processors but will also help to maximize the spillover effects resulting from expanded rice production.

### MARKETING AND TRADE FACILITATION

In general, price data show that there is good market integration between the Office du Niger and the other major domestic Malian markets, thanks in part to the CFA franc devaluation, which improved competitiveness of Malian rice, thus encouraging the flow of rice between Office du Niger production areas and consumption markets. At the same time, the data suggest that, although trade exists between Mali and northern Côte d'Ivoire, there generally is substantial segmentation between Malian markets and those of neighboring countries (Barry, Diarra, and Diarra, 1998).

This analysis of the price data is corroborated by that of the structure of costs. Mali's comparative advantage in rice extends beyond its borders, for example to the northern area of Côte d'Ivoire and almost as far as the center of that country. However, this comparative advantage vanishes further south due to high transport costs between the Malian production zones and the coastal urban markets. Several factors converge to induce these high transport costs including the old condition of the fleet; high import duties and other taxes on trucks, spare parts, and fuel; and poor road conditions. Another major problem experienced by virtually all transporters is long delays and high costs associated with numerous informal barriers along the road (Barry and Tall, 1999).

Rice transactions are normally carried out informally without signing a sales and purchase contract. Transactions are negotiated orally, which increases risks associated with delivery delays, misunderstandings regarding quality, and other contract specifications. Another important problem in occurs because of delays in bank transfers from importing to exporting countries. These delays can be up to two or three months in some instances. This increases transaction costs, encourages the use of risky cash payments, and discourages bulking of exports so as to take advantage of economies of scale (Barry, Diarra, and Diarra, 1998).

Though rice packaging does not appear to have a major influence on the competitiveness of Malian rice in the domestic market, it is likely to play an increasingly important role in future export marketing. If Malian rice is to conquer the regional market, it needs to be packaged so as to catch the consumer's attention.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

The most important regulatory issue in the rice subsector relates to land tenure. One constraint to expanding rice production in the Office du Niger may be the failure to grant clear land titles to private entrepreneurs. Under a new land tenure law, four types of land tenure coexist: an annual production permit, an agricultural production permit that has a longer period and can be renewed as long as the owner complies with the rules of the ON, an ordinary lease, and a long-term lease. The main objective of this new law is to provide tenure security to farm families and promote private investments. However, there are those who argue that the new law does not go far enough in providing secure collateral against a long-term loan. For example, a recent study of the possibility of creating a non-bank financial institution for the purpose of financing private investment in irrigation infrastructure suggests that the investors in and lenders to such an institution are likely to require that it hold secure title to the land on which such investments are being made until the loans are repaid (Stryker, 2002, p. 24).

Another area where there is a need for regulation is for the importation and distribution of phytosanitary products, whether these be used for production or for storage. This is a general problem that extends beyond rice.

## IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

Expansion of rice supply to the domestic and regional markets can contribute to growth and poverty reduction by increasing farmer incomes, creating employment opportunities for agricultural laborers in the Office du Niger and elsewhere, and increasing the demand for inputs and transportation services. In addition, important multiplier effects are generated by increases in overall demand resulting from higher incomes. These are likely to be particularly important since most rice is produced on many small farms. Increased rice supply through expansion of irrigation infrastructure can also contribute to fostering the production of other agricultural commodities, such as horticultural products, which can be grown as a second crop on rice lands. At present about 40 percent of the agricultural income in the ON comes from horticultural products produced mainly by women (Abt Associates, 2002, Vol. II, p. 3).

## 4. Coarse Grain Cereals

The coarse grain cereals subsector is one of the most important in Mali. Millet, sorghum, and maize are the most important staples in the Malian diet. Yet these products account for only a small share of foreign trade. Much of production is consumed on the farm or in neighboring rural areas. Most of the rest of it flows to the cities, where it competes primarily with rice in consumption. Although exports of coarse grains within the region currently are fairly large compared with those of rice, they still make up only about two percent of total production.

Nevertheless, there is considerable potential for expansion of coarse grain exports, primarily in the form of animal and poultry feed or to be used in the production of feed. The poultry industry has been growing rapidly in neighboring countries such as Côte d'Ivoire, and Ivorian traders are coming to Mali to buy feed. There are also opportunities to millet and sorghum for human consumption to Mauritania, Niger, and Senegal, which are unable to satisfy their own needs. This has the advantage that it could involve producers in the extreme western and eastern regions of Mali, which are relative poor compared with the central and southern regions. Mali appears to have a significant comparative advantage in these exports.

Production of maize has increased quite rapidly over the past decade and a half. Most of this expansion has been by bringing more land under cultivation, but there is also substantial potential for increasing yields. Maize is grown primarily in the areas where cotton is grown and often competes with cotton in production based on changing relative prices.

Production of maize has been limited in the past on the side of demand because it is not a preferred cereal for final consumption. Some progress has been made in increasing demand through the development of new products based on maize. In addition, producers are reluctant to commit themselves too heavily to maize given large price fluctuations resulting from high transportation costs and the fact that the West African maize market is not well linked with international markets. This means that it is very important to have good market information.

Animal and poultry feed using maize is produced in both large and intermediate size mills. These have saturated the local market for poultry feed, which is more profitable than animal feed and will have to export feed if any expansion of feed production is to occur.

### RECOMMENDATIONS

Many of the recommendations for the rice subsector also apply to coarse grains. Those that apply are repeated here in abbreviated form:

- Provide adequate funding for the food technology laboratory at Sotuba to develop and test new technologies for processing coarse grains, to undertake marketing and socioeconomic research to see how these technologies might be used, and to disseminate information from this research to potential investors, both domestic and foreign.

- Continue and strengthen current efforts to assist intermediate-scale feed millers to improve their efficiency.
- Continue and strengthen current technical assistance to cereals traders to enable them to market a higher quality product.
- Give serious consideration to reducing customs duties and other taxes, including the excise tax on fuels, on utility vehicles, spare parts, fuel, and other consumables used in the commercial transportation industry as a way to reduce transportation costs.
- Take steps to speed up bank transfers between West African countries
- Encourage the efforts being initiated by CILSS and the National Coordinating Committees to establish an Observatory for the purpose of gathering and disseminating information regarding informal barriers to cross-border trade.
- Strengthen the OMA, SIMS, and CONOESAM from the perspective of trade capacity building. Make the OMA financially and administratively independent of the Government of Mali.
- Develop a regulatory structure concerning the importation and distribution of phytosanitary products.
- Work to strengthen linkages between commercial banks and local savings and credit funds as a way of extending the availability of working capital for marketing and trade.
- The *Direction National des Industries* and the *Direction National de la Réglementation et du Contrôle*, working together with the private sector, should establish norms and standards related to products produced from coarse grain cereals.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

Mali exhibits a strong comparative advantage in the production and marketing of coarse grains for local and regional consumption (Barry, 1994; Stryker, Salinger, and Metzler, 1994). This advantage is due in large part to the low input-output nature of cereal production that relies heavily on family labor and land. There is considerable potential for expanding coarse grain exports to regional markets. Some of this is for human consumption, but that which is growing most rapidly is for input into the animal feed industry, especially poultry feed. This is especially important for countries such as Senegal, which have a large urban population and limited ability to produce their own feed. In addition, Mali also exports millet and sorghum to countries such as Mauritania, Niger, and Senegal, which have a very limited capacity to grow enough cereals for their basic consumption needs (*Centre Agro-Entreprise, 2001*). There is also some possibility of marketing limited quantities of coarse grains to European urban centers where the Malian diaspora prefers cereal-based dishes (Abt Associates, Vol. II, p. 40).

The data on production, trade, and changes in stock are only available since 1996-97. Furthermore, they do not distinguish between maize and the other coarse grains -- millet and sorghum. What they do show, in Table 2, is that production of all coarse grains has been increasing rather slowly and has translated into a limited increase in net availability. Exports have been

substantial but have varied widely from year to year, as have changes in stocks, depending on production conditions.

**Table 2. Coarse Grain Production, Exports, and Availability (thousand metric tons)**

Crop Year	Production	Net Exports	Chg Stocks (2)	Availability
1996-97	1350	18	10	1322
1997-98	1325	30	-36	1331
1998-99	1550	6	57	1487
1999-2000	1835	35	99	1701
2001-02 (1)	1714	68	26	1620

Source: FEWS NET

Notes:

- (1) Exports minus imports. Export data are very unreliable. Figure for 2000-01 is a forecast.
- (2) No data are available on change in stocks before 1996-97. Generally these changes are less than 5% of production.

If one examines the production data separately for these crops, one sees that the story is very different, depending on the crop. Maize production rose approximately three times from the mid 1980s to the late 1990s, whereas millet and sorghum production increased by only 18%. Most of the increase in maize production came about as a result of an expansion in the area under cultivation, though substantial progress was also made in introducing new high-yielding technology (CPS, 2001). It is clear that farmers find maize to be a profitable crop, and there is considerable scope for increasing production in the future.

Very little is known about the actual size of the market for maize and other coarse grains as inputs into the animal feed industry—other than that this market appears to be substantial and growing quite rapidly. Less certain is the extent to which additional demand for maize is going to be met by Mali's neighbors, such as Côte d'Ivoire, which comprises a large share of that market. On the other hand, Mali is exporting maize to Senegal and Côte d'Ivoire, and traders report that buyers in Côte d'Ivoire prefer Malian maize, which is better dried than maize grown in Côte d'Ivoire.

Mali is also already engaged in exporting roughly 10,000 tons per year of animal feed within West Africa. The principal exporter of animal feed currently is the Grands Moulins du Mali (GMM), which exported about 6,300 tons in 1998 and 4,500 tons in 1999 (IER, 2000, p.12). Nearly the entire feed output of this company goes for export, of which 60 percent is destined for Senegal. Other traders export an estimated 2,000 tons of animal feed per year, with shipments reportedly going to Ghana, France, Switzerland, and Italy. Mali also exports limited volumes of poultry feed to Côte d'Ivoire, but this trade is plagued by informal barriers, delays, and payments en route.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Trade in coarse grains within UEMOA is duty-free under the customs union agreement. Imports from outside the union are subject to the same duty as is rice.

### Institutional Capabilities

Institutional capabilities for coarse grains are essentially the same as for rice. One additional comment is that the gathering and dissemination of market price information by the SIMs is particularly useful for coarse grain cereals because of their high degree of price volatility described below. Efforts to group farmers so as to enhance their bargaining power in relation to traders have not worked very well but the existence of good market price information and its widespread dissemination by radio and other means does much to improve market efficiency. Nevertheless, there is a need to improve the collection and dissemination of information on producer prices and on market opportunities in neighboring countries (*Centre Agro-Entreprise*, 2001). Clearly this requires that more resources be allocated to the SIMs.

## PRODUCTION AND PROCESSING CONSTRAINTS

Millet and sorghum can be grown in an environment with annual rainfall ranging between 400 and 700 mm. In contrast, maize, having a higher water requirement, is concentrated in southern Mali. This region also accounts for more than half of millet/sorghum supply in Mali. Most of the growth in maize supply over the past twenty years has been concentrated in the southern production zones of the CMDT, where maize is grown in rotation with cotton. One reason for this growth is that maize prices rose substantially in the years following devaluation of the CFA franc (CPS, 2001). Furthermore, in the late 1990s, maize production was becoming relatively more attractive as CMDT, in severe financial difficulties, decreased cotton prices, support for cotton inputs, and technical advice to cotton farmers. Alarmed by the resulting sudden drop in cotton production, CMDT in 2001 raised the cotton price, which helped cotton production recover from the low levels of the previous year but also caused maize production to fall from about 400,000 tons in 1998-99 to 214,500 tons in 2000-01 (CPS, 2001; FEWS/NET).

Production of maize has been found to be marginally profitable, with a sale price of 120 FCFA per kilo and a cost of production of 115.87 FCFA/kg, resulting in a margin of 3.6%. There is considerable potential for greatly increased maize yields in Mali, which are currently only about 1.5 tons per hectare and could be 4.5 to 5 tons/ha.

There are several ways in which coarse grains could be processed. One is large-scale milling by the Grands Moulins du Mali (GMM). The advantage here is that the germ can be extracted, greatly improving shelf-life. However, Malian traders tend to deliver yellow and white maize mixed together, which makes it nearly impossible to use in the large mills, which seek to buy only yellow maize. There may be scope for informing traders of the GMM's specific purchase requirements and encouraging the sorting of maize so that these requirements can be met.

A feasibility study was undertaken by the *Centre Agro-Entreprise* for constructing and operating a large modern feed mill, capable of producing 50,000 tons per year of chicken and animal feed. This mill would have created a substantial demand for inputs, including maize. The mill was found to be economically and financially profitable under reasonable assumptions for domestic sales within Mali. However, the market for poultry feed, which is most profitable, is limited to about 14,000 tons in Mali, so exports to Côte d'Ivoire and elsewhere within the region would be highly desirable. These exports would have to compete, however, with locally produced feed in these countries. In the end, the mill that was the subject of the study was not constructed because another similar mill was built in Fana.

There are also a number of intermediate-size mills that use maize to produce chicken feed, and in some cases cattle feed as well. This may either be for the mill's own account or it may involve furnishing milling services to others who supply the inputs. Some of this feed is sold to traders who export it to neighboring countries, especially Côte d'Ivoire, suggesting that exports of feed are profitable. The *Centre Agro-Entreprise* is working with some of these smaller mills to improve their performance. These mills may in the long run represent the best way of expanding production of feed and therefore of demand for maize.

Smaller scale mills are used to grind maize or other coarse grains into flour, semolina, and other maize products. Most of the operations are manual and the quality is highly variable.

The food technology laboratory at Sotuba has been working for many years to develop improved technologies for processing coarse grains. However, the results of this research have not been widely promulgated nor has there been much in the area of marketing and socio-economic research to see how these technologies might be used. This could be a promising area for the future (*Centre Agro-Entreprise*, 2001).

## MARKETING AND TRADE FACILITATION

Although cereals marketing is better integrated than it was prior to liberalization in the 1980s and earlier 1990s, market prices for coarse grains are still volatile, reflecting the fact that transportation costs are high, production depends critically on highly variable rainfall, and that there is no steady supply of coarse grain imports into West Africa, which would help to stabilize prices, as is the case for rice. The alternative would be storage, but this is costly for traders, and, even though there has been substantial investment in storage over the past two decades, most storage is still undertaken on the farm (Abt Associates, 2002, pp. 38-39).

Most production of coarse grains is used for on-farm consumption. However, farmers generally produce some surplus as a hedge against bad times. If not needed for family consumption, this surplus is sold on the market. The fact that most of this grain is residual production means that prices are even more volatile than they otherwise would be. This tends to discourage production of coarse grains such as maize as a cash crop, though this is becoming more common in the CFDT zone as an alternative to cotton.

One reason why the potential for increasing maize yields has not been fully realized is that demand for human consumption has in the past been limited. So efforts have been underway for several decades to transform maize into products that consumers want. Because of urbanization and the fact that the opportunity cost of women's time in urban areas is often higher than in the

countryside, coarse grains are now beginning to be processed, pre-cooked, packaged, and sold in supermarkets in the Bamako region. It also appears that pre-cooked cereals are finding markets in neighboring countries (Abt Associates, 2002, p. 42). This plus the increase in demand for maize as an input into the feed industry implies that the prospects for a growing maize market have considerably improved.

One problem is the poor quality of coarse grain cereals that are marketed. USAID is providing technical assistance to cereals traders to enable them to market a higher quality product. This involves better drying and storage, as well as market presentation. Improved quality should go hand in hand with setting norms and standards in both Malian and regional markets. Mali is well positioned to take the lead in setting cereal norms based on objective criteria because of its major importance as a supplier.

Another problem is lack of access to working capital for marketing, which is now completely in the hands of the private sector consisting of producers, collectors, processors, semi-wholesalers, wholesalers, retailers, and exporters. Where markets are well developed, a few larger wholesalers or exporters, who either have their own working capital or able to obtain it from commercial banks, will often extend trade credit to smaller traders upstream in the marketing chain. However, given the relatively small quantities of coarse grains that are collected from dispersed production areas, as well as the risks engendered by high price volatility, this system does not work very well for coarse grains. To some extent credit can be obtained from the decentralized rural savings and credit funds that exist in Mali, but the perception is that this is inadequate (*Centre Agro-Entreprise*, 2001). Nevertheless, many of these funds are quite successful and it is difficult to see any viable alternative other than continuing to promote them and linking them more closely with the commercial banking system.<sup>2</sup>

As with rice, high transportation costs and illegal barriers to trade in neighboring countries pose major problems for exports of coarse grains and animal and poultry feed. In addition to the high cost of operating trucks, the poor condition of roads in many areas of the country means that these areas are not well linked with the market and with opportunities for export. It also means that the cost of agricultural inputs is very high. This has important consequences for poverty reduction since many of the poor live in areas not well served by roads.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

There do not appear to be any important regulatory or competitiveness issues currently in the coarse grains subsector, which is unregulated and subject to substantial competition. One potential issue for the future, however, is what norms and standards, if any, should be applied in the animal and poultry feed industry, as well as the development of new consumer products produced from coarse grains. There is also need for a regulatory structure regarding the importation and distribution of phytosanitary products.

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<sup>2</sup> USAID has an interesting program underway using its Development Credit Authority to help guarantee the loans of two Malian commercial banks. One use of this guarantee might be to induce these banks to extend their lending into rural areas by rediscounting loans made by the savings and credit funds.

## IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

Expansion of trade in coarse grains has important implications for economic growth and poverty reduction. Although most of the expansion will probably take place in maize, which is concentrated in the south, production of coarse grains is widespread throughout the country. Anything that increases demand for some of these grains is likely to have spillover effects for the others. For example, an increase in demand for maize for animal feed is likely to raise its price, causing consumers to switch towards greater consumption of millet and sorghum. Second, there are important linkages to other activities through processing, transportation, and the animal feed industry. This implies that there will be secondary increases income. All of this increased income will, in turn, generate increases in the overall level of demand for a variety of goods and services, thus generating further increases in income and employment.



## 5. Livestock and Livestock Products

Livestock has been one of the most important activities in Mali, both respect to its widespread prevalence and its contribution to exports. However, demand for meat products is increasing rapidly in Mali and threatens to outstrip supply in a few years unless modes of production are changed. Most important, there has to be a shift away from dependence on extensive techniques of grazing on pasture and crop residues, which are a limited resource, towards greater use of supplemental feeds and cultivated forage. There is substantial potential for this to take place in the agropastoral zone, especially in southern Mali. Intensification of livestock production has become quite profitable with the devaluation of the CFA franc in 1994, the establishment of the UEMOA customs union, and the rise in world prices for livestock products associated with the Uruguay Round.

Because there is strong demand and relatively high prices for livestock offals in the southern coastal markets of West Africa, it is more profitable to export live animals than to slaughter them in Mali and sell the offals on the local market. There may be some possibilities for slaughtering animals domestically and transporting the meat by air to distant markets, but this is not likely to grow into a very important activity for some time to come, given the problems of air freight transportation that exist in Mali today.

Major barriers involved in the transportation of live animals to the coastal markets include the high cost of transport and numerous informal charges that exist along the route, which involve long delays and sizeable payments. Current efforts to reduce these through the establishment of an Observatory need to be encouraged.

### RECOMMENDATIONS

The following actions are recommended:

- As the main professional association for livestock, the *Fédération de Groupements Inter-Professionnels du Bétail et de la Viande* (FEBEBVIM) needs strengthening. One such action was a workshop that was held in 2000 under the ATRIP project to teach lobbying to members of the Federation.
- Actions to improve feed availability, increase its nutritional effectiveness, and lower its cost would boost the competitiveness of Malian animal feed and livestock exports. Key steps are: (1) conduct applied research by IER (and a related extension effort) to determine least-cost rations for different types of livestock and different feeding regimes, based on locally available products and byproducts; and (2) continued policy discussions with the Malian government to push for full liberalization of the cottonseed market, which is necessary to rationalize the feed industry.

- Quality standards do not exist for blended feeds, chicks or egg and meat products. Introduction of quality standards, including information for producers and feed millers regarding suitable rations, could improve the efficiency of the whole production chain.
- Efforts to eliminate informal barriers to livestock exports, such as the establishment of an Observatory to record and publicize delays and payments made, need to be pursued.
- The Bamako abattoir needs to be refurbished if for no reason other than health considerations. Efforts to privatize it should be pursued with greater vigor, including willingness to accept a lower price than has been demanded until now.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

The livestock sector accounts for approximately one fifth of Mali's GDP and is the second most important agricultural export. Mali has historically been a major exporter of cattle and small ruminants, and DRC studies confirm Mali's comparative advantage in production of live animals for export (Metzel, *et al*, 1998). Cote d'Ivoire, Ghana, and, to a much smaller extent, Senegal, Algeria, and Nigeria, are the main export markets for live cattle. Emerging markets include Guinea and Benin. Export is both by truck and, in some cases, on the hoof to the major assembly point or border, and by truck thereafter (Abt Associates, 2002, p. 45).

After some slowdown during the late 1980s and early 1990s, exports rebounded following the elimination of export taxes in 1993 and the devaluation of the CFA Franc in 1994. Other changes that have improved prospects for animal exports include a concerted effort to liberalize regional livestock trade controls in Côte d'Ivoire and Ghana (Metzel, *et al*, 1998, p. 7).

Despite this expansion induced by price increases and trade liberalization, questions remain as to the ability of livestock production to keep up with growing demand. Analysis from the EAGER Project found that if past trends in domestic consumption and production of red meat continue, total consumption will overtake production by the year 2010, and Mali's exports will fall to zero, except for raw or tanned hide and skin exports, which will increase as local slaughter increases (Metzel, *et al*, 1998, p. 1).

Most growth in livestock production has in the past come from increasing herd numbers. Although there has been some rise in herd off-take rates and average animal weight—probably as a result of better market incentives and improved veterinary services—techniques of livestock production have for the most part been very extensive in nature, involving grazing of pasture and crop residues. Growing pressure on these resources, however, severely limits the capacity for future expansion to be based on these sources of animal nutrition alone. Furthermore, although intensification of livestock production has not until recently been profitable in competition with more extensive production techniques, as additional grazing and crop residual resources have declined, the relative attractiveness of more intensive forms of production has increased, especially after devaluation of the CFA franc (Metzel, *et al*, 1998, p. 1).

The potential for intensification, especially in the agropastoral zones, is quite substantial in terms of both livestock numbers and productivity. Although there is some competition in these zones between livestock and agriculture, most of this is associated with cultivation during the dry season,

which is relatively rare, and the potential complementarities between cultivation and livestock are considerable.

There is also a likelihood that red meat consumption will grow less rapidly than that predicted by past trends. Because livestock exports are largely destined for the West African market, and because this market as a whole is not able to satisfy its needs, the prices of Malian livestock exports are influenced by the prices of meat imported into the market from abroad and by the Common External Tariff (CET) of the UEMOA customs union. Prices of imported meat are likely to rise given the overall reduction in livestock subsidies throughout the world as a result of the Uruguay Round. In addition, as shown below, the rate of protection against imports from external sources is very high and may have increased with the creation of the customs union. In any event, the recent expansion of poultry production in West Africa is already creating an alternative to consumption of red meat (Metzel, *et al*, 1998, p. 2).

An important issue is whether more value added can be captured within Mali by moving the locus of slaughter to Mali from neighboring countries. While there have been several attempts over the years to export chilled beef by air, rail, and road, both within West Africa and to other African markets (Gabon, North Africa), these efforts have generally proved unprofitable. Major constraints to meat exports are higher value placed on by-products in coastal markets, which makes it more profitable to export live animals, and the high-cost and unreliability of refrigerated transport. Developing meat exports would also require rehabilitation of the Bamako abattoir, which is currently in a poor state of repair. Quantitative analysis generally supports the conclusion that exporting meat, as opposed to live animals, is not profitable either financially or economically (Metzel, *et al*, 1998).

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

In the early 1990s, the Malian government significantly simplified export procedures for cattle and eliminated the export tax. It also opened the export trade to individual livestock raisers, cooperatives, and village associations as well cattle traders. This greatly facilitated the ability of exporters to take advantage of the increased prices in export markets that resulted from the devaluation.

Under the UEMOA customs union, livestock and livestock products should circulate freely within the union. This free trade zone will be enlarged when other countries within ECOWAS but currently outside the customs union join it within the next few years. The Common External Tariff that is applied to livestock and its products imported from outside the union is 22.5 percent. In addition, the value-added tax of 18 percent is also paid on these imports but is not paid on domestic production. This amounts to a very high degree of protection against imports within potentially the entire West African region.

### Institutional Capabilities

The livestock sector in Mali is assisted by a number of institutions. One is the *Office Malien du Bétail et de la Viande*, which has a system in place for the collection and diffusion of livestock market information and which conducts market studies and other similar tasks. It also provides a

small secretariat to the *Fédération de Groupements Inter-Professionnels du Bétail et de la Viande* (FEBEBVIM), which is the national association of producers, traders, and butchers. FEBEBVIM is relatively young, though some of its member associations have been around for several years.

In 1993, an inter-ministerial organization was established, which was called the *Comité National de Concertation pour la Promotion des Echanges Commerciaux des Produits d'Elevage*. This was the Malian branch of a series of National Coordinating Committees (NCCs) that were set up in a number of West African countries to deal with problems of cross-border trade. The goals of the Mali NCC, which were similar to those of most of the other national committees, were to help organize professionals in the sub-sector, to simplify procedures and reduce taxes on cross-border trade, to exchange information within the region, to assist in improving transportation and infrastructure, to ease the problem of finance, and to deal with issues related to regional commercial policy. The Malian NCC was made up of 8 representatives of the public sector and 7 of the private sector. The NCC was chaired by the ministerial livestock representative and its secretariat was the responsibility of OMBEVI.

An evaluation of the NCCs in 2001 noted that the Malian NCC was more effective in providing inter-departmental coordination within government than in eliciting active participation by the private sector. Despite this, the NCC was effective in simplifying export procedures, reducing the fiscal burden on livestock exports, and in distributing livestock market information. It also played a major role in the struggle to eliminate informal barriers to trade. By the end of the decade, the Government had ceded chairmanship of the NCC to the FEBEBVIM, thus enhancing to some extent the importance of the private sector (CILSS/FERAP, 2001, pp. 44-48).

Government actions to increase livestock production have focused primarily on animal health activities, such as rinderpest vaccination, provision of public slaughter facilities, and improved access to veterinary inputs and diagnoses through creation of the Central Veterinary Laboratory and the *Pharmacie Vétérinaire du Mali*. Aside from some public involvement in the past with marketing and ranching, the livestock sector has historically involved mostly the private sector. The reforms of the mid 1990s even allowed the private practice of veterinary medicine and the opening of private veterinary pharmacies, which appear to have improved access to farmers and herders to veterinary services and supplies (Abt Associates, 2002, Vol. II, p. 42).

## PRODUCTION AND PROCESSING CONSTRAINTS

The major potential for expanding livestock production is in the agropastoral zones of Mali, especially in the south. Here livestock and cropping activities have increasingly been combined in a mutually complementary way through use of draft oxen, grazing of crop residues, feeding on crop by-products, manuring of fields, and cultivation of forage. The other major shift over the past 20 years has been the growth of peri-urban livestock production in response to the demand generated by growing cities. This has involved increased poultry and dairy production, destined for the urban market, and livestock fattening activities for both cattle and small ruminants (Abt Associates, 2002, Vol. II, p. 42).

Economically, small farm-based enterprises are currently most competitive because these typically draw on surplus by-products of the farm and labor with a relatively low opportunity cost.

However, potential to expand this activity is limited by the availability of these cheap resources on-farm.

Larger commercial fattening operations are also economically attractive and present greater prospects for expanding fattening activities in the long run because they depend more on the market feed inputs. Constraints to growth include:

- Limited access to protein feed concentrates, particularly cotton seed cake;
- Limited access to and timely delivery of financing for seasonal fattening;
- Insufficient information on market prices;
- Inadequate knowledge or technology to make optimal use of local feed resources in feed rations; and
- Competition with agriculture for access to factors of production (Metzel, *et al*, 1998, p. 2).

Lack of adequate feed is the most widely cited constraint to expanded ruminant production. The feed problem has two major aspects:

- Inadequate dry-season forage, which leads to significant weight loss during the dry season and weakens the condition of work animals; and
- Costly or unavailable concentrate feeds. This problem is closely related to the failure to fully liberalize the cottonseed and cottonseed cake market. Distortions in this market have led to feeds formulated with excessive amounts of cottonseed or cottonseed cake, and to non-market allocations of cottonseed and cottonseed cake that often lead to shortages.

Lack of animal feed availability is perhaps most constraining in the modern poultry sector, which must feed the birds year round. Feed ingredients are expensive in Mali, and the blended feed rations are not nutritionally balanced to provide optimum feed conversion.

One of the most important inputs into animal feed is cottonseed cake, which is produced by HUICOMA, which has a monopoly over the purchase of cottonseed from CMDT. The policies involving the distribution of the cake constitute a major impediment to making efficient use of it, and ultimately to expanding livestock production. Until the beginning of 2000, only 6 percent of the cottonseed cake distributed in Mali was truly liberalized and in the hands of private sector traders or individuals. Half the output of cake from the three HUICOMA mills was reserved for CMDT, which delivered it to cotton farmers as partial repayment for their cotton crop. Forty percent went to the APCAM network which distributed and sold it to its members through the regional agricultural chambers. The Ministry of Rural Development had the right to distribute the remaining 4% of the animal feed. This non-market distribution system led to very inefficient use of the cake because most livestock owners were not paying full market price.

In January 2000, a new system was set up reserving 30,000 tons of cottonseed cake for CMDT, with the rest sold under an auction system with a floor price. As the auction system led to very high prices, it was scrapped in March 2000, and both CMDT and APCAM were given quotas of 30,000 tons each, with the rest (36 percent of production, or around 40,000 tons) reserved for liberalized sale by HUICOMA. Thus the system continues to be plagued by inefficiencies.

A recent Institut de l'Economie Rurale (IER) analysis estimates the relative competitiveness of Mali's present cottonseed distributions system compared with regional and international price levels. The conclusions are that, because of its subsidized sales of cottonseed to HUICOMA, CMDT loses 5.2 billion CFA francs (\$7.3 million) compared with the prices it could command in a liberalized internal market and 8.8 billion CFA francs (\$12.4 million) compared with sales it could make to the external market. These losses are to the benefit of HUICOMA and those receiving the cottonseed cake quota (APCAM, cotton producers, Ministry of Rural Development). The net effect for the entire Malian economy is a loss of 1.769 billion CFA francs (\$2.5 million) in comparison with exporting the total output and 1.059 billion CFA francs (\$1.5 million) compared with sales in a liberalized internal market.

Feed conversion efficiency in Mali generally is quite low. Feed constitutes most of the cost of producing poultry meat and eggs. It takes over 3 pounds of feed to produce a pound of meat in Mali, whereas more advanced countries require less than 2 pounds. Improved feeds would lead to better feed conversion and therefore lower costs for poultry meat and eggs. Lower prices, in turn, would expand the market for poultry products and thereby the inputs used in poultry feed like maize, peanut meal, fishmeal, cottonseed meal, and other locally produced feed ingredients. According to an industry analyst at APCAM, what is needed is greater knowledge of the appropriate feed rations, including differentiation by species, and also promoting the use of concentrates.

There are two refrigerated abattoirs in Mali, one in Gao (built in the 1960s for meat exports to North Africa, but which has never been put into service) and one in Bamako. The Bamako abattoir is owned by the Ministry of Rural Development, which has been trying to sell it for the past 5 years. There has been only one bid, which was for about a third of what the Ministry was asking. In the 5 years it has been up for sale, there has been little reinvestment or maintenance, and the facilities are degrading, creating serious health dangers.

## MARKETING AND TRADE FACILITATION

Roughly half the cattle sold for slaughter each year and nearly 80 percent of the small ruminants are consumed domestically. The trade is in the hands of the private sector, and most evidence suggests that it is fairly competitive. Market information is collected through OMBEVI (*Office Malien du Bétail et de la Viande*) and is diffused via the Malian agricultural market information system (OMA).

The livestock are typically trekked to market and then slaughtered either in the countryside, or in publicly provided slaughter slabs or abattoirs. Under the decentralization program, each commune is responsible for maintaining its own livestock corridors for the passage of trade animals and animals on transhumance. A major question is how well this local management of the livestock corridors and associated watering points will work. These paths are essential to maintaining market access for livestock producers and avoiding crop damage by livestock.

A major problem for livestock exports is the informal barriers that exist en route to coastal markets. These barriers involve long delays and costly bribes. Traders report that while some barriers (police and customs officers at road check points) still exist in Mali, the major problems are in Côte d'Ivoire and Senegal. Such harassment does not appear to be a problem in Ghana.

The level of the payoffs can be very large: payments often amount to 30-35,000 CFA francs per head of cattle, which are worth 250-300,000 francs in Abidjan. The problem of payoffs and seizures

of animals in Côte d'Ivoire became so severe during the political crisis in that country in November 2000 that Malian cattle merchants refused to ship cattle there for nearly two weeks. This boycott prompted the Ivorian government to provide military escorts for trucks of cattle from Mali to prevent harassment by police and other officials. This arrangement has now been replaced with the requirement that livestock imported into Côte d'Ivoire be handled by an Ivorian "*Société de Convoyage*", a company that, for a fee, handles all paperwork and bribes for the exporter. Most traders are not satisfied with this arrangement. An alternative being worked out is to establish a selling market in Sikasso or at the border and to allow Ivorian traders to handle the transport through Côte d'Ivoire.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

Mali's livestock sector remains largely private and often "informal". Except for hides and skins, virtually all exports are of live animals. Domestically consumed meat is sold with almost no processing beyond slaughter. Animal health regulations, including those imposed at the border, are rudimentary. If Mali is to expand its exports to include new markets abroad, this will require substantial upgrading of sanitary and health controls.

## IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

Livestock production is widespread throughout Mali, involving at least 30 percent of the Malian workforce and contributing 10-12 percent to GDP and 10 percent to export earnings. Linkages to crop cultivation are important through the use of animal traction, manuring of fields, feeding of agricultural by-products, and the role of animals as "savings accounts" in rural areas. Small ruminants (sheep and goats) are widely held in rural areas so that increasing in their productivity could lead to very broad-based increases in income. Livestock are also an important source of women's income. In rural areas, for example, women dominate milk marketing and are often involved in small ruminant production. In addition, nearly 40 percent of small ruminants are produced in the arid northeast (regions of Gao, Kidal, and Tombouctou), compared to only 14 percent of cattle, so that efforts to increase income from small ruminants would have important regional income distribution effects (Abt Associates, 2002, Vol. II, pp. 41-42).

The finding that the greatest potential for increasing livestock production lies in the agropastoral zone implies that public efforts to support livestock through research, animal health services, animal nutrition programs, and market development should concentrate in these zones. This raises the question of what efforts should be made in the livestock sector in other regions, where the potential is less and the possible danger to the environment is greater. Equity considerations are important, here, as is the impact on the absolute level of poverty.

The analysis confirms the impact of drought in shifting herds from pastoral systems associated with dryland crops alone to systems which have dry season crops based either on irrigation or flood recession. This has implications for investments in water control and for drought response strategies. First, to the extent that dry season agriculture buffers herd losses during drought, this effect should be factored into the benefits of these systems in assessing public investments. It also suggests that programs targeted to pastoralists during droughts should address this trend.



## 6. Oilseeds

The most important oilseeds in Mali are cottonseed, groundnuts, and shea nuts (*shea*). Cottonseed is a joint product with cotton fiber. Its true economic value is determined by the world market, but this value is distorted in Mali by the sale of cottonseed by CMDT, after ginning, to HUICOMA at a price that is generally well below the world market price. In addition, there are substantial distortions in the market for cottonseed cake, which prevent its being used efficiently as an animal feed.

Groundnuts were once an important Malian export, but inefficient parastatal marketing and processing destroyed that business. Production, processing, and marketing for the local market have, however, recently begun to expand relatively rapidly. Groundnut cake is a potentially valuable input into the poultry industry, which could potentially get the subsector moving again.

With two-thirds of all the shea trees in the world, Mali is well positioned to benefit from expanding trade in shea nuts and butter. Great improvements are possible and needed in harvesting efficiency, initial handling, and ensuring product quality, all of which could contribute to increasing the supply of shea nuts and butter conforming to international requirements. This sector has very strong poverty linkages because collection, processing, and marketing of shea nuts and butter is estimated to involve 3 million Malian women, providing about 80 percent of their income.

### RECOMMENDATIONS

#### Cottonseed

The principal recommendations regarding trade capacity building in the cottonseed and cottonseed cake subsector concern moving away from the existing distorted pricing and allocation system to one that will earn the highest return and provide the greatest efficiency. This could imply exporting unprocessed cottonseed. At the very least it would mean that scarce cottonseed cake would be allocated more efficiently in its use in animal feed.

#### Groundnuts

There needs to be a careful study of the groundnut subsector and how it could potentially develop. Of special importance is the use of groundnut cake as an input into poultry feed and what this implies for the profitability of production, processing, and marketing.

Facilitating the multiplication of improved groundnut seed would help expand production. Technical assistance in storage and processing also would help ensure a market for the products.

## Shea

Of the various oilseeds, that which has demonstrated the greatest promise in terms of exports is shea nuts and butter. A number of steps could be taken to build trade capacity in this sector:

- Find the processing method that makes the best-quality butter and disseminate that technique to all the producers. This would help standardize the national product and ultimately help to improve the quality of exports.
- Increase the quantity of butter produced by turning butter production into a year-round activity.
- Organize women's groups, since women are the most important producers (CAE/Chemonics, Vol. III, 2001, p.65).
- Intensify the collection of nuts and educate women about which fruit to pick.
- Achieve widespread adoption of improved method for treating nuts, including radio and television campaigns.

The Platform Project funded by a pool of donors appears to be a good opportunity to reduce women's burden. It plans to target 450 villages, but it has equipped 200 villages only. USAID could join the pool of donors to speed up the process of equipping additional villages with the multi-function platforms and improved shea and peanut processing.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

### Cottonseed

Cottonseed could potentially be exported from Mali, which establishes its economic opportunity cost. Instead, all the cottonseed produced in Mali by CMDT in its ginneries is sold to HUICOMA, a mixed public-private company, which has a monopoly on the crushing of the seed and the sale of the resulting oil and cottonseed cake. The price at which the cottonseed is sold to HUICOMA is 29 CFA francs/kilogram, which is much lower than the price that could be obtained on the world market if the seed were exported directly to overseas markets or neighboring countries. Partly because of the low price that CMDT receives for its cottonseed, it obtains 30,000 tons of cottonseed cake from HUICOMA at no charge, which in turn is passed on to its farmers to compensate them for the low price they are paid, at least until recently, for their raw cotton. This gives rise to serious distortions and misallocation of resources as discussed in the section on livestock. Despite the low price that HUICOMA pays for its cottonseed, it is still not able to sell oil competitively on the local market without substantial import protection (Abt Associates, Vol. II, 2002, p 74). This situation would be alleviated somewhat if HUICOMA could sell the cake at full market value, but of course to do this it should also have to pay full market price for the cottonseed.

The competitiveness of cottonseed oil is affected by the high cost of imported inputs to process oil and by poor management. The restructuring of HUICOMA and the increase in seed price will be a test for the future viability of the oil subsector. Also, if the cotton sector is liberalized, it is possible

that cottonseed would be exported, and that could change the economics of both oil and animal feed operations in Mali.

## Groundnuts

Until the early 1990s, groundnut production in the western region of Mali was under the leadership of the *Office de Développement Intégré des Productions Arachidières et Céréalières* (ODIPAC). Groundnuts were collected by ODIPAC and sold to SEPAMA, which produced unrefined oil that was either exported to Europe or sold in the local market to HUICOMA, which in turn supplied refined peanut oil for the domestic market. Price incentives were seriously distorted by these state-owned parastatals, however, which together with high costs led to an increasing inability to sell on world markets. As a result, the parastatals were dismantled in the early 1990s, which left a marketing vacuum that has not been filled by the private sector (Abt Associates, Vol. II, 2002, p.75).

The combination of favorable agro-ecological conditions and farmers' experience with the crop suggests that Mali could be competitive in groundnut production. Furthermore, there is considerable potential for expansion of groundnut cake as an input into poultry feed. With an existing market for cake, and extraction of groundnut oil being a very simple process, there may be considerable potential for expansion of production and perhaps even exports of this crop.

## Shea

Only 16 countries in the world, all in Africa, produce shea, and two-thirds of all the shea trees in the world are in Mali. Though data on shea nuts are very poor, there are an estimated 141 to 150 million trees, which bear fruit at 15-20 years of age. About 60 percent of the trees produce fruit and nuts in any given year, with yields of about 75 kilograms of fruit and about 15 kg of nuts per tree.

Production in Mali varies between 80,000 and 250,000 tons per year, primarily in the regions of Bamako, Bougouni, Koutiala, San, Ségou, and Sikasso. An estimated 100 to 120,000 tons of shea nuts are used by Malian consumers, with roughly 5,000 tons of dried nut exports. A further 60,000 to 90,000 tons of nuts are dedicated to producing 15,000 to 18,000 tons of butter (CAE/Chemonics, Vol. III, 2001, p. 32).

The main export markets for shea nuts are the EU and Japan, with annual imports of about 20,000 tons at a value of 2 billion CFA francs (equal to about \$3.3 million). Export demand for good quality shea nuts is strong, but the quality of Malian nuts is not as good as in other neighboring countries such as Burkina Faso (Abt Associates, 2002, Vol. II, p. 75). In February 2001, for example, there were very unattractive prices being offered for Malian shea nuts, at 65 CFA francs/kg while the nuts from Burkina Faso were selling for 100 CFA francs/kg.

In 1999, Mali exported 5,555 tons of shea nuts and 1,436 tons of butter to France, Senegal, Burkina Faso, and Singapore (CAE/Chemonics, Vol. III, 2001, p.39). Shea nut butter is used as household oil for cooking and lighting, for soap, as a traditional pharmaceutical, and as a cosmetic. It's also used to make chocolate. Large multinational companies are the ultimate users of the shea nuts exported, such as UNILEVER in the U.K., Arhus in the Netherlands, Karlsham in Sweden, and Fudji Itoh, Karreka and Mitshi in Japan.

The recent change in European Union rules to permit the use of up to 5 percent shea butter in the production of chocolate provides a good opportunity to expand shea production. Demand for shea butter is also strong in the cosmetic industry.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regimes

Oilseeds and their products should be traded freely within the UEMOA customs union. The seeds or nuts are subject to a 7.5 percent CET if imported from outside the zone. Imports of unrefined vegetable oil and of oilseed cake are subject to a 12.5 percent TEC and those of refined oil are taxed at 22.5 percent. In addition there is the value-added tax in Mali of 18 percent.

### Institutional Capabilities

Cottonseed producers are supported by CMDT under the overall structure of the cotton subsector. There is very little organization or support of groundnut producers now that the parastatals have been disbanded.

Shea producers are represented at the level of the village associations. In addition, the *Office de la Haute Vallée du Niger* (OHVN), through its agribusiness section, provides support for shea producers in its zone. Shea exporters are represented by the *Association Malienne des Exportateurs des Produits de Collecte* (AMEPROC), a relatively new organization.

AMIPJ, an NGO, has been actively working in the sector with the *Canadian Centre d'Etudes et de Coopération Internationale* (CCECI), now beginning to replicate in Mali its successful work in Burkina Faso where it has been active since the mid-1990s. Otherwise, few efforts have been made to organize the participants or manage the trees (Abt Associates, 2002, Vol. II, p. 55).

## PRODUCTION AND PROCESSING CONSTRAINTS

### Cottonseed

Most of the constraints on production and ginning of cottonseed are covered under the cottonseed subsector. The competitiveness of cottonseed oil is affected by the high cost of imported inputs to process oil and by poor management in its extraction and processing. The restructuring of HUICOMA and the increase in cottonseed price that this may imply will be a test for the future viability of the oil subsector. Also, if the cottonseed subsector is completely liberalized, it is possible that cottonseed will be exported, and that could change the economics of both oil and animal feed operations in Mali.

### Groundnuts

The groundnut subsector is constrained by many factors including (1) lack of improved seeds in the production zones, making it difficult for farmers to increase yields to lower unit costs; (2) low level

of fertilizer use in the production zones; (3) poor storage facilities causing a high level of aflatoxin; (4) painful and labor-intensive processing activities due to the lack of appropriate technology; (5) lack of transport in the production zones; and (6) strong competition from other vegetable oils in the domestic market.

Groundnut production is concentrated in four regions—Kayes, Koulikoro, Sikasso, and Segou. Among these, Kayes is by far the largest producer in the country, accounting for more than 35 percent of groundnut supply during the period 1984 to 1999. During this period, total production grew by about 11 percent per year, but this growth emanated almost entirely from expansion in cultivated area. Although groundnut production stagnated from 1995/96 to 1998/99, it increased spectacularly in 1999/00 to reach its all-time peak of 278,000 tons.

## Shea

Only the shea fruit that has fallen on the ground is usually collected. Rural women at present have very little incentive to gather a greater quantity of nuts, since the producer prices are not very remunerative for gathering and handling. As a result, there is an insufficient supply of nuts being harvested in order to boost export volumes. But there are adequate supplies of nuts on the trees, since a high percentage of the fruit growing on the tree is lost and never harvested.

A key production constraint in the shea sector is a lack of responsibility for the maintenance of the trees. One problem is that the trees grow in the wild, with no one owning them or looking after their upkeep and maintenance. To maintain a long income stream, a systematic program of protecting existing trees and planting new ones needs to be undertaken, using grafting methods developed by research. Promisingly, research has produced grafted shea trees that produce fruit after 6 years, instead of the current average of 17 years.

At present, the initial drying of the nuts, achieved by stacking them for several months in the villages, is ill suited to ensuring an end product of appropriate quality for export. Sometimes, the nuts are buried in order to facilitate fermentation. The best method for treating the nuts is to boil them for two hours and dry them in the sun or very briefly in an oven. In this way, they can be stored for up to two years, for example in jute bags. According to IER, the handling of shea nuts during drying and storage is critical to ensuring that they will reach the market in suitable export quality.

As a result of the lack of quality standards, Malian shea butter is considered to be a sub-standard product on the international market (CAE/Chemonics, Vol. III, p. 16). According to CCECI, the traditional method of production makes higher quality butter than machine processed butter, which is of poor quality. Therefore, traditional labor-intensive processing methods may be useful as an alternative to machine processing for expanding Mali's exports. The main drawback to traditional processing, at the moment, is the high acidity resulting from the improper methods currently in use for storing the nuts.

Regardless of the method of processing, the priority trade capacity building need is to improve the methods of handling and conservation so that the raw material is of higher quality. It has been shown in Burkina Faso that the improved methods can be successfully adopted in a widespread manner and result in a high quality product. A French-supported project has recently introduced a multifunctional processing platform.

A final production constraint for the shea sector is the high cost of energy. At least two firms

process nuts industrially in Mali—Shea-Mali and SIKA. However, with the high energy costs, their product is often not price competitive with industries located in industrial countries that import the nuts for processing.

### MARKETING AND TRADE FACILITATION

As shown in Table 2a, transport costs account for a heavy share of the sale price for shea nuts, rendering their sale a losing proposition for traders during the busy season, according to IER calculations. This is partly due to a lack of transport in rural areas.

Most of the shea nuts are trucked to the Abidjan trading counters where they are shipped by boat to Europe or Japan. European and Japanese buyers usually pre-finance the Malian exporters. Many Ivorian and Burkinabé traders buy shea nuts in Mali and export them to Europe from their countries. Some have begun to pre-finance the collection and aggregation activities. AMEPROC often receives orders from foreign buyers, but cannot fill them due to the difficulty in aggregating export-quality product.

**Table 2a. Marketing Budget for Shea Nuts and Shea Butter**

	<u>Shea Nuts</u>		<u>Shea Butter</u>	
	Off season	Busy season	Off season	Busy season
	FCFA/kg			
Producer price	40	25	290	240
Transport	10	10	10	10
Handling	0.5	0.5	0.5	0.5
Bagging	2.5	2.5	3.9	3.9
Storage	0.3	0.3	0.3	0.3
Sale price in market	60	30	305	260
Net revenue for traders	6.7	-8.3	0.3	5.3

Source: IER

For shea nuts, December to April is the period when there is a great deal of product on the markets of San and Benena. The off season is from May to September, when prices rise. For shea nuts, the lowest price observed is usually about 20 CFA francs/kg and the highest is 87 CFA francs/kg (the average monthly price is 23 FCFA/kg). Butter prices are lowest in February at 200 CFA francs/kg and highest in December at 307 CFA francs/kg. The monthly average on the San market is 260 CFA francs/kg.

Though a proven export market exists for shea nuts, Mali has trouble competing in terms of both quality and quantity. For shea butter, there are difficulties related to quality and price. Improving the quality and price competitiveness of Malian shea butter should therefore be a priority.

## **REGULATORY ENVIRONMENT AND COMPETITIVENESS**

The cottonseed subsector is highly regulated as described above. The groundnut and shea nut subsectors are characterized by a high degree of competition among producers and collectors and no regulation.

## **IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION**

Collection, processing, and marketing of shea nuts and butter is estimated to involve 3 million Malian women, providing about 80 percent of their income. This alone makes this a very important activity in terms of poverty reduction.



## 7. Horticulture

Mali's horticulture sector holds great promise for expanding trade, with clear linkages for poverty reduction among rural producers. However, considerable barriers exist to boosting export competitiveness (e.g., inefficiencies in production, harvest, handling, and internal and foreign transportation). The supply of raw materials to exporting firms is disorganized and unreliable, and is characterized by high levels of product loss and degradation. Problems with financing, input use, quality inspection, and marketing clearly have a negative impact on the quality and yields of horticultural products for export. A lack of professionalism among the exporting firms inhibits greater cooperation and coordination with the upstream actors and impedes the development of long-term relationships with foreign buyers. As for processing horticultural products for export, a principal constraint is the unreliable electricity supply, which raises the cost and risk of investing in or engaging in agribusiness.

### RECOMMENDATIONS

The following are the major recommendations for the horticulture subsector:

- Elaborate quality norms for fruits and vegetables and proceed to establish a system for ensuring regular phytosanitary controls. Equip the phytosanitary authorities with the required materials. Create a national trademark for fruits and vegetables, signifying that the product displaying the official sticker meets or exceeds defined national standards.
- Develop and disseminate export calendars for each product, so all involved, from the rural gatherer or producer to the exporter to the foreign buyer have a clear idea of what is available when.
- Support efforts to establish a mechanism for providing credit at the level of the village association for seeds and other inputs, as part of the decentralization program.
- Also as part of the decentralization program, organize the rural producers in village associations by product, with a single association at the national level for a particular product.

In most instances, these actions should be carried out jointly by the public and private sectors, with support where necessary or desirable from the donors. For example, establishment and enforcement of norms and standards is the responsibility of the Ministry of Industry, Trade, and Transport and of the Ministry of Rural Development, but this needs to be done in close association with private-sector professional associations, which know what these norms and standards should be.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

Consumption of horticultural products in Mali is about 30 kg per capita and growing rapidly (CAE/Chemonics, 2001, Vol. IV, p.10). The farmers and their families consume much of the fresh produce. Malian markets, as do other West African markets, tolerate a wide variability in quality. As for local demand for value-added products, Mali's domestic market is very shallow, with the high costs related to energy, packaging, and transport placing processed horticultural products out of the reach of more than 8 million Malians (Abt Associates, 2002, Vol. II, p.71).

As indicated in Table 3, Mali already exports a broad range of horticultural products. Yet for the most part, the only Malian horticulture products exported are those for which pre-financing is provided by foreign buyers, prompting calls for some form of internal financing mechanism. Mali's competitive advantage lies in its ability to do the intensive labor needed to grow, gather, and handle these crops at a low labor cost (Abt Associates, 2002, Vol. II, p.62). What becomes apparent is that those producers in Mali capable of assuring export-quality output are also those using modern techniques for fertilization and plant protection.

**Table 3. Source and Destination of Mali's Horticultural Product Exports**

	Destinations	Zones of production
Mango	CI, Senegal, Europe	Sikasso, Bamako, Koulikoro, Kayes
Pineapple	CI	Sikasso
Potato	CI, Burkina, Mauritania	Sikasso
Banana	CI, Burkina, Mauritania	Sikasso, Ségou
Sweet potato	CI, Senegal, Mauritania	Sikasso
Igname	CI, Europe	Sikasso
Green bean	Europe	Bamako
Tiger nut	Europe	Sikasso
Tomato	CI, Senegal, Mauritania, Europe	Ségou, Koulikoro, Kayes
Black pepper	Europe	Bamako
Lemons	Europe, CI, Senegal	Bamako, Koulikoro
Papaya	Europe	Koulikoro
Oranges	Europe, Senegal, Mauritania	Koulikoro, Kayes
Mandarins	Senegal, Europe	Kayes, Koulikoro
Guava	Europe	Koulikoro
Onion	CI, Burkina, Senegal	Ségou
Shallot	CI, Burkina, Ghana, Guinea, Europe	Mopti, Ségou
Garlic	CI, Burkina	Ségou
Manioc	CI	Ségou
Cabbage	Senegal	Kayes

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Malian horticultural exports are traded duty free within the UEMOA customs union. The Common External tariff is 22.5 percent. In addition, Mali applies a value-added tax of 18 percent, and other UEMOA countries have similar VAT rates.

### Institutional Capabilities

There are four main public or quasi-public structures of support for the horticulture sector, one of which is the Office de Développement de la Haute Vallée du Niger (OHVN). OHVN is involved in the production and marketing of products, providing technical support, and furnishing credit for inputs, seeds, and equipment. OHVN also buys products directly from producers at prices agreed before planting, and acts as intermediary with European importers (CAE/Chemonics, 2001, Vol. IV, p.11).

The second support organization is the Office du Niger, which is the oldest and largest irrigation structure in West Africa. It was set up mainly for rice production, but also provides technical support to horticultural producers. A project within the Office du Niger, the Unité de Recherche Développement Observatoire du Changement (URDOC), has been working with shallot producers on new methods and equipment for drying fresh shallots. Another Office du Niger project, the Centre de Prestation de Services (PCPS), was begun in 1995 with support by France to provide training to farmers on management and accounting. PCPS has five centers in operation, working with 80 farmer associations, which contribute 1,000-1,500 FCFA per hectare.

The third public or quasi-public institution is the Office du Périmètre Irrigué de Baguineda (OPIB). OPIB manages the irrigation zone close to Bamako and provides technical advice, training, and information to producers. It covers 22 villages, each with its own village association. The main horticultural crop of OPIB is tomatoes.

The final public institution, the Division of Diversification of CMDT, has offered technical advice, monitoring, test crops, diversification of crops, and marketing support since 1976. This group has been active in the production of hibiscus, black pepper, potatoes, Tiger nuts, and watermelons.

In Mali's horticulture sector, there are three main professional organizations at the national level: the Association Malienne des Exportateurs des Légumes et des Fruits (AMELEF); the Association des Producteurs et Exportateurs des Fruits et Légumes (APEFEL); and the Association Malienne des Exportateurs des Produits de la Cueillette (AMEPROC). As with other associations in Mali, there remains significant room for improvement in these organizations, whether related to the reliable contribution of dues by members, the range and quality of services provided, or the overall effectiveness these groups have on the sector. Often, an organization's activities revolve solely around the capacity and energy of its president. Perhaps the greatest benefit comes from having a spokesperson to interact with government officials concerning problems related to the industry; for example, this is often helpful regarding problems related to road transport or assessment of formal and informal taxes.

As far as improving how the horticulture sector is organized in order to expand exports, the tendency now among the donor-supported projects is to focus on reinforcing the capacity of individual operators rather than working through the national-level professional associations. One project has sought to develop a market of local business service providers, for example in developing business plans, feasibility studies, reports, and documents.

In order to better organize the producers and reinforce their institutional capabilities, it is advisable to work at the level of the village association, providing training in group dynamics; the roles, rights; and responsibilities of different actors; the functioning and requirements of international markets, international market norms, and standards by product; and negotiating techniques (CAE/Chemonics, 2001, Vol. IV, p.83). The leaders of the village associations should be trained in management and accounting. One initiative that could be conducted as part of the decentralization program (PASAOP) would be to organize the rural producers in village associations by product, with a single association at the national level for a particular product (CAE/Chemonics, 2001, Vol. IV, p.83).

Ultimately, the exporters themselves must take responsibility for cooperating in a more effective manner both among themselves and with producers and traders. There was an inter-ministerial decree in 1995 that defined the conditions and obligations for operating as a fruit and vegetable exporter, but this legislation has not been fully implemented. The exporters should encourage forward integration from producers to packing and shipping operations, and establish procedures for maintaining the chain of quality throughout the export operation.

## PRODUCTION AND PROCESSING CONSTRAINTS

Financing is a fundamental problem for the horticultural sector, where there is a lack of financial wherewithal among the economic operators in order to undertake substantial investment. Larger producers have access to credit from their usual banking relationships, but the small producers have to rely on self-financing or informal credit systems. Obstacles include government policies related to land titles, the conservative nature of lending institutions, and the lack of adequate transparency in the accounting of firms. For those seeking loans, the red tape and paperwork burden is enormously constraining. Banks often require the posting of collateral equal to the value of the loan and the interest. Further, the fact that shipments to Europe are made on consignment, meaning that the exporter only gets paid upon arrival of the product, makes it impossible to provide an export payment guarantee (CAE/Chemonics, 2001, Vol. IV, p.16). Because of these difficulties, and the occasional shipment lost to spoilage, Malian exporters on a number of occasions have failed to pay off loans made or failed to pay producers for the products rendered.

In addition to problems with finance, there is a lack of availability of improved seeds and those that are available are high-priced and often are not of the quality advertised. For some products (potatoes, in particular), the lack of suitable seeds in sufficient quantities is a major impediment to expansion. As for fertilizer, horticultural producers in Mali generally benefit from the fertilizer distribution systems already in place to serve rice production. The need to import intermediate inputs for processing, such as packaging or ingredients, places Malian exporters at a disadvantage, in addition to raising prices for Malian consumers.

There is an obvious need for education and training in the appropriate marketing and use of inputs such as seed, fertilizer, and plant protection materials. Malian producers demonstrate a basic lack of knowledge regarding the appropriate inputs to use for each crop, which combined with illiteracy and the lack of product labeling in rural areas, all contribute to lower productivity and serious health risks. These health risks exist for both those applying inorganic inputs and those consuming the resultant fruits and vegetables. Further, there is a lack of adequate equipment for quality assurance. There are enormous needs in terms of equipment, whether for the producer in the field, the handler in the packing shed, or the quality control inspector.

Harvesting in Mali is also made difficult by production taking place on small units spread over large areas. The harvest season of many gathered products coincides with high labor demand periods for main season crops, leading to real constraints in harvest scheduling and the timeliness of post-harvest operations.

Another factor that places horticultural industries at a distinct disadvantage is high electricity tariffs (Mali has the highest in the region). Low energy reliability increases operating risks and raises costs for product handling, washing, grading, processing, and packing. Temperature and humidity controlled storage is at risk. As horticulture products have distinct seasons, which can be extended by canning or drying, the high cost of electricity as an input represents a significant disadvantage to the development of value-added agribusiness in Mali. Eventually, new developments in the energy sector, including completion of the gas pipeline along the West African coastline and investment in an interconnection line from Côte d'Ivoire to Sikasso, should bring greater electricity reliability and narrow the disadvantage Malian processors face vis-à-vis processors in neighboring countries.

## MARKETING AND TRADE FACILITATION

All horticultural production and marketing is characterized by lack of vertical integration and multiple handling from producer to consumer. Producers and collectors supply local markets and local traders, who sell to larger traders or their agents for transport to Bamako or other cities. There are layers of transaction costs in aggregating products through many local markets and individual smallholders. There is generally very little investment in post-harvest handling and storage infrastructure, because quality control is low at the first stage of product aggregation from producers. There is poorly differentiated transport from fields and villages to urban markets, resulting in further loss and degradation of quality (Abt Associates, 2002, Vol. II, p.64). As a result, it is no surprise that exporters have significant difficulty in obtaining uniform lots of produce. There is also a need for greater professionalism in the export sector. Malian horticulture exporters fulfill a multiplicity of managerial and technical functions within the firm. There is a clear need to train the exporters in sustainable and transparent business practices.

One key aspect of market organization is the provision of market information. Only since the beginning of 2000 has the Observatoire des Marchés Agricoles (OMA) collected price information on horticultural products. One Malian researcher has noted that the specific market information needed by the economic operators for the main horticultural products varies depending on whether one is buying or selling (Coulibaly, M.). For those purchasing products, the categories of information needed include: available supply in the zones of production, supply and demand conditions in the major markets, potential sources of financing available, prices offered by other suppliers, the cost and

time needed for delivery from the production zones, and the availability of transportation services. For those selling products, their interest lies in: prices and demand in the major markets, the availability of transportation services, the quality desired in potential markets, potential existing sources of financing, prices on other foreign markets, and competitors' prices. One reason why market information is so poor is the lack of data on different markets. The INSAH report for CILLS points to "one of the greatest challenges facing the horticultural sector—the development of reliable data bases that can be used by subsector participants and policy analysts to assess past performance and develop strategies to stimulate subsector growth" (INSAH, 1998, p.1).

In addition, road transport within Mali and between Mali and its neighbors is a principal constraint to expanding exports. An indication of the competitive disadvantage for Mali posed by the poor condition of roads and trucks is that transport makes up an estimated 30 percent of the cost of imports of all kinds (including packing, packaging materials, and fuel) compared with 12-14 percent in other countries of West Africa (Abt Associates, 2002, Vol. II p.69, citing UNCTAD and Price Waterhouse). Better rural roads would reduce the costs of collection and marketing. Better international roads would reduce product loss and degradation. Also, more widespread use of refrigerated trucks would ensure that horticultural products arrive in export-quality condition in the country of destination.

Until the recent difficulties among the airlines serving Mali, Malian exporters benefited from very competitive air transport rates to Europe (\$0.75-0.80/kg). However, with the bankruptcy of Sabena Airways and with enhanced concerns about security, there has been a dramatic decline in airfreight space availability. Even if this situation improves, costs are likely to increase substantially because of decreased airfreight space and increased security costs at airports. For some products (green beans), the situation has been especially damaging because airfreight is the sole option for exporting outside the region. With greater cooperation, it may be possible for Mali's horticultural product exporters, and perhaps exporters from other neighboring countries, to aggregate their collective demand for airfreight services so as to engage cargo planes to carry their produce. This will require liberalization of the air freight business throughout West Africa, a problem which is currently being acted upon by ECOWAS.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

The *Direction Générale de la Règlementation et du Contrôle* (DGRC), under the Ministry for Rural Development, is responsible for development and oversight of phytosanitary norms and standards in Mali, including harvest practices and post-harvest handling techniques and storage for horticultural products. The DGRC is also responsible for setting and overseeing quality standards and for promoting the adoption of quality control techniques related to horticultural products. For processed food and agricultural products, norms and quality control are the responsibility of the *Direction Nationale des Industries* of the Ministry of Industry, Trade, and Transport.

Unfortunately, relatively few norms or quality standards have been developed by these institutions, and there is almost no effective application in the field or factory of those norms for which legislation has been developed (CAE/Chemonics, 2001, Vol. IV, p.16). As a result, exported agriculture and food products leave Mali without the certificate of approval by the DGRC or the DNI, and are often of substandard quality or outright unusable. The head of the division of

phytosanitary control of the DGRC has called for a two-pronged approach to address trade capacity needs in this area:

- Adequately equipping the laboratories of the DGRC, which at present can do little more than conduct physical inspections of inputs or outputs; and
- Adequately training the DGRC agents and horticultural producers in order to produce safer, better-quality products “on the vine” and to raise the share of products receiving safety and quality certification.

It is clear that government departments by themselves cannot solve the problem of establishing and enforcing appropriate grades and standards. This must also be the responsibility of subsector professional associations, which have the detailed knowledge of their subsectors that is required. Otherwise the imposition of arbitrary norms and standards can easily become a significant non-tariff barrier to trade.

### **IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION**

Mali produces a range of potential horticultural products for export, with recent estimates of area and production shown in Table 4. Production tends to be on very small parcels, although farmers may plant several cycles throughout the year. On average, small producers plant a total cultivated area of 0.6 hectares to fruits and vegetables over the course of the year, compared with 1.7 hectares for medium-size producers and 4.7 hectares for the largest farmers. About 10 percent of the operations are run as cooperatives. Labor amounts to 65 percent of total production costs, only one-quarter of which is paid in wages, the rest being paid in food.

Since the 1984/85 drought in the Sahel, horticulture production in Mali has steadily increased, with planted area doubling over that time. Horticultural production is estimated at about 8% of GDP (Coulibaly, M.). There are about 51,000 producers engaged in annual horticultural. The most important region for is the Office du Niger (including Dogon Country), accounting for 25-35% of national production, followed by the Bamako region with 15-20% of output. Horticultural incomes tend to be second incomes, with rice and cotton generating the bulk of farm cash incomes. In the Office du Niger, about 40% of farm income comes from horticultural products, produced mainly by women (Abt Associates, 2002, Vol. II, p.10). The fact that horticultural production is so widespread and is such an important activity for women has important implications for poverty reduction.

**Table 4. Area and Production for Horticultural Products (1997/98)**

	Area (ha)	Production (metric tons)
Mangoes	6250	156250
Oranges	1385	20775
Lemons	494	7403
Mandarins	1042	15623
Bananas	1642	49247
Papaya	456	9126
Guava	573	5728
Dates	14	168
Potatoes	336	7737
Yams	3664	36640
Igname	6748	80976
Green beans	23	77
Tiger nut	1650	4538
Tomatoes	836	16713
Black pepper	18	273
Onion	579	9265
Shallots	3903	58539
Garlic	210	2049
Cabbage	161	3542

SOURCE: Coulibaly, M.

## 8. Green Beans

In Mali, green beans are a traditional horticultural export, but difficulties in logistics and transportation have prevented growth in export volumes. Malian green beans have intrinsic quality characteristics that are very attractive on international markets. The challenges are to assemble a workforce capable of responding to tight scheduling deadlines and to develop long-term relationships with buyers in Europe.

### RECOMMENDATIONS

The following are the major recommendations for the green bean subsector:

- Encourage greater cooperation among the exporting firms within the professional associations.
- Develop better logistical infrastructure for green bean exporting (e.g. pre-cooling units, refrigerated trucks, better airport facilities).
- Study the seasonal labor market in order to encourage sufficient supply of labor during the green bean harvest period, which conflicts with the rice harvest period.

### TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

World production of green beans is about 4.7 million tons, supplied and traded in great part through the informal sector and small gardening activities. China is the largest producer, with 1.2 million tons in 1998, followed by Turkey, India, and several European countries. World trade in fresh green beans is estimated at 267,000 tons, or slightly less than 6 percent of world production. Accounting for two-thirds of overall trade, European imports have grown, reaching 181,000 tons in 2000. France leads as the world largest importer, with about 42,000 tons coming from outside the EU, followed by Germany (17,000 tons) and Italy (8,000 tons). A COLEACP study shows that Europe tends to import green beans from ACP countries mainly during the December-March period.

Malian green bean production is about 1,200 tons per year, with 400-700 tons going for export. Malian grown green beans have special features (long slender shape, dark green color) that are highly prized internationally, both for fresh market sales and for canning or freezing. Producer prices have climbed slightly in recent years, averaging about 86 CFA francs/kg (Table 5).

**Table 5. Producer Prices for Green Beans (CFA francs/kg)**

1994	1995	1996	1997	1998	1999
63	65	75	80	84	86

One of the problems for the sector is the lack of local demand for green beans. About 40-60% of production is not of export quality, for which there is little local demand, lowering overall profitability (Abt Associates, 2002, Vol. II, p.67). There is also little regional demand for green bean imports from Mali. Senegal is the biggest producer of green beans in West Africa, at about 7,000 tons, followed by Burkina Faso at 4,000 tons (CAE/Chemonics, 2001, Vol. IV, p.77).

Kenya is the African country that has been most effective in penetrating foreign markets, exporting between 15,000 and 22,000 tons per year. Other African exporters of green beans are Burkina Faso (2,000 tons) and Morocco (1,000 tons). Mali's main competitive advantage compared with other suppliers is the quality characteristics of its green beans, which suit current tastes in high-income markets such as France.

The prospects for increasing exports of Malian green beans are not overly encouraging. Recent data supplied by Malian exporters indicate an average export level of 400 tons during the 1990s and 358 tons for the 1999-2000 season. According to COLEACP, 80 percent to 90 percent of Malian exports go to France, with the rest going to Holland and Switzerland. Malian fresh green beans enter the European Union with a zero tariff, under the EU-ACP Cotonou Agreement. Greater diversification of export markets is hampered by the lack of effective local and regional demand, and by the phytosanitary barriers blocking entry to the relatively large American market.

Despite the promise of a zero tariff under AGOA, the American market remains closed to Malian green beans due to the lack of phytosanitary approval. Insects likely to attack green bean plants are mealybugs, caterpillars and grasshoppers. The first step toward seeking to gain access to the U.S. market would be development of a Pest Risk Assessment for green beans, listing the types of insects found in the country and specifying available treatments to lower the risk of contamination of the vegetables.

Value-added opportunities are limited to canning or freezing of green beans. Potential returns are highest in the frozen green bean market. In Paris, the frozen green beans market includes both French and Moroccan goods. Prices were found to range all the way from "very fine" beans at 1,100 FCFA/kg to "extra fine" at 1,400 FF/kg, then to "hand-picked and hand-processed extra fine" reaching a price of 3,000 FCFA/kg for the Moroccan product and 4,000 FCFA/kg for the French product. Features indicated on the packaging include length of pods, hand picking, flat look of the beans, cut or uncut.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Malian fresh green beans enter the European Union with a zero tariff, under the EU-ACP Cotonou Agreement.

### Institutional Capabilities

Under the present system, Malian exporters of green beans incur substantial risks. In terms of organization of production, the exporters provide the seeds and other inputs, as well as the precise planting schedules for the producers. A handful of firms control seed imports, with a number of

smaller traders also involved in seed and input supply. Producers do receive some technical support from the OHVN (the Organisation pour la Haute Vallée du Niger) (CAE/Chemonics, 2001, Vol. IV, p.78). As a way to mitigate the risk for themselves, exporters only pay the producers after the product has been exported and the exporters themselves receive payment.

About 20 companies are active in the export trade, split between the two professional associations (AMELEF and APELEF). Some firms are vertically integrated as both producers and exporters, lending coherence in dealing with importers, airfreight, and ground transport. However, these firms typically lack managerial expertise in order to take advantage of their vertical integration. The second type of firm buys green beans from producers, then handles, palletizes, and ships the product, requiring less investment but greater dependence on the competent behavior of the producers.

The lack of organization among Mali's green bean exporters works to their disadvantage. By working together within more closely integrated professional associations, exporters could: (1) more easily aggregate product within Mali; (2) negotiate better freight rates with larger export shipments; and (3) exercise greater market power vis-à-vis the Rungis commission buyers.

## **PRODUCTION AND PROCESSING CONSTRAINTS**

Production in Mali is concentrated in the OHVN zone, where agronomic conditions are particularly good. Small wells are the main source of water. In Mali, yields reach 5 tons per hectare when imported seeds are used. In comparison, European yields are in the order of 10.6 tons per hectare, while in the U.S. yields are around 6.3 tons per hectare.

One production constraint for green beans is labor market difficulties. There is a conflict in the harvest seasons for rice and green beans, which results in a lack of labor at critical times. Further, the rush to get the green beans to Europe imposes a heavy workload on the exporters themselves.

## **MARKETING AND TRADE FACILITATION**

Green beans are exported via airfreight to commission buyers at the Rungis wholesale market in France. The timeframe for shipment to France is very tight. The green beans must arrive in the importing country no later than 48 hours after picking. A major problem facing green bean exporters continues to be the high costs and unreliable timing of transport (INSAH, 1998, p.4). Given the high perishability of green beans, Malian exporters suffer greatly from the ongoing airfreight problems, such as delays and cancellations of flights, as well as difficulty in negotiating favorable rates due to the small size of shipments.

Further, though there are two refrigerated containers at the airport in Bamako, there is a lack of pre-cooling infrastructure and refrigerated transport within the country. As a result, the highly perishable product often receives a lower price upon arrival in France than its initial quality would merit.

The main trade capacity need identified in the green bean sector is greater coordination of the transport and logistics involved in exporting. Export volumes would go up if a greater share of the export-quality green beans leaving the fields actually reached France in suitable condition for sale, rather than losing value due to degradation. One way to bring that about would be to encourage exporting firms to cooperate with their rivals within the framework of the professional associations.

Another constraint facing green bean exporters is their lack of market power. Malian exporters must ship on consignment to the French wholesale market, where they have little choice but to accept the price offered.

#### **IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION**

Conveniently, Mali's growing regions of Ouelessébougou and Dialakoroba are both less than 100 kilometers from the Bamako airport. It is believed that green bean production could be expanded to the irrigation zones of Baguinéda, Sélingué and the Office du Niger, although these are further away from the airport, but this would be about the limit. Further, green beans are an off-season crop, with the export season of fine and very fine green beans running from November to March. Thus the impact of green bean production and exports on domestic income is fairly limited. There is some potential for small-scale production in other periods of the year, but even during the main harvest season traders encounter difficulties aggregating to adequate shipment size.

## 9. Mangoes

Mangoes are a leading horticultural export for Mali, but the sector suffers from interlocking inefficiencies that hamper competitiveness. In a country overflowing with mangoes, there are insufficient quantities of export-quality fruit readily available for shipment. Mali only exports about 1,000 tons at a time when world imports are growing quickly. Yet the raw material in Mali is highly promising. In fact, traders from neighboring Côte d'Ivoire and Burkina Faso find it attractive to buy mangoes in Mali and then export them from their own countries. To expand trade, there is a major need to upgrade the physical and human resources related to export infrastructure.

### RECOMMENDATIONS

The following are the major recommendations for the mango subsector:

- Conduct a census of producers to find out the varietal distribution within the country and to develop a plan for combating pest infestation.
- Encourage broader availability of market information, such as a network of potential partners, price trends on international markets, and quality preferences.
- Encourage mango exporters to develop a mechanism for cooperating on export shipments. Once the exporters are organized, they should undertake greater cooperation and coordination with the mango growers and pickers.

### TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

In the last 20 years, world mango production has increased by 50 percent to around 24 million tons in 1999. India, reputedly the birthplace of mangoes, accounts for about 10 million tons. Trade has been doubling in volume every 5 years, but still only about 2 percent of total production and only a handful of the over 500 existing varieties of mangoes are traded. Competition is intense, since the market is scattered among several supplier countries. Mexico is the largest exporter, with 209,000 tons in 1998, followed by India with 27,000 tons. India also exports mango pulp—38,000 tons in 1998. Israel exports about 10,000 tons of fresh mangoes and Haiti has exported more than 7,000 tons.

Mangoes are available in Mali from February to August, with a peak from April to June. Mali has more than 35 varieties of mangos, but only three are exported (Kent, Keita, and Amélie). It is difficult to gauge the level of national production, as there has never been a national census of producers to determine the number of trees and the varietal distribution within the country, to better combat pest infestation. APROFA did undertake a comprehensive evaluation of mango production in the third region, Sikasso, finding that production in that one region alone (203,000 tons) exceeded the figure used by FAO for the country as a whole (50,000 tons).

Mali exports around 1,000 tons of mangoes per year. Major customers are France (around two thirds of Mali's exports) and the Netherlands (who re-export towards other European countries). Within West Africa, Mali has exported small volumes of mangoes to Mauritania, Senegal, Guinea and Côte d'Ivoire for decades. In addition, Malian mangoes also are exported via transshipment through Burkina Faso and Côte d'Ivoire since both countries possess much better post-harvest packing and handling facilities.

West African mangoes are exported to Europe from April to July, either on refrigerated ships sailing from the port of Abidjan, or by air. Major competitors are:

- April-July: Venezuela, India, and Mexico
- July-September: Israel, Puerto Rico, and Pakistan
- October-February: South America and South Africa.

The United States alone imports about 40 percent of the world total (e.g., 220,000 tons in 1999). U.S. imports also include about 10,000 tons of frozen mango (usually pulp), dried mangoes, and mangoes in vinegar, chutney style. In Europe, mangoes are the third largest tropical fruit import (bananas excluded), after pineapples and avocados. In 1998, European imports reached 117,000 tons, with Brazil and South Africa the main suppliers. Ivory Coast is the main exporter to France. Import demand is determined by various factors including appearance and firmness, taste, and color (red is preferred over green or yellow). International markets favor varieties rich in color (République du Mali, p.40).

One major constraint for Mali is lack of access to the U.S. market. The U.S. market for mango imports is closed to Malian mangoes due to the potential presence of the fruit fly and the seed weevil. Further, given the lack of direct flights from West Africa to the United States, it would be exceedingly difficult to target the U.S. fresh mango market, which is the largest in the world and growing. However, with duty-free, quota-free access available to Mali under AGOA, it may be worth undertaking the initial steps necessary to determine if risk abatement techniques would be sufficient to overcome the two main phytosanitary problems facing Malian mango exports to the U.S.

For exporting fresh mangoes to the U.S., the first requirement for approval of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) would be a Pest Risk Assessment, listing the types of insects found in the country and specifying which treatment is available in order to lower the risk of fruit contamination. Even if the seed weevil is found to be present in Mali, it may be possible to designate and eventually certify an area of the country as "risk-free". According to Mali's DGRC (Direction Générale de la Réglementation et du Contrôle), such a region could potentially be defined within the second and third administrative regions of the country. Once the Pest Risk Assessment is completed, an application may be submitted to APHIS, seeking inclusion of the Malian mango in the list of U.S. authorized imports. The whole process may last 2 to 4 years, and there is no guarantee that the product will be accepted.

The mango subsector offers a range of potential value-added products, for example mango juice; dried, frozen, or preserved mangoes; and perfumes or essences to be used by processed food industries. At the moment, drying probably represents the best value-added opportunity for Mali. But to obtain a more consistent quality product, there must be greater uniformity in raw material selection, including use of maturity indicators and refractometers to gauge sugar content. As for

canning and bottling, it will be hard to find investors until the costs of energy and packaging costs can be brought down.

Processed mango products do not face the same phytosanitary restrictions as the fresh fruit. In fact, dried mango slices could enter the U.S. immediately duty-free under AGOA. The U.S. import price for dried mango is \$4/kg and imports are growing. Mango pulp is also a fast-growing import into the U.S.. Mango pulp in 50-gallon drums could be shipped from Abidjan or Dakar, although process control certification would likely be required.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

### Institutional Capabilities

Mango growers are represented by the Cooperative of Mango Producers (COPROMANG), which is part of the National Union of Cooperatives of Malian Planters and Small-Scale Growers (UNCPM). Until 1982, mango exports were the responsibility of a state organization (OPAM), giving way to a mixed public/private entity, FRUITEMA, for a further 10 years, before the private sector took over entirely in the early 1990s. The two main professional associations for mango exporters are AMELEF and APEFEL. They exercise little influence over their members, the exporters, to prevent unsavory business practices, which are reported to occur both at the level of purchasing the fruit and with foreign buyers.

In general, the mango sector in Mali suffers from poor organization, including a lack of cooperation amongst exporting firms and a lack of coordination between suppliers, government inspection officials, and exporters. As a result, there is inadequate aggregation of product ahead of time in order to meet the very narrow windows for transit and destination scheduling to be able to fill international orders. Organizational and transactional efficiencies will be difficult to realize until either one exporter or a small group can consistently aggregate two to three thousand tons of mangoes for export each year.

## PRODUCTION AND PROCESSING CONSTRAINTS

Despite the long history of irrigation in Mali, almost all of the mango orchards are rain-fed or receive water from wells. Mango orchards are usually small and atomized, thought to be less than 5 hectares on average. Mango growers see very little incentive in investing in their orchards and provide little in the way of normal maintenance (watering, trimming, phytosanitary treatment), with a negative impact on the quality of the fruit available for export.

Also, Malian mango growers regularly bring in Ivorian laborers for the mango harvest, as it is reported that Malian workers lack the knowledge of how to pick efficiently (République du Mali, p.21). It is these mango pickers, not the growers, who sell the fruit to the exporters. One can quickly see how the quality chain can easily break down. In addition, the procedures for washing, sorting,

grading, transport, and storage are inadequate. The rate of post-harvest loss or waste is estimated at 30 percent.

One reason for the low quality of Malian mangoes is the high level of fruit fly damage. Luckily, there are established procedures for overcoming the risk of the fruit fly, such as the warm water dip. More specifically, in Mali, early varieties and fruit from relatively high (over 1.5 meter) branches are less heavily attacked by the fruit fly. However, there are no effective mechanisms to fight the seed weevil, if it is found to be endemic to Mali.

In Sikasso, there is only one modern facility for handling fruits and vegetables, which leads to bottlenecks at harvest. There is also the problem of packing the mangoes in boxes for export. The quality of the boxes produced in Mali is inadequate for the task, and imported boxes raise costs substantially. When importing boxes for re-exporting fruit, there is a deposit required by the government, which makes it more difficult to obtain appropriate material.

In Mali, mangoes are being processed into mango juice, dried mango, and marmalade. With the closing of the SOCOMA processing plant in January 2000, there remains only artisanal processing at the present time. Most of the artisanal processed products found on the market are generally lacking in quality, presentation, and design of packaging.

## MARKETING AND TRADE FACILITATION

One constraint to the Malian mango sector is the inefficiency of export operations. Since the export business was only liberalized a little more than a decade ago, Malian exporters lack training and experience in marketing, negotiation, and management. In addition, Malian traders must fulfill multiple functions within an exporting firm. This places them at a disadvantage in negotiating with foreign buyers. Because of the small size of shipments and their inability to keep precise dates and quantities, Malian exporters have difficulty in building and maintaining long-term relations with European importers. This means that the European buyers are reluctant to sign firm contracts. Instead, Malian mangoes arrive in Europe and are sold on consignment, with a much higher risk of non-payment. Malian exporters often ship to the same consignment importer, who plays off one against the other. By not cooperating to aggregate shipments and negotiate together, Malian exporters are hurting themselves and losing market power.

In addition, the present state of quality norms and standards in Mali is insufficient for international markets (CAE/Chemonics, 2001, Vol. IV, p.61). Often there is a great differential in quality even within an exporters' same load. It is not rare to see loads of mangoes exported to Europe being seized and destroyed by the import authorities (CAE/Chemonics, 2001, Vol. IV, p.63). Further, there is a lack of varietal segmentation in production and marketing. Though Mali produces varieties highly suitable for both the fresh export market and for processing, the lack of orchards bearing uniform varieties greatly inhibits aggregation into exportable lots.

Road transport to the maritime ports at Abidjan or Dakar is also problematic. The poor quality of the roads, and the poor state of the trucking fleet, results in a high share of bruised or wasted fruit. Further, the informal taxes to be paid along the way raise the costs as well. To sustain expanded exports of fresh mangoes, there must be investment in the infrastructure to maintain a cold chain from the production zones to the ports. As mangoes are currently limited to ocean freight, and Abidjan is 10 days from the main European ports, refrigerated trucks are called for to ensure that the

fruit arrives in suitable condition. In addition to road transport, the mango sector suffers from unreliable airfreight. While not as badly affected as the green bean sector by flight delays and cancellations, mango exporters must also cope with these difficulties.

### **REGULATORY ENVIRONMENT AND COMPETITIVENESS**

In a USAID-sponsored training in lobbying techniques, COPROMANG came out in favor of three types of reforms by the government. These are:

- Eliminate the airport tax of 15 FCFA/kg for the export of products;
- Eliminate the guarantee payment linked to import of packaging materials; and
- Improve access to credit for operators in the sector.

In addition, there is currently no inspection or control of either fresh fruit or processed mango products put on the market in Mali. For exporting fruit, there are difficulties in obtaining phytosanitary certificates from the Malian authorities, including variable fees charged and lack of statistical reporting on certificates granted (which would allow for a better idea of export volumes). It is worthwhile to study the development of an accelerated procedure for obtaining the necessary licensing for exporting perishable produce (CAE/Chemonics, 2001, Vol. IV, p.64).



# 10. Potatoes

Potatoes represent an attractive opportunity for Mali to expand exports to its neighbors within the region. It is believed that there exists strong unmet demand for potatoes both within Mali and in regional markets. The sole West African producer of potatoes, Mali will still face stiff competition from European sources in order to capture markets in Côte d'Ivoire, Nigeria, and Senegal. Mali needs to improve the price competitiveness of its potatoes vis-à-vis European potatoes. The sector is principally constrained by monopolistic supply of seed potatoes, poor input quality, delivery timing issues, viral (and probably fungal) disease, and lack of investment in post-harvest storage and refrigerated transport. Other challenges include the small size of potato fields, multiple handling through the post-harvest chain and highly variable application of quality control standards. The organization of harvesting and internal distribution in Mali, as well as the professionalism of the exporters, will need to be greatly enhanced.

## RECOMMENDATIONS

The following are the major recommendations for the potato subsector:

- Encourage the development of new sources of supply for potato seed.
- OMA should expand coverage in its market information system to include estimated potato market needs, sales leads, addresses of potential buyers, and foreign market information.
- Support the adoption of better storage and conservation techniques in order to maximize revenue from production by spreading marketing throughout the year. CAE has shown that losses can be reduced from 20 to 4 percent (with the 4 percent loss only due to dehydration weight loss, rather than rotting).
- Improve the attractiveness of planting out-of-season potatoes for farmers within the irrigated zones by removing the requirement to plant rice.
- Assist the government in setting up specialized extension and marketing teams to assist in the different zones of production.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

World potato production is estimated at 295 million tons (CAE/Chemonics, 2001, Vol. IV, p.65). International trade in potatoes is only about 2.7 percent of production, or about 8 million tons, with the Netherlands, Belgium, and France the leading exporters.

According to IER, Malian production of potatoes was estimated at 50,000 tons in 2001, with a value of 7 billion FCFA (\$9.3 million). That makes Mali the second largest producer of potatoes in West Africa, following Nigeria (109,000 tons) and well ahead of Senegal (6,500 tons). Production in

other countries only amounts to about 7,000 tons, although there are a number of close starch substitutes (igname, yam, cassava, and other tubers). There is very little intra-regional trade in potatoes; even the producing countries import from Europe.

Unlike Mali's neighbors, which satisfy most of their needs via imports, Mali meets the greater part of its national demand from national potato production. But, Malian markets are notably under-supplied in potatoes during some parts of the year. Mali imports about 800-1,000 tons per year from Europe, mainly during the off-season.

Aside from Nigeria, Mali is the only West African country capable of exporting potatoes. Malian potato exports were about 1,500 tons per year in the mid-1990s, with a reported increase to 4,100 tons in 1999 (CAE/Chemonics, 2001, Vol. IV, p.69). The potatoes shipped by Mali to Europe tend to be new potatoes (*primeurs*), with these sales often dependent on poor weather in Europe and among other producers in North Africa (Abt Associates, 2002, Vol. II, p.63). Potatoes are grown in Mali from September to March. Over the course of the year, producer prices for potatoes are usually about 150-175 CFA francs per kilo. Prices can go down to 130 CFA francs/kg during the flush season (as in Table 6) and can go as high as 235 CFA francs or more during the short season.

It is estimated that the market for imported potatoes in the coastal countries of West Africa amounts to about 34,000 tons. By exporting to its neighbors, Mali could substitute its potatoes for European imports. However, due to the competitiveness of suppliers from the EU, South Africa, and North Africa, Malian potatoes could probably capture no more than 30 percent, or around 10,000 tons (Abt Associates, 2002, Vol. II, p.71). The EU, South Africa, and North Africa offer differentiated potato varieties for the low solids boiling market and the high solids fry markets.

The best export prospects are for raw potato exports to Côte d'Ivoire, Senegal, and Mauritania. Presently, about 90 percent of Malian potato exports go from Sikasso to Côte d'Ivoire, at a transport cost of 250 FCFA/kg (CAE, personal communication). In seeking to export to Senegal, it makes geographic sense to ship Malian potatoes from Kati, whether by rail or truck. Malian potatoes are price-competitive against the limited local Senegalese production; in the late 1990s, the cost of potato production in Mali was estimated to be 41% lower than in Senegal.

In Mali, potatoes are considered to be a luxury good by the majority of the population. Consumption of potatoes is primarily an urban phenomenon (CAE/Chemonics, 2001, Vol. IV, p.65), estimated at 16 kg per capita per year in Mali vs. 31 kg in Senegal, 19 kg in Mauritania, and 16 kg in Côte d'Ivoire. Total demand in Mali is estimated to be 23,000 tons, compared with 24,900 in Senegal, 18,000 in Côte d'Ivoire, 7,800 in Mauritania, and 3,800 in Guinea. The expected demographic shift to a predominantly urban population in West Africa that is predicted to occur during this decade should boost opportunities for Malian potato exports.

As for value-added potato products, there is currently competition from Nigeria, Côte d'Ivoire, and Ghana, which have the capacity for extruded cereal and starch snack food production capacity (Abt Associates, 2002, Vol. II, p. 66). If purchasing power increases in Mali's urban areas over the next 10 years, major value added potential would come in cleaning, sorting, grading, packing for export, and storage. For french fry or chip production, producers would need to introduce higher soluble solids varieties. Chip producers would need to combine potato chip production with chips from fruit and other starches, such as banana, plantain, and cassava to utilize plant capacity. CAE has called for a feasibility study on such a plant. At present, artisanal chip manufacturing satisfies the limited urban demand.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Mali benefits from the UMEOA customs union in that its exports within the union are free of duty, but imports coming from outside must pay the CET of 22.5 percent. The situation regarding payment of the value added tax within the union is less clear.

### Institutional Capabilities

There is no professional organization specifically for potato producers. Instead, potato producers are represented as such only within village associations. As potatoes are a storable product, an effective producer organization at the national or regional level could regulate supply throughout the year, stabilizing prices and farmer income.

Currently, potato producers in Mali receive little formal support in the form of extension advice and market information services. One of the groups involved is CMDT, which has diversified into potato production in Sikasso and Bougouni (CAE/Chemonics, 2001, Vol. IV, p.12). Through the intervention of a handful of specialists, Mali can realize significant efficiencies in harvest, post-harvest handling, storage, and marketing. Since the beginning of 2000, the Observatoire des Marchés Agricoles has started to collect and publish potato price data. Other types of data it would be useful to provide include estimated market needs, sales leads, addresses of potential buyers, and foreign market information.

## PRODUCTION AND PROCESSING CONSTRAINTS

Mali has the highest potato yields in West Africa, at about 23 tons per hectare on average. Yet Malian yields are only about 60 percent of those in the EU, U.S., and South Africa. There is obvious potential for yield improvement, as some producers in Mali are achieving yields of 40 tons per hectare, comparable to those in Europe or the U.S (CAE/Chemonics, 2001, Vol. IV, p.67). At present, yield levels are too low to compete for markets in coastal West African cities.

Reducing seed costs and improving seed quality would greatly enhance the competitiveness in neighboring markets of Malian potatoes vis-à-vis European imports. Until as recently as 1998, 96 percent of potato seed was imported by one company, the trading firm La Sikassoise, which was able to exact high prices from producers. Another firm has now entered the seed supply business and, together, both firms now control an important share of the crop produced in the off-season. There are also smaller exporters selling to family connections in Côte d'Ivoire and Senegal. Relevant recommendations made in 1998 to alleviate the seed supply problem were:

- For APROFA to work with the agricultural research bodies to produce seed potatoes; and
- For the administration and donors to assist the producer association in obtaining credit to import seed potatoes, providing competition for La Sikassoise and binding producers more closely to the Association (République du Mali, p.21).

Recently, the SAFGRAD project has begun to promote replication of potato seed among micro-enterprises. Among the many varieties of seeds introduced after the devaluation, lola, Iroise, and yasmia are appreciated for their storage life; pamina, sahel and lola for early season harvest; and spunta for its profitability. The reasons given for farmers abandoning production of certain varieties include the poor storage qualities of sahel and pamina, and the poor profitability of pamia, Iroise, and cynthia.

As mentioned, the lack of affordable and reliable potato seed is one of the greatest constraints to expanding output. Table 6 shows the cost of seed representing 49 percent of the cost of production, although it has been reported as high as 72 percent. Other problems related to seed potatoes are the poor quality of some lots, such that they rot before being planted, the lack of choice among varieties on offer, and the lack of coordination of seed sales with the planting season. There is a research program on seed potatoes underway at the Rural Polytechnic Institute of Katibougou. (CAE/Chemonics, 2001, Vol. IV, p.73)

**Table 6. Costs of Production and Marketing for Potato Producers (1996/97)**

Producer level	FCFA/kg
Seeds	34.9
Fertilizers	11.8
organic fumigant	2.7
preparation of fields	0.5
Plowing	1.1
Planting	0.3
Plowing	2.2
Watering/weeding	16.3
harvesting	1.1
Sorting	0.5
transport	0.3
Total variable costs	71.6
Sale price	150.0
Amortization of donkey	0.3
Amortization of wheelbarrow	0.8
Amortization of other material	0.3
Amortization of warehouse	1.0
Total amortization	2.5
On-farm consumption & gifts (1.54%)	2.3
Losses (0.49%)	0.7
Net sale price	144.5
Net revenue	72.8

SOURCE: IER.

In addition to the problem of seeds, there is a marked lack of extension and marketing specialists for potatoes. The government should consider setting up specialized teams to assist in the different zones of production. The potato harvest begins in February and continues through May. Producers are not properly harvesting the potatoes, picking blighted, immature or waterlogged potatoes. Despite some recent investment in potato storage facilities, the storage techniques are not being properly used (overloading the warehouses, improperly utilizing pest control products, and stocking potatoes with other crops) (CAE/Chemonics, 2001, Vol. IV, p.74). The greatest value-added potential in the sector can come from improvements in harvest, post-harvest selection, handling, storage, and preservation. One successful example is that diffuse light storage with anti-sprout treatment for local market use is being extended in the OHVN and CMDT zones of influence.

In sum, the sector is principally constrained by the monopolistic supply of seed potatoes, input quality and delivery timing issues, viral (and probably fungal) disease, lack of investment in post-harvest storage, and lack of refrigerated transport. Other challenges include the small size of potato fields, multiple handling through the post-harvest chain, and highly variable application of quality control standards.

### MARKETING AND TRADE FACILITATION

Potato producers tend to sell their output individually, with buyers often taking possession directly in the producers' fields. This is done in order to obtain cash to plant the wet season crops starting in May. An estimated 96 percent of sales by producers are done on a cash basis (IER, p.12). There are several levels of handlers involved subsequently, with marketing losses relatively high due to poor handling, storage, and transportation techniques. One result is significant harvest-season marketing gluts for potatoes, which could be addressed through better spacing of production and marketing. Malian producers have typically tried to sell to the same market at the same time, (République du Mali, p.21). On average, wholesalers market 24 tons of potatoes per month during the busy season, marketing only 6.8 tons in the slack season. The transport of potatoes is done via wheelbarrow. Tractors and trucks are ill equipped to preserve the quality of the potatoes (for example, by using refrigerated trucks). Informal taxes are a problem as well (CAE/Chemonics, 2001, Vol. IV, p.75). As shown in Tables 7 and 8, marketing losses tend to be 5 percent during the busy season and 10 percent during the slack season. Losses of 20-30 percent in marketing are not uncommon.

Further, past experience shows that Malian exporters tend to compete against each other in Côte d'Ivoire, leading to lower prices and the marketing of a poor quality product in competition with imports from outside West Africa. As in the domestic market, Malian marketers of potatoes abroad must learn not to try to sell to the same markets at the same time. One solution would be greater provision of market information.

**Table 7. Costs of Handling and Marketing at Wholesaler Level**

	FCFA/kg	Busy season	Slack season
Acquisition costs		130.0	235.0
Transport costs		1.5	1.5
Packing costs		5.2	5.1
Fees on route		0.1	0.1
Bribes			6.9
Taxes		0.0	0.0
Total costs		136.8	248.6
Sales price		185.0	279.0
Net revenue		48.2	30.4

SOURCE: IER

**Table 8. Costs of Handling and Marketing Potatoes at Retail Level**

	FCFA/kg	Busy season	Slack season
Acquisition cost		185.0	279.0
Transport costs		8.7	10.9
Fees on route		1.5	1.5
Taxes		1.5	1.5
Total costs		196.7	293.0
Sales price		215.0	375.0
Auto-consumption (0.6%)		1.3	2.3
Losses (5%, 10%)		10.8	37.5
Net revenue		6.2	42.3

SOURCE: IER

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

### IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

Despite difficulties with obtaining precise data, Mali's potato sector appears to have grown since the mid-1990s, with output increasing from 35,000 tons in 1996/97 to the present 50,000 tons. Since the devaluation of the CFA franc in 1994, the cost of inputs has reportedly more than doubled, but INSAH found real income gains for Malian potato producers in the first four years following the CFA devaluation.

Potatoes are grown principally around Sikasso and Kati, grown in rotation with rice and corn. Planted area is about 2,200 hectares, with about 1,200 hectares in Sikasso. Some producers in Sikasso abandoned cotton production more than a decade ago in order to devote themselves to potatoes. Beyond yield increases, there is an opportunity to expand potato production if rice were no longer a required crop to hold and use land in the Office du Niger. Such a policy change would permit winter-season production of potatoes (Abt Associates, 2002, Vol. II, p.72).

# 11. Shallots

Mali exports both fresh and dried shallots to neighboring countries and Europe. Shallot production has strong linkages to poverty reduction, as the main operators are rural women in the Dogon Country, which is relatively poor. Efforts to reduce waste in harvesting and storage would increase the supply of fresh shallots available for export. Shallot processing for export could be expanded through the use of higher-volume drying racks.

## RECOMMENDATIONS

The following are the major recommendations for the shallot subsector:

- Encourage adoption of aerated storage techniques to extend the marketing season for fresh shallots.
- Train producers to reduce waste through use of maturity indicators and better field management.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

World production of shallots was roughly 40 million tons in 1999, growing at about 3.5 percent per year. The billion-dollar shallot trade amounts to less than 10% of shallot production worldwide. The Netherlands is the dominant shallot exporter, with about one-fourth of world exports. Other major exporters are India, the U.S., Spain and Argentina. The main import markets are the U.S., Russia, and Germany, although these countries represent less than one-third of world imports (CAE/Chemonics, 2001, Vol. IV, p.21). Nigeria is the largest shallot producer in West Africa, with total production at about 650,000 tons.

Malian shallot exports amounted to just over 1,000 tons of fresh shallots and 157 tons of dried shallots in 1999. Mali exports shallots to Côte d'Ivoire, Burkina Faso, Ghana, Guinea, Senegal, Togo, Benin, and some destinations in Europe. Malian shallot exports to other West African countries face competition from the Netherlands during the summer and fall period, e.g. outside of Mali's main harvest period. There is also competition presented by Galmi red onions from Niger.

The main value-added activity for shallots is drying, although there is a need to identify additional types of value-added products for processing activities in times of low prices for fresh shallots. Shallot processing via the EST method (*échalote séchée selon la méthode améliorée*) produces a product suitable for export in terms of sanitary and quality norms. This method is mainly used in the Dogon Plateau of the Mopti region, but is also becoming more common in the Office du Niger. In Dogon Country, only about 2.4 percent of the region's fresh shallots are processed in this manner, but overall output of dried shallots has grown from 8.8 tons in 1991 to 70.3 tons in 1998.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Mali benefits from the UMEOA customs union in that its exports within the union are free of duty, but imports coming from outside must pay the CET of 22.5 percent. The situation regarding payment of the value added tax within the union is less clear.

### Institutional Capabilities

The shallot producers of the Dogon Plateau are considered one of the few farmer groups in any agricultural sector that has been able to act together effectively. On the other hand, in the Office du Niger, the lack of cooperation is problematic. In Dogon Country, there is a Steering Committee (*Comité de Pilotage*) which is responsible for negotiating prices and sales and for allocating the amounts to be delivered by each Village Association. There is also the practice of monitoring a floor price: when prices for fresh shallots fall below 75 FCFA/kg, then producers are instructed to start drying the fresh shallots for later sale. Dried shallots are conserved in a central storage area, but producers are paid 1,000 FCFA/kg immediately upon delivery from the common fund. The sale price of 1,275 FCFA/kg allows a margin for the producer group to operate the warehouse.

It was a German-sponsored project extending from 1985 to 1998 that helped establish the highly promising shallot sector on the Dogon Plateau in the Mopti region. Since then, the public sector, *Service de l'Appui Conseil de l'Aménagement et de l'Équipement Rural* (SLACAER) has taken up responsibility for assisting shallot producers.

Another organization working with shallot producers is URDOC (Unité de Recherche Développement Observatoire du Changement). By developing drying racks for female producers, URDOC has shown that it is possible to reduce product shrinkage from 80 to 20 percent. On a 4-ton rack, losses due to evaporation and shrinkage are only 300-400 kg (CAE/Chemonics, 2001, Vol. IV, p.12). The project uses local radio to disseminate information on planting and harvesting techniques.

## PRODUCTION AND PROCESSING CONSTRAINTS

Analysis of FAO data by CAE shows that from 1995 to 1999, Mali had the highest shallot yields in West Africa, somewhere near 30 tons per hectare (CAE/Chemonics, 2001, Vol. IV, p.23).

Nevertheless, shallot yields could be improved via better seed bulb varieties, better techniques for fermentation of seed bulbs, adoption of heat treatment of seed bulbs, and better fertilization. Further, profitability could be improved through better post-harvest handling, storage, and transportation.

Under the EST method, dried shallot slices can be conserved 12 months. Drying takes 7 days, with 8 kilos of fresh shallots required to produce 1 kilo of dried product. It is believed that the present equipment used, principally hand-cranked cutters and small drying trays, cannot handle sufficient quantities for viable export volumes. In 1999, a survey showed there were around 1,500 drying racks of the type "RETAIL" in Dogon Country.

Another potential area of improvement in shallot production is reduction in waste, by means of maturity indicators (collar closure) and more uniform field curing. Also, there has reportedly been some recent investment in shallot storage facilities. By more widespread adoption of aerated storage

techniques, Malian producers could further reduce waste and permit expanded marketing during the off season when prices are high.

Table 9 shows the cost of production in 1996/97 as 51 CFA francs/kg in the Office du Niger. More recent reports suggest production costs in the Office du Niger of 45 CFA francs/kg, with the cost of production more competitive in Dogon Country at 35 CFA francs/kg. Costs are kept low by using organic fertilizer, rather than chemical fertilizers.

**Table 9. Shallot Production and Marketing Costs in the Office du Niger (1996/97)**

<u>Input Costs</u>	<u>FCFA per hectare</u>
Seeds	20,600
Organic manure	52,500
Urea	18,750
<b>Phosphate</b>	<b>19,600</b>
Equipment rental	24,000
Total labor	375,000
<b>Family labor (508 hours labor)</b>	<b>305,000</b>
<u>Hired labor</u>	<u>70,000</u>
Total costs of production	695,850
Cost of production by kilogram	51
<u>Sale price per kilogram</u>	<u>130</u>

SOURCE: Chohin-Kuper et al.

## MARKETING AND TRADE FACILITATION

The exporters of shallots in Mali are to be found among a reported 18 or so wholesalers for onions and shallots in Bamako, usually individuals with roots in the zones of production. In order to respond quickly to export orders, these traders need a better system for aggregating sufficient volumes of dried shallots.

Beyond aggregating exportable volumes, priority capacity building needs for exporting should focus on the findings of a 1996 workshop sponsored by APROFA and URDOC. The recommendations include

- Adopting the use of aerated bags rather than polypropylene bags, which accelerate loss;
- Training producers not to
  - mix dirt into their shipments (to increase the weight),
  - mix varieties and different sizes,
  - market shallots that have not reached maturity;
- Training producers to remove damaged or deteriorating shallots from the bags during marketing, as these can rapidly cause the rest of the product to deteriorate.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

### IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

In Mali, shallots are grown around Niono and Mopti, usually based on interventions by NGOs. There is also some production in the Bamako basin. Malian production of shallots roughly tripled from 1995 to 1999, reaching about 112,000 tons, due to increases in both area planted and yields. With a production value of 17 billion FCFA (\$22.6 million), shallots are particularly important for the Office du Niger, making up 90 percent of the production of horticultural products. The main harvest period is from January to April, with production ongoing from May to July. Off-season prices are 3 to 4 times those observed in the main growing season.

Shallot production has a strong linkage to poverty reduction, as producers are generally the poor in Mopti and poor women in the Office Du Niger and Baguineda. However, as seed and inorganic fertilizers tend to be imported, there are limited backward linkages to poverty reduction from shallot production (Abt Associates, 2002, Vol. II, p.73).

## 12. Tomatoes

Malian tomato production has been increasing, but mainly to satisfy growing local urban demand. The lack of adequate export infrastructure, including sorting and packing stations, suitable boxes, and modern trucks and roads, poses daunting challenges to organizing an effective export trade. At present, the high rate of product loss incurred in exporting to regional markets hampers profitability. The introduction of new varieties would be a positive step for both the fresh tomato market and for any eventual investment in tomato processing. Mali's experience, however, has been that local tomato paste production may be unsustainable in the face of strong competition from Italian imports, which benefit from an EU subsidy.

### RECOMMENDATIONS

The following are the major recommendations for the tomato subsector:

- Develop a program to introduce (a) new varieties for fresh tomatoes better suited for export, and (b) new varieties with higher solids content appropriate for tomato processing.
- Facilitate the establishment of sorting and packing centers in order to reduce raw material loss in bringing fresh tomatoes to wholesale and export markets.

### TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

Mali produces about 21,000 tons of tomatoes, making it one of the smallest producing countries in West Africa (CAE/Chemonics, 2001, Vol. IV, p.33). Production of tomatoes, grown on irrigated land, is highly variable from year to year. About 750-1,000 hectares are planted to tomatoes in several parts of Mali (Koulikoro, Mopti, Ségou, Bamako and its environs, along the rail route from Kati to Kita, at Baguineda, and in the zone operated by OHVN). Around Ségou alone in the Office du Niger, there is potential for 50,000 hectares of irrigated tomato production.

INSAH found that Mali has continued to expand production of tomatoes since the CFA franc devaluation in 1994, but this expanded output has mainly gone for local consumption. Due to urbanization, there has been a strong increase in demand for fresh tomatoes in Mali. At present, there are indications that Mali is also engaging in occasional small-scale exports of fresh tomatoes to Côte d'Ivoire, Senegal, Mauritania, and Europe. Mali has limited immediate prospects for successfully exporting large volumes of fresh tomatoes either within the West Africa region or to Europe. Given the highly perishable nature of tomato production, the best chances for expanding trade in fresh tomatoes would seem to be small-scale shipping over short distances to regional markets, such as Bobo Dioulasso in Burkina Faso. This trade must overcome high rates of product loss.

Reportedly, Malian consumers have a preference for tomato paste that is very red in color. CAE reports that Italian processors actually add coloring to the paste exported to Africa. Local tomato paste production faces strong competition from Italian imports, which benefit from an EU processing

subsidy estimated at 34 CFA francs/kg (INSAH, p.4). For processed tomatoes, the closure of the lone industrial plant makes exporting tomato paste from Mali any time soon relatively unlikely. Even when SOMACO was in operation, Mali was a net importer of tomato paste.

One way to stimulate value-added activity in the tomato sector in Mali would be to promote sun-dried tomatoes for export. At present, there are small quantities of dried tomato available, but these are produced strictly on an artisanal basis. One benefit of dried tomatoes as an export product is that it would not face significant phytosanitary barriers in gaining access to the U.S. market under AGOA.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Mali benefits from the UMEOA customs union in that its exports within the union are free of duty, but imports coming from outside must pay the CET of 22.5 percent. The situation regarding payment of the value-added tax in the union is less clear.

### Institutional Capabilities

Mali's agribusiness sector appears to be relatively well organized through such groupings as the National Chamber of Commerce, the National Federation of Employers, and the National Directorate for Industry. Also, as tomato producers are in organized irrigated zones, they interact with the quasi-public agencies responsible for infrastructure. For example, the Office du Perimetre Irrigué de Baguinéda (OPIB) manages the irrigation zone close to Bamako and provides technical advice, training, and information on tomatoes to producers. OPIB covers 22 villages, each with its own village association. The main horticultural crop of OPIB is tomatoes, which is why SOMACO, the processing plant, was located within the OPIB zone (CAE/Chemonics, 2001, Vol. IV, p.12). If tomato-exporting firms were to develop in Mali, they would most likely seek representation at the national level through the main professional associations (AMELEF, APEFEL) or perhaps through the regional agribusiness exporters' group (CONOESAM).

## PRODUCTION AND PROCESSING CONSTRAINTS

An IER survey of one producing zone yielded some useful descriptive information regarding production and marketing conditions. About 55 percent of the active population produces tomatoes on plots of 20 acres (one-fifth of a hectare). Approximately 80 percent of the producers use improved seed, planting 0.3 kg (3 packs of 100 grams) per 0.2 hectare plot. The irrigated zone of Baguinéda provides much of the improved seed in use. Producers on average devote 20 days to their tomato crop. None reported using off-farm labor. Input use varies according to the purchasing power of the producers, with an average of 20 kg of DAP and 15 of urea per ha. The average number of wagons of organic manure is 5 per plot. About 40 percent of producers use pesticides, at 0.88 kg/ha. The farmers themselves usually finance tomato production, often from the sale of their main crop (cotton, rice).

At the end of the 1990s, the tomato area grew by about half, but tomato yields, highly variable under any condition, fell from about 28 tons per hectare to below 20 tons per hectare. The closing of the processing plant SOMACO is given as one reason for the drop in yields. Mali's tomato yields are only one third or less of the levels needed (85-90 tons per hectare) for efficient processing, resulting in high raw material costs. The varieties of tomatoes grown in Mali tend to have lower solids content, which makes them less suitable for processing (CAE/Chemonics, 2001, Vol. IV, p.41).

La Société Malienne de Conserves (SOMACO) opened in 1964, thanks to a grant from Yugoslavia, in order to make use of the surplus quantities of fresh tomatoes available at harvest, which would otherwise be lost. SOMACO produced double concentrate tomato paste off and on before being privatized in 1991. As the tomato processing season only lasts one-quarter of the year, in order to continue functioning during the off season, SOMACO was importing triple concentrated paste from Italy and diluting it to double concentrate for the local market, although this practice did not last long. When it was in operation, SOMACO engaged in some contract production with farmers (IER, p.3).

Before finally ending operations in September 1999, SOMACO experienced difficulty in obtaining the raw material, given the fluctuations in producer prices and the disorganization of collection (CAE/Chemonics, 2001, Vol. IV, p.36). Also, tomato paste must be put in cans suitable for heat sterilization. These cans were not readily available in Mali, which raised production costs that were already high due to costly and unreliable electricity supply. Furthermore, the factory was located too far from the main production zones in order to be profitable. A Swiss group has expressed interest in re-opening SOMACO with a capacity of processing 600 tons of fresh tomatoes per day, for an annual throughput of 90,000-100,000 tons.

Based on the range of price fluctuation, tomato production seems fairly profitable in Mali. As shown in Table 10, a wholesale price at the lower bound of 90 CFA francs permits producers to realize a net margin beyond the cost of production. But at 90 CFA francs, traders only cover their transport and marketing costs to bring the product for sale at wholesale markets and are likely to lose money due to waste. At the upper bound of 150 FCFA during the main marketing season, traders comfortably cover their transport and marketing costs, even given an allowance for physical losses due to waste.

The primary trade capacity needs for fresh tomato exports include: the introduction of new varieties that are suitable for export and the adoption of techniques for reducing waste in shipping through packing in boxes and cold chain preservation. The varieties of tomatoes grown in Mali tend to have lower solids content, which makes them less suitable for processing. Also, fresh tomato varieties in Mali are relatively fragile and suffer high losses in transport. Another production constraint is the unreliable and high-cost of electricity, which impedes tomato processing.

**Table 10. Budget of Tomato Production and Marketing Costs**

Variable costs of production	FCFA/kg
Seeds	2.4
Fertilizers	6.5
Fumier	5.9
Pesticides	0.7
Insecticides	5.0
Labor	16.5
Total costs of production	36.9
<b>Net margin</b>	<b>38.2</b>
<b>Producer price</b>	<b>75.1</b>
Transport to Bamako market	8.7
Handling costs	5.8
Market taxes	0.58
<b>Price delivered to wholesale market</b>	<b>90.2</b>

SOURCE: IER.

### MARKETING AND TRADE FACILITATION

Most tomato production comes as an off-season crop. During the main 3-month harvest period from January to March, wholesale prices tend to fall from 150 to 90 CFA francs/kg. With limited product available from April to September, fresh tomato prices rise from 105 CFA francs to 300 CFA francs per kilo. Starting in October, prices again fall to around 150 CFA francs/kg. It may be possible to spread out the planting season so as to take advantage of the higher prices during the summer months, but it is unclear if this is technically feasible.

One way to help take advantage of seasonal price fluctuations is through better market information on the seasonal price trends for fresh tomatoes in regional markets. If neighboring markets such as Côte d'Ivoire follow the same seasonal price trends as in Mali, then efforts to extend the growing season for Malian tomatoes could boost production available for export during the period of rising prices from April to September.

In terms of the marketing chain, producers sell tomatoes to local traders, who sell to wholesalers in cities, who then sell to retailers. Unlike in many other tomato producing countries, Mali has yet to develop an infrastructure chain specifically dedicated to handling the marketing of tomatoes. Currently, in harvesting, storage, and transport, product degradation and loss undercuts the profitability of the tomato sector. Specifically, Mali's export capacity suffers from inadequate sorting and packing facilities, unsuitable trucks, and very bumpy roads.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

### IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

The linkages with poverty reduction from expansion of the tomato sector in Mali are not very clear. Tomato producers tend to be some of the better-off farmers in the country seeking to supplement the income from their main crop. Consumers of tomatoes tend to be the better-off urban consumers. Nevertheless, even the better-off farmers and consumers in Mali are usually at or near the poverty line. However, expanding existing artisanal dried tomato production would have concrete benefits in terms of employment and poverty reduction.



## 13. Tiger Nuts

The Tiger nut has become a reliable export commodity for Mali, with significant room for greater efficiencies in the production and marketing chain. As harvesting is done manually, there is a strong impact on the poor from expanding output. Malian exporters need to better insert themselves into the principal import market in Spain, for example through regular price reporting on prices and supply and demand conditions. Steps to improve the quality of the raw material seem paramount and relatively easy to achieve.

### RECOMMENDATIONS

- Improve procedures for cleaning and storage of the harvested nuts so as to improve the quality of the export product. Elaborate norms for handling and storage.
- Provide training and information for producers on the price/quality relationship in the Spanish market.
- Provide training for the producer association on strategies for optimizing revenue and expanding market power. This would meet the primary need to reinforce the institutional capacity of the producer association.
- Define the optimal growing cycle for the Tiger Nut, which is now done according to traditional methods.

### TRADE OPPORTUNITIES & MARKET ACCESS REQUIREMENTS

Spain is the principal market for the Tiger Nut, or *pois sucré*, accounting for 80% of world trade. In Mali, there is a small but active market for exporting Tiger Nuts to Spain. In 1997, Spanish importers bought just under 1,200 tons of Malian Tiger Nuts. CMDT also purchases some Tiger Nut in order to supply other Malian exporters outside the zone of production. All told, there are about 10 buyers active in the market.

The Tiger Nut has only been cultivated on a tiny scale in Mali, but in recent years the Spanish buyers have provided pre-financing and inputs. The existence of a steady export market has helped to raise production. Between 1993/94 and 1999, production of the Tiger nut jumped from 250 tons to 6,200 tons (République du Mali, p.18; CAE/Chemonics, 2001, Vol. IV, p. 41). As a result, in the late 1990s, Malian exports amount to about 1,200 tons, or one-fifth of production, with the export value hovering around 1 billion CFA francs (\$1.3 million).

In Mali, the Tiger Nut is eaten raw or roasted, while in Spain it is processed into juice and used as a flavoring in sherbet. Promisingly, the Malian Tiger Nut is considered to have a superior taste to the Spanish Tiger Nut. Further, as area available for planting in Spain declines, the prospects for

Malian trade increase (CAE/Chemonics, 2001, Vol. IV, p. 41). But to maintain their market share and expand exports, Malian producers and exporters must raise the cleanliness of their shipments.

There is a great deal of price variability, which is to be expected in such a thin market, with prices ranging from about 75 CFA francs/kg for local consumption to double or triple that for export sales. In recent years, CIC-SA has been offering around 200 CFA francs/kg, which served to increase production.

One factor limiting development of value-added activities is the lack of any local demand for Tiger Nut juice among Malian consumers. As a trial, the trading company CIC-SA imported some juice in tetrapack from Spain and had difficulty selling it. If costs were low enough, and EU quality standards could be met, there may be justification for investigating the feasibility of producing Tiger Nut juice in Mali for export to Spain.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

### Institutional Capabilities

In the mid-1990s, the Tiger Nut Producers Association of Sikasso and Kadiolo was created, although it did not immediately have a formal status. Donors in management and negotiation skills provided training. Currently, only a handful of producers do not belong to the Association (CAE/Chemonics, 2001, Vol. IV, p.42). Reinforcing the position and capabilities of this producer association could translate into tangible improvements in farmer income. As the product is nearly all cultivated around Sikasso, there would seem to be great potential for the producer association to exercise some market power in negotiating with exporters. In addition, the Tiger Nut Producers Association could provide other professional services to its members, including training in cleaning and handling, and the provision of market information (following the example of CONOESAM).

Beyond the producers association, other actors include a Malian exporting company, CIC-SA, and CMDT. In 1998, CMDT brought Tiger Nut into its portfolio of activities under the Project for Diversification of Revenues after being approached by CIC-SA for assistance in Tiger Nut production and marketing. Given the more or less guaranteed market for the product, CMDT assisted CIC-SA in obtaining 22 million CFA francs in credit (for the 1997 season) from the National Bank for Agricultural Development. Tiger Nut producers have encountered long delays, however, in receiving payment from CIC-SA (République du Mali, p.18).

## PRODUCTION AND PROCESSING CONSTRAINTS

From 1993 to 1997, Tiger Nut yields were about 4.5 tons per hectare, but in 1998 and 1999 yields fell substantially, registering 3.2 tons/ha in 1999. Yields in Spain, on the other hand, amount to roughly 15 tons per hectare (p.23). The Tiger Nut is typically planted in September/October and harvested in November/December. The main export season therefore starts in January.

As with any crop, the Tiger Nut sector would benefit from research on optimal soil and seed characteristics, as well as planting and harvesting techniques. It is reported that there is a lack of suitable soils for growing Tiger Nut, as it is cultivated on sand. Also, fertilizer costs are considered to be very high, amounting to 10,770 CFA francs per 50-kilogram bag. There is a need to define the optimal growing cycle for the Tiger Nut, which is now cultivated according to traditional methods (République du Mali, p.25). Furthermore, to date, there has been little or no research conducted on how to improve seeds. Also, plant protection strategies remain to be developed to prevent the Tiger Nut from attacks by parasites below ground and from infestation by weevils when in storage.

A main priority for donor intervention is assistance in adopting improved techniques for handling and storage. There are no norms or quality standards set for the Tiger Nut, which means that export shipments can be of highly variable quality. Harvesting methods are considered to be particularly difficult and harmful to the producers' health: as the Tiger Nut is produced on sand, there are respiratory concerns for those harvesting the product. There also tend to be a high level of impurities in the end product, up to 30 percent. Some export shipments end up being returned due to the poor quality control.

Further, cleaning operations, when they take place, are poorly organized and usually done in haste, treating a large quantity in a short period of time (e.g., while the exporter waits impatiently). Cleaning, undertaken by women, usually ends up in losses of about 10 percent of otherwise exportable product. Beyond cleaning, producers must also sort their production by size class, requiring a special tool that is not widely found in the country (République du Mali 1998, p. 23).

## MARKETING AND TRADE FACILITATION

Spanish buyers usually pre-finance the marketing campaign; in other words, giving CIC-SA and the trading company La Sikassoise funds to buy the product for export. However, training and information for producers on the price/quality relationship in the Spanish market are needed. The CAE report discusses Malian producers' difficult experience in the late 1990s with changing market prices. Reporting by OMA of prices and demand on the Spanish market would permit development of a year-round marketing strategy for Malian exports.

Malian producers and traders are relatively inexperienced in gauging when to sell and when to hold their product. Price fluctuations are a sore point for producers, who would prefer to have a fixed price. As the Tiger Nut can be stored for up to 2 years, there may be opportunities for spreading out the sale of the Tiger Nut in order to increase revenue. Investment in this area would stretch the season for producers, who could perform cleaning operations off-season.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

### IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

Area planted to the Tiger Nut has grown from 1,200 ha in 1995 to just under 2,000 ha in 1999. Slightly less than 10,000 parcels are planted to Tiger Nut, with an average size of 20 acres, or one-fifth of a hectare. Production is limited to two zones around Sikasso and is dominated by women, who comprise 68 percent of the producers.

## 14. Gold Mining

The gold mining sub-sector in Mali comprises two elements. One is industrial mining, which currently produces about 50 tons of gold per year and employs about 2000 people. The other is artisanal mining, which produces around 3 tons annually but employs as many as 100,000 people on at least a seasonal or part-time basis. Despite the importance of employment in the artisanal sector, prospects for its growth are not encouraging. Profits from existing mining activity do not tend to be reinvested in the sector, and the potential for productivity enhancement is not well known. On the other hand, from the industrial sub-sector, Mali should be able to export 30-40 tons of gold per year over the next 10 or so years, and beyond this at least 20-25 tons until the year 2020. This makes gold one of Mali's two most important exports, alongside cotton. Unlike cotton, however, only about one-third of foreign exchange earnings from gold remain within the country.

### RECOMMENDATIONS

The mining sector has experienced numerous reforms over the past few years, especially with respect to revision of the Mining Code and other elements of tax policy. There is little unfinished business left on the agenda, except possibly to calculate and monitor continuously the user, or rental, value of gold left in the ground as a guide to taxation of the sector. In the artisanal sector, on the other hand, much less is known, and there is room for further study as to how improvements might be made. The following recommendations pertain;

- Calculate the user, or rental, value of gold left in the ground as a guide to the extent to which the sector should be taxed. Develop the capacity within the DNGM to continuously monitor this value on the basis of world market prices, discovery of gold reserves, mining technology, cost of production, and other key variables.
- Investigate what kinds of improvements might be made in artisan mining through the introduction of appropriate technologies.
- Undertake a study of small-scale mining (other than artisanal) to learn why it has not been more successful in Mali and what might be done to improve its record of success, or to incorporate some of these lessons into programs to support artisanal mining.
- Investigate ways in which value can be added through local jewelry production and the extent to which this jewelry might be competitive on export markets.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

The gold mining industry has grown very rapidly since the introduction of a new Mining Code in 1991, which broadly reflects international standards in the mining business. By 2001, gold production was over 50 tons per year, and this is expected to grow to more than 63 tons by 2005. In 2001, gold mining comprised almost 11% of GDP and fully 68% of export earnings. These shares are expected to at least be maintained over the next few years, with gold reserves currently estimated at close to 900 tons (DNGM, n.d.).

Production costs of gold in Mali vary, usually with the richness of the deposit. The Syrama mine in southern Mali, for example, was hampered by technical problems and low profitability for several years until Randgold (South Africa) undertook a new investment program aimed at reducing operating costs by increasing output. The result was a decline in costs to about \$210 per ounce, which should have been profitable even at the low world market price of \$265 per ounce in 2001. However, the Syrama mine continued to encounter operating difficulties and had to close when the price of gold fell that year.

Other mining operations are much more profitable. For example, the Sadiola mine, operated by Anglo-American (South Africa), is expected to produce a minimum of 10 tons annually until at least 2010. Since the ores are relatively concentrated, operating costs over the period 1997-99 were only \$125-165 per ounce. The largest mine in Mali, at Morila, produced close to 25 tons in 2001 at an operating cost of only \$137 per ounce. Production should continue until at least 2014. Finally, the mine at Yatela has production costs similar to Sadiola and should be able to produce 6.5 tons per year for the next 12 years (IMF, 2002, p. 43).

Based on existing production capacity, two mines currently under construction, and conservative estimates of artisanal production, Mali should be able to export 30-40 tons of gold per year over the next 10 or so years. Based on reasonable assumptions regarding the world market price of gold and the exchange rate, these exports should be worth about 150-210 billion CFA francs per year. Beyond this, Mali should be able to export at least 20-25 tons until the year 2020 (IMF, 2002, p. 44).

Gold is by far the most important mining activity in Mali, accounting for 98% of total mining production, the rest comprising mostly the mining of construction materials. There is some ongoing exploration for diamonds, fossil fuels, and other minerals.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Gold exports are almost all destined for overseas markets and are not subject to an export tax. Other taxes are determined by the general tax code, the UEMOA customs union, and the revised Mining Code, which are described in the section on the regulatory environment.

## **Institutional Capabilities**

The major government agency responsible for the mining sector is the Direction National de la Géologie et des Mines (DNGM), Ministry of Mines, Energy, and Water. This department is responsible for formulating and implementing mining policy (in cooperation with the Ministry of Economy and Finance for tax policy), regulating the mining sector, and granting exploration and mining permits. It also manages the government's participation in the financial capital of mining ventures. In addition, the DNGM is responsible for geologic mapping and surveys IMF, 2002, p. 44).

## **PRODUCTION AND PROCESSING CONSTRAINTS**

Most mining of gold is in the industrial sub-sector. However, while artisanal production is only about three tons per year, this sub-sector employs as many as 100,000 people on 250 to 300 sites throughout the country, while the industrial sub-sector in 1997 employed only 1496 people in both exploration and production, of which 147 were expatriates (Shaw and Kanté, 2001, p. 13). The maximum number of people likely to be employed in the industrial sub-sector in the future is no more than about 4000 (DNGM, n.d.). Although much employment in the artisanal sub-sector is part-time or seasonal in nature, this is an important supplemental source of income, which is diffused rather broadly throughout much of the population.

On the other hand, it is difficult to see how artisanal production is to be expanded very much beyond its current level of production. For this to occur, deposits must be fairly close to the surface, which is often not the case. Furthermore, the level of equipment used is not very high, and miners do not appear to be very anxious to invest more in equipment. A recent survey of the artisanal sub-sector found that most profits from artisanal mining are invested in agriculture or other activities, not in mining (Shaw and Kanté, 2001, p. 35). One reason may be lack of appropriate technology. But other countries, such as Zimbabwe, have witnessed the use of jack hammers and other types of equipment that go beyond pumps and electrical power generators, which are about the only kinds of equipment used in Mali. The issue of appropriate technology for artisanal mining needs to be investigated further.

There is a level of small-scale mining that differs from both industrial and artisanal mining. This has never succeeded very well in Mali, however, probably because it is unable to achieve either the economies of scale of industrial mining or the low costs associated with artisanal mining. Nevertheless, very little is known about this experience, and it would be worthwhile studying it further.

## **MARKETING AND TRADE FACILITATION**

Marketing and exports of gold mined in the industrial sub-sector pose no problems since the owners and managers of these mines are well connected with the international market. The only problem is the level of gold prices on the world market, and over this they have no control.

With respect to marketing and exports of gold mined in the artisanal sub-sector, very little is known once we go beyond the organization of these activities at the mining site.<sup>3</sup> However, it appears that the demand for and organization of exports is sufficiently strong that local jewelry manufactures are having a very hard time obtaining the gold that they need at a price they deem to be competitive. The whole structure of gold marketing and exports from the mining site downstream needs to be studied further with a view towards identifying opportunities for adding value to gold exports. At present, this value added is largely in the form of hand-crafted jewelry, which is largely sold to locals and tourists but might be competitive on the export market.

### REGULATORY ENVIRONMENT AND COMPETITIVENESS

The most recent Mining Code was developed in 1991, in accordance with international standards, and was revised in 1999. This revision shifted the tax burden from inputs and production towards profits. The royalty on gold production was reduced from 6% to 3%, and customs duties were lowered in line with the introduction of the UEMOA customs union's common external tariff (CET). Tax holidays on corporate income and import duties during the initial period of production were eliminated.

In addition to these changes, the regulations remain in effect with respect to:

- Issuance of exploration and mining permits;
- Free repatriation of earnings;
- 35% corporate income tax, 27.5% depletion allowance as a percentage of gross sales, zero duty on imports used for exploration;
- definition of government rights to participate financially in mining ventures (IMF, 2002, p. 45).

Partly as a result of the changes instituted in 1999, tax receipts from the mining sector increased from 3.5% of total government revenue in 1995 to 8.5% in 2000 (IMF, 2002, p. 46).

### VIII. IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

A very important issue in the mining sector is what impact gold production and exports have on the Malian economy and on poverty production. Clearly this depends on which sector is involved: industrial or artisanal. There are a number of ways in which the impact of each of these sub-sectors can be measured. One of these is the employment that is generated. Here the artisanal sub-sector clearly has the edge, with perhaps as many as 100,000 people employed full-time, part-time, or seasonally, while fewer than 4000 people are likely to be employed in the industrial sub-sector at any time in the future. Even if one adds on

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<sup>3</sup> For an extensive discussion of the organization of production and marketing at the site see Shaw and Kanté (2001).

employment generated in other sectors by the demand for inputs or consumption goods, the artisanal sub-sector is much more important.

On the other hand, the fiscal contribution of the artisanal subsector is minimal compared with the industrial sub-sector, which generated 8.5% of total government revenue in 2000. The impact that this revenue will have on the economy and on poverty reduction over the longer run will depend on how it is spent by the Government. If not spent wisely, the danger is that the gold reserves will run out and nothing will be left behind. However, any judgement concerning the allocation of public revenues from mining is beyond the scope of this paper, since these revenues are no longer kept separate from other public revenue.<sup>4</sup>

Another effect of the mining sector is on earnings of foreign exchange. Almost all production of both sub-sectors is exported. However, a relatively high percentage (56%) of the inputs used in the industrial sector is imported, and even among the inputs that are purchased locally (e.g., petroleum products), there is a high import content (Shaw and Kanté, 2001, p. 14). If we take into account receipts of public revenue, local salaries paid, direct and indirect local expenditures, and contributions of mining companies to physical and social infrastructure, only 32% of the value of exports is retained within Mali as a contribution to the local economy (Shaw and Kanté, 2001, p 18). Although precise figures for the artisanal sub-sector are not available, the percentage is much higher.

With respect to poverty reduction, the relative impact of the two sub-sectors depends on their size, their employment characteristics, and on how the public revenues that are received from the sub-sector are spent. Clearly, the industrial subsector has the advantage with respect to size, and no matter what efforts might be undertaken to promote artisanal production, it is never likely to approach that of the industrial sub-sector. With respect to employment in relation to size, on the other hand, the artisanal sub-sector has a much more important impact on poverty reduction. Finally, to the extent that government revenues from the mining sector are spent in ways that reduce poverty, the industrial sub-sector is more likely to have a greater impact.

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<sup>4</sup> Prior to 1988, revenue from mining was deposited in a special account, which was used for geological surveys and other efforts to support the sector.

# 15. Agribusiness

Agribusiness in Mali has been growing, but remains hampered by high costs for electricity and intermediate inputs such as packaging. The sector is relatively well organized, with a clear focal point for interested investors.

## RECOMMENDATIONS

The following are the major recommendations for the agribusiness subsector:

- Provide technical assistance on optimal electricity usage (develop a night shift of workers in order to cut the share of electricity in the costs of production).
- Support the establishment of an export promotion agency (MALIPEX).
- Liberalize wheat flour imports.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

Mali's agribusiness sector remains underdeveloped in relation to its potential. Economic data on the sector are available through the Ministry of Economics and Finance, which reports that, from 1994-99, there was an annual rate of growth of slightly under 6 percent per year for the category Foods-Drinks-Tobacco, reaching a value of 48.9 billion CFA francs (\$74 million) in 1999. Thus, the food industry accounted for about 2.9 percent of GDP in 1999, falling from 3.8 percent in 1994, as other sectors grew more quickly. An estimated 5.5 percent of the economic activity in the food-processing sector is considered to be in the traditional sector, with the rest made up by the modern sector. As final household consumption for the sector is estimated at 191.632 billion CFA francs (\$290.3 million), this means that imports account for nearly three-quarters of all the processed food, drinks, and tobacco consumed in Mali. Counted separately in the national accounts, the bakery industry is about two-thirds the size of the other agroindustries combined, accounting for 34.7 billion CFA francs (\$52.6 million) in 1999.

Though Mali's national demand for processed food is relatively weak given the limited purchasing power of the average consumer, most of Mali's agribusiness opportunities will be in satisfying domestic demand, rather than in exporting processed foods. However, targeting export markets would be one way to realize economies of scale in food processing and overcome the limited size of the domestic market.

In anticipation of the increasing opportunity cost of food preparation for urban women, coarse grains are being processed, precooked, packaged, and sold in supermarkets in the Bamako region, albeit in a limited fashion. One product with potential for local processing is precooked fonio, which is eaten similarly to couscous. In addition to sales in Bamako, pre-cooked cereals from Mali are

being successfully marketed in neighboring countries as well, pointing to the potential to add value to coarse grains and target the local and foreign urban markets (Abt Associates, 2002, Vol. II, p.59).

In terms of exporting beyond the region, there is some possibility of marketing limited quantities to European urban centers, where the Malian diaspora prefers these cereal-based dishes. This potential could be reached if the precooked meals are manufactured under tight hygienic conditions to fulfill the European health requirements. Eventually, other European consumers could be targeted through attractively packaged pre-cooked meals (Abt Associates, 2002, Vol. II, pp.58-59).

Mali has only a handful of small artisanal processors of potatoes, essentially for potato chips. For Mali to develop a modern industry producing french fries or potato chips, Malian potato producers would need to introduce higher soluble solids varieties. Chip producers would need to combine potato chip production with chips from fruit and other starches, such as banana, plantain, and cassava, in order to utilize plant capacity. In its chapter on potatoes, the Centre Agro-Entreprise calls for a feasibility study on a chip plant capable of producing not only potato chips, but chips from other chippable products (CAE/Chemonics, 2001, Vol. IV, p.69).

At present, Malian production of sugar (through the two small operations of the firm SUKALA) amounts to 30,000 tons, satisfying only about 23 percent of Mali's consumption of 130,000 tons of sugar per year, at roughly 13 kg per capita. Given assumptions regarding population growth (+2.5 percent per year), per-capita income (+3 percent per year) and the income elasticity for sugar (0.7, based on a SOFRECO study), the 6-year, \$254-million proposed sugar mill investment (described below) would make Mali self-sufficient in sugar in the medium term, and result in exports of about 60,000 tons. Burkina Faso and Côte d'Ivoire appear to be the most promising export markets for Mali, as these two countries import 15,000 and 40,000 tons per year.

Mali has a handful of firms involved in processing drinks such as carbonated beverages, juices, or flavored milk products. Due to the unreliability of supply of local inputs to these bottling operations, most of the drinks processors prefer to import concentrated purées, juices, and flavorings for their formulations (Abt Associates, 2002, Vol. II, p.64). After reaching a peak output of 66,685 hectoliters in 1998, Malian beer production has remained relatively flat since (MEF, p.24). Breweries have proven to be attractive investments in other West African countries, for example in Ghana, as rising incomes have enabled greater beer consumption on the part of West African consumers.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Most of the goods produced by agribusiness firms in Mali should be entitled to duty-free entry into any of the UEMOA countries and be protected by a 22.5% common external tariff. These goods would normally be subject to a value added tax (VAT) in the country of import. Malian exports should either be exempted from the VAT in Mali or exporters should be reimbursed if the VAT has already been paid, but it is not clear how well this system works. Harmonization of indirect taxes within UEMOA is a goal that has yet to be achieved. Thus the VAT, which is 18% in Mali, is different in other countries.

## Institutional Capabilities

### PRODUCTION AND PROCESSING CONSTRAINTS

High electricity costs and unreliable supply are major constraints to the agribusiness sector. Producers must invest in backup generation capacity in order to be able to fill orders consistently.

### MARKETING AND TRADE FACILITATION

### REGULATORY ENVIRONMENT AND COMPETITIVENESS

Regulatory constraints in the agribusiness sector create a poor investment environment. These constraints include the red tape associated with the banking sector, and difficulties in conducting legal transactions.

Part of the reason for a favorable rate of return for sugar in Mali is the method of application of the Common External Tariff of UEMOA, which provides sufficient protection against lower-cost imports from external sources. UEMOA uses as a reference price an arithmetic average of the EU, U.S., and world price, to which is added the 20 percent tariff, plus a 1 percent statistical tax and an additional 4 percent tax, according to the calculations in the feasibility study. This suggests that the reference price in Mali would be \$584 per ton (Table 11), which is a much higher base on which to assess the CET than if the lowest cost source of supply were used.

**Table 11. Reference Price Calculation for Application of WAEMU Common External Tariff**

Guarantee price, EU	700 (US\$/metric ton)
Guarantee price, US	500
Average world price	252
Arithmetic average price	484
Maritime shipping (to Abidjan)	50
Reference price at Abidjan	534
Port charges and road transport to Zégoua	50
<u>Reference price at Malian border</u>	<u>584 (excluding tariffs &amp; taxes)</u>

SOURCE: Schaffer & Associates (2001)

A recent USAID study on Mali's flour milling industry clearly showed the non-competitiveness of this industry, which taxes all consumers for the benefit of only 116 jobs. By liberalizing flour imports, the Grands Moulins would of necessity become more competitive and overall consumer welfare would rise.

### IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

The National Directorate for Industries reports that from 1998 to 2000, there were a total of 127 planned investments in the food industry, representing 36.4 percent of all of the investments tracked

by the DNI during that period. Food industries had the largest number of proposed investments, followed by “non-industrial services” (DNI, p.2). Over this time period, the planned investments in the food industry grew from 7.7 billion CFA francs (\$11.7 million) in 1998 to 8.5 billion CFA francs (\$12.2 million) in 1999 and 12.7 CFA francs (\$18.1 million) in 2000. Out of the planned projects, 32 (34 percent) were actually realized, which was the second-best completion rate trailing non-industrial services (48 percent). In terms of the value of the investments, 8.8 billion CFA francs (\$12.6 million) were in fact invested in these 32 projects, just below one-fourth of the value proposed. Of this sum, 3.8 billion CFA francs (\$5.4 million), or just under 44 percent of the funding, came from foreign direct investors. The new investments created about 733 new jobs.

The National Commission for Investment Promotion is actively seeking investors for four agribusiness projects in Bamako (CNPI 2002). The proposed Générale Alimentaire Malienne (GAM) would require investment of 2 billion CFA francs (\$2.8 million), creating 150 full-time and 200 part-time jobs, in order to set up an industrial bakery and produce cookies, ice cream and other dairy products such as yogurt. GAM would seek to serve both the Malian market and other markets of West Africa. SOMACO-SA, which recently closed down, is seeking investment of 533 million CFA francs in operations to produce double-concentrated tomato paste, as well as fruit juices and syrups. A feasibility study indicates an internal rate of return of 25%. SOMACO would seek to serve the domestic Malian market for these products. The UHT Milk and Butter Company of Mopti would need 1.105 billion CFA francs (\$1.5 million) to set up a 49-job facility capable of producing 4.2 million liters of milk and 43 tons of butter per year. A feasibility study calculated an internal rate of return of 19.5 percent with a period of 4.5 years to recoup the investment. The UHT Milk and Butter Company of Mopti would serve the domestic market initially, then seek to export once established. Finally, a 310 million CFA franc (\$437,000) project to produce monosodium glutamate, based in Tienfala near Kati would produce 649 tons of MSG per year, creating at least 16 full-time jobs.

A potential investment in a sugar mill located at Markala near Ségou in the Office du Niger could result in an impressive economic internal rate of return (Table 12), according to a feasibility study conducted in 2001 (Schaffer & Associates, 2001). The authors of the feasibility study view Mali as one of only 2 or 3 countries in Africa with suitable conditions for low-cost sugar production at immediate profitability. Mali offers such attractive features as “good land, good quality agricultural labor, abundant water, and ideal plain topography.”

**Table 12. Financial Projections for Proposed Sugar Project**

Financial rate of return before interest	24.31%
<b>Financial rate of return after interest</b>	<b>21.69%</b>
Return on invested capital	41.55%
Total reimbursement coverage ratio	2.66
<b><u>Economic rate of return</u></b>	<b><u>47.76%</u></b>

SOURCE: Schaffer & Associates (2001)

The project would increase the region’s irrigated sugar cane production by 15,000 ha, which would be expected to achieve yields averaging 100 tons of cane per hectare (well above present yields in Mali). Of that planted area, 12,400 ha would be operated by the project (with yields of at least 100 tons/ha), with the additional feature of 2,600 ha reserved for private farmers to grow sugar

cane, with the technical assistance of the project staff, with the private farmers achieving yields of at least 85 ha.

The adjoining mill, with processing capacity of 8,000 tons of cane per day, would have output of 150,000-170,000 per year after 4-6 years. The feasibility study predicts that most of the adult laborers in the 14 surrounding villages would have the opportunity for either direct or indirect employment as a result of the new sugar plantation and mill, with positive effects on poverty. Employment is expected to be 2,000 full-time jobs and 3,000 part-time

The present price received by SUKALA for white sugar is \$655 per ton ex-factory, including 15 percent VAT and 4 percent other taxes. This indicates a net sale value to SUKALA of \$550 per ton (excluding corporate tax). The Markala project would be able to sell sugar ex-factory at \$584 per ton (including VAT and other taxes, but excluding corporate tax), which compares favorably with the estimated shadow import price of \$611 per ton (Table 13).

**Table 13. Shadow Price Calculation for Sugar Imports to Mali**

World price for raw sugar, FOB at exporting port	252 (US\$/metric ton)
Costs of refining and bagging	48
Maritime transport	50
<u>Unloading and ground transport to Zégoua</u>	<u>50</u>
Subtotal	400
<u>Import tariff of 25% (based on reference price calculation)</u>	<u>146</u>
Delivered price to Zégoua	\$546
<u>Presumed minimum profit of importer (12%)</u>	<u>65</u>
<b><u>Minimum sale price (excluding VAT and other taxes)</u></b>	<b><u>\$611</u></b>

SOURCE: Schaffer & Associates (2001)



## 16. Textiles, Clothing, and Handicrafts

Mali is francophone Africa's largest exporter of cotton to world markets. Most of this is exported as ginned bales of fiber, without further value-added processing. Mali has long sought investments in spinning, weaving, and garment manufacture that would allow it to establish itself as a vertically integrated player in global textile markets.

Several factors have stymied such investments to date. Mali's established industrial base is outdated and inefficient, requiring substantial investment in new technology in order to be competitive with Asian mills. Mali's infrastructure (energy, waste treatment, and transportation) is in a similar state. Recent uncertainties with respect to Mali's economic policy environment in the cotton sector have confused the picture with regard to expected production and domestic price levels. Mali's workforce is barely industrialized, raising questions about the availability of a sufficiently disciplined labor force to work the mills and staff garment factories. Skilled labor is rare, requiring foreign managers to be brought in to run these enterprises.

In the early 2000s, this gloomy picture is beginning to change. Investments in regional energy development and distribution are improving the precariousness of electricity supply in Mali. A reform program for domestic cotton production, ginning, and export has now been agreed to by all parties. And a foreign direct investment project in the cotton sector, planned for several years, may now finally be coming to Mali.

There are several options for Mali to consider in the downstream processing of cotton into semi- or finished goods for export:

- Existing textile mill capacity could be modernized by current owners in order to improve its physical efficiency and thus profitability;
- Existing textile mill capacity could be fully privatized in order to bring in new sources of international capital to help finance the necessary modernization to improve efficiency and profitability;
- New milling capacity could be developed for spinning and weaving/knitting of cotton fiber for export; however, these are lower valued intermediary commodities in the textile industry;
- New vertically integrated capacity could be sought for higher quality spinning, weaving, continuous processing (knitting), and garment manufacture;
- Existing artisanal production of cotton and leather-based wearables and household furnishings, which already employs a large percentage of the Malian workforce, albeit on a less formal and more intermittent basis, could be trained to supply a modern, high-end consumer market.

## RECOMMENDATIONS

Modernization of current industrial capacity and/or creation of new capacity will require large-scale investments from abroad. Policymakers need to evaluate how international investors, who compare operating environments across a large number of candidate countries before deciding where to invest, view Mali. By understanding Mali's ranking with regard to the economic, political, educational, and sociocultural variables that affect a country's competitiveness, Mali could develop a long-term strategic plan to address two or three key variables each year over a longer period. Most critical are:

- Resolving the problem of freight logistics in/out of Mali to allow for efficient overland transport to Dakar and/or Abidjan and competitive air freight in/out of Bamako's airport;
- Resolving the issue of erratic energy supplies to eliminate the need to rely on independent electricity generation;
- Improving the implementation of temporary admission and duty rebate schemes, so that exporters only pay world prices for imported raw materials and inputs; and
- Embarking on a long-term workforce development program that provides trained workers, technicians, and managers for industrial development.

Within the textiles-cotton-handicrafts sector, there are strategic choices that could be made without having to wait for the larger investments to be attracted to Mali to improve the competitiveness of existing operations. These include:

- Introducing new product lines into textile mills in order to increase their capacity use to three shifts per day, increase their profitability, and generate new funds for re-investment in modernization;
- Undertaking a survey to assess the extent to which Malian households are already engaged in textile-related processing activities, at what level of capacity and for what points in the markets, in order to design appropriate training programs for workforce development;
- Helping to connect Mali's talented textile and leather artisans and manufacturers with international markets via paid commercial representation and promotional efforts;
- Training Mali's textile, cotton, and handicraft industry operators about export-related issues (design, quality, timing, pricing, logistics, etc.);
- Teaching Mali's banking sector about the opportunities available for lending to textile-clothing-handicrafts businesses and teaching those businesses how to prepare bankable loan applications.
- Working with exporters to strengthen their capacity to obtain working capital, oversee quality standards, organize timely production and delivery, assure proper packaging, arrange for shipping and freight facilitation, and work effectively with foreign buyer; and
- Establishing a sound and well functioning system for exemption or reimbursement of all indirect taxes paid on raw materials and intermediate inputs used in the production of goods that are exported.

It is also recommended that Mali review progress in cotton sector liberalization, economic policy reform, and private investments taking place elsewhere in the UEMOA region in order to assess the possible impact of those reforms on Mali's textile -cotton sector.

### TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

Mali's cotton industry is vertically integrated from input supply through lint export, managed by the *Compagnie Malienne pour le Développement des Textiles (CMDT)*, which is jointly owned by the Malian state (60 percent) and the *Compagnie Française pour le Développement des Textiles (CFDT)* (40 percent). The 1994 devaluation of the CFA franc improved cotton producer prices dramatically. From below 300,000 tons of seed cotton in the early 1990s, Mali increased production to over 500,000 tons annually by the mid-to-late 1990s, due mainly to area expansion. However, in 2000 the Malian economy was hit hard by several exogenous shocks, including a sharp decline in the price of a key exportable, cotton. The sharp decline in the world price-linked producer price led to a 50 percent decrease in cotton production (2000/01) and negative GDP growth for 2001. After an agreement was reached between Mali and the international financial institutions to resume cotton price supports, farmers returned in force to cotton production in late 2001. The U.S. Department of Agriculture estimates that Mali's area under seed cotton cultivation is up for the 2001/02 growing season by 89 percent from the previous year. Combined with more favorable rainfall, West Africa's largest cotton producer is expected to produce 620,000 bales of lint, or an increase of 129 percent over 2000/01. Mali is the second-ranking African producer and exporter of cotton fiber, and the largest in the Franc Zone.<sup>5</sup>

**Table 14. World Cotton Fiber Production and Exports, 2001/02 (1000 metric tons)**

	Production		Exports	
	Quantity	%	Quantity	%
China	5127	24%	87	1%
United States	4402	21%	2051	33%
India	2662	13%	11	0%
Pakistan	1811	9%	87	1%
Uzbekistan	1025	5%	n/a	
Turkey	884	4%	884	14%
Brazil	720	3%	720	12%
Egypt	280	1%	98	2%
Mali	135	1%	135	2%
<i>(All francophone Africa)</i>			815	13%
World total	21135		6134	

SOURCE: USDA/ERS (2001)

<sup>5</sup> Seed cotton is converted to fiber (or lint) at a ginning yield of 42 percent. Note that cotton sector liberalization, economic policy reform, and private sector investments in new processing capacity are moving ahead in Côte d'Ivoire. It is not known whether this situation exists elsewhere in the UEMOA region, and what effect such progress may have on Mali's cotton-textiles industry.

Virtually all of Mali's cotton production is shipped to global markets. CMDT sells 95% of its fiber overseas via the international brokerage services of *Compagnie Cotonnière (COPACO)*, the exclusive international agent of CFDT; the remainder for export is sold privately by CMDT to international customers. COPACO sells to a large diversity of international clients on Mali's behalf. Despite acknowledgement by government officials that Mali needs to focus on flexible, large-scale production for the world market, value-added processing activities beyond ginning are quite limited in Mali. Only about 1 percent of total domestic fiber production is transformed, and all is for local consumption, i.e. virtually no cotton textiles or clothing is exported. In a country where labor supply is abundant, this lack of downstream processing seems a missed opportunity.

At the artisanal processing level, cotton is cleaned and spun by hand by villagers into thread for processing by pedal weavers into narrow strips of cloth. Some of this is quite basic, and ends up being pieced together into sheets for hand painting using colors made from roots and clays into traditional Malian "mud cloth," or *bogolan*. Most of this is sold into the domestic and foreign tourist markets as cloth; a small portion is further transformed into finished household furnishings or garments for the same markets. An unknown quantity is taken out of the country informally for sale in Europe and the U.S. Another portion of the hand woven market is processed from dyed cotton thread into strips of vibrant fabric, and mostly pieced together into *pagne*-sized wraps. Some of this latter is woven with a seersucker look. Despite the present lack of formal industrial development in the cotton value-added industries, Malians have a long cultural tradition in spinning, weaving, dyeing, tailoring, and embroidery.

In the formal sector, two textile mills used to exist in Mali; in 2002, only one is economically active.<sup>6</sup> COMATEX is a vertically integrated textile plant. Created as a public company in 1967, privatized in 1994/95, it is owned jointly by a Chinese company (80 percent) and the Malian government (20 percent). COMATEX processes about 1500 tons of fiber per year and supplies cotton thread to the Malian artisanal weaving market and low quality "FANCY" fabric for the local market. In 1999, COMATEX operated at about 60 percent capacity, with quite outdated machinery and low labor productivity.

Competition from textiles imports is an issue in Mali. Despite raw material cost advantage as an important exporter of cotton, very little Mali-produced cloth is visible in the Bamako market. Most of Malian fabric consumption is satisfied through imports, including *bazin* (cotton damask), "waxes," and simpler printed cotton from Europe and Asia, as well as Nigeria, Benin, and Côte d'Ivoire. The secondhand clothing market also competes with domestic and regional fabric production.

In addition to the textile mills, one formal sector clothing firm exists in Mali, the *Palais de Vêtements*, which is located in Bamako. It has had difficulties modernizing and growing its business, despite having benefited from several private sector training opportunities. The firm produces custom work gear and military uniforms for the Malian armed forces, hospitals, banks, schools, and private companies, all for the local market. Although the company owns thirty sewing machines, it only operates twenty of them, and one embroidery machine. It produces virtually nothing for export.

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<sup>6</sup> ITEMA (state-owned, headquartered in Bamako) was established in 1971, largely to import greige fabric at a CIF cost equal to, or lower than, its own cost of production, and print fabric for the local market. By 1999, ITEMA had fallen into serious financial difficulty, leading to its virtual closure.

Malian policy makers have long sought investments in spinning, weaving, and garment manufacture that would allow Mali to establish itself as a vertically integrated player in global textile markets. Several factors have stymied such investments to date. Mali's established industrial base is outdated and inefficient, requiring substantial investment in new technology in order to be competitive with Asian mills. Mali's infrastructure (energy, waste treatment, and transportation) is in a similar state. Recent uncertainties with respect to Mali's economic policy environment in the cotton sector have confused the picture with regard to expected production and domestic price levels. Mali's workforce is barely industrialized, raising questions about the availability of a sufficiently disciplined labor force to work the mills and staff garment factories. Skilled labor is rare, requiring foreign managers to be brought in to run these enterprises.

In the early 2000s, this gloomy picture is beginning to change. Investments in regional energy development and distribution are improving the precariousness of electricity supply in Mali. A reform program for the domestic cotton production, ginning, and export system has now been agreed to by all parties. And a foreign direct investment project in the cotton spinning sector, planned for several years, may now finally be coming to Mali.

There are several options for Mali to consider in the downstream processing of cotton into semi- or finished goods for export:

- Existing textile mill capacity could be modernized by current owners in order to improve its physical efficiency;
- Existing textile mill capacity could be fully privatized in order to bring in new sources of international capital to help finance the necessary modernization;
- New milling capacity could be sought for spinning and weaving/knitting of cotton fiber, for export; however, these are lower valued intermediary commodities in the textile industry;
- New vertically integrated capacity could be sought for spinning, weaving, continuous processing (knitting), and garment manufacture;
- Existing artisanal production of cotton- and leather-based wearables and household furnishings, which already employs a large percentage of the Malian workforce,<sup>7</sup> albeit on a less formal and more intermittent basis, could be trained to respond to modern, high-end consumer market.

For several reasons, in the short-to-medium run, Mali's comparative advantage may lie in the development of culturally based textile and leather products, rather than the export of cotton-based commodities such as yarn and fabric (Salinger, et al. 1999). Mali is land-locked and its land-based transportation infrastructure is inefficient, resulting in high costs of transportation and uncertain delivery to international clients via coastal seaports. Mali's labor is also not as cheap as it is in competing garment producer nations around the world. Thus, the export of standardized, "commodity" clothing such as T-shirts and men's slacks is not likely to be effectively undertaken in

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<sup>7</sup> Little quantitative data exist regarding the breadth of this largely informal industry.

a higher cost country such as Mali. Instead Mali could develop a niche exports strategy which allows for the export of higher valued goods that can be competitively air freighted to foreign customers.

Mali's cultural traditions have long embraced textile and clothing design, production, and trade. Mali's informal spinning, weaving, dyeing, tailoring, and embroidering enterprises produce goods of significantly high quality. Successful international marketing of these goods requires an innovative approach to achieving economies of scale in input procurement, production, and international marketing. Once exposed to international markets and ways of doing business, Malians will generate new product and market ideas themselves, excited to link up with international partners and join the international marketplace as competitive suppliers of high quality fabrics, designs, household textiles, and garments to internationally savvy consumers the world over.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

### Trade Regime

Textiles produced and traded within the West African Economic and Monetary Union, including from Benin and Côte d'Ivoire, circulate freely without payment of customs duty as long as they satisfy certain rules of origin requirements.

Fabric imported from outside the Union, such as in the case of the *bazin* test cases mentioned above, is subject to a *taxe extérieure commune* (TEC) (import duty) on imported finished goods of 22.5 percent, as well as to Mali's value-added tax (VAT), equal to 18 percent, paid on top of CIF-with-duty.<sup>8</sup> In principle, goods that are manufactured from imported inputs for re-export are exonerated from payment of both the TEC and the VAT and thus eligible either for ex-ante temporary admission or for ex-post reimbursement. In practice, however, this system does not function. This is a very important obstacle to trade, given the competition that exists on world markets from countries in which such systems of tax exemption or reimbursement do operate efficiently.

Although world trade in textiles and clothing is still highly regulated, pending the 2005 expiration of the WTO Agreement on Textiles and Clothing, access of sub-Saharan African exporters to the U.S. market is governed under the African Growth and Opportunity Act (AGOA). For exporters of apparel, AGOA offers an average 17.5 percent duty advantage, relative to non-African suppliers, to eligible sub-Saharan African countries that qualify for AGOA's Special Rule on Apparel. In addition, the Act offers duty-free access to the U.S. market for hand-loomed, handcrafted, and folkloric articles, as well as an additional 1,835 non-textile products not previously included under the Generalized System of Preferences. AGOA does *not* offer duty-free access for non-apparel textile products. Non-clothing textile products presently produced in Mali, such as home furnishings and accessories, would be taxed upon importation into the U.S. according to the rates specified in the U.S. Harmonized Tariff System (HTS).

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<sup>8</sup> Although technically an intermediate good, which should pay a lower duty rate, cloth is classified as a finished good because much of it is purchased directly by consumers.

There are several requirements which African countries must meet in order to be eligible for AGOA. General AGOA eligibility is contingent on countries having economic and political policies in place that promote open markets and political systems, reduce poverty, make efforts to fight corruption, protect human rights and the rights of workers, and eliminate child labor practices. Mali has already qualified for such eligibility.

To qualify for the Special Rule on Apparel a country must require a certificate of origin customs visa for all textile-related trade transactions. This form—insisted upon to prevent illegal transshipment through Africa from non-AGOA sources—is subject to approval by the U.S. Government. Countries must also agree to make their industries open and available to U.S. Customs Service inspection teams, and individual textile and clothing firms must maintain records of raw materials, employment, production equipment, and sales for five years after export for possible review by the U.S. Customs officials. Mali has not yet been granted qualification status under this second requirement.

### Institutional Capabilities

The various institutional actors in Mali's cotton-textiles-clothing-artisanal goods sector are well known to each other, given the small size of this sector, but are not well organized. There is no textile association. Producers, ginneries, and lint exporters have all been coordinated by CMDT, although the government's cotton sector reform strategy envisages the withdrawal of CMDT from extension services and public services such as input provision and transportation, and the implementation of a more competitive mechanism to maximize export receipts. Textile mills, artisanal fiber producers and processors, and clothing firms operate on their own. A National Malian Artisans Federation and a National Center for the Promotion of Handicrafts both exist, but have not been very active. In late 2001, an association of handicrafts exporters was created to help traders lobby for fair policy treatment and to increase their market presence, but little is known about how active or effective this group has been to date.

### PRODUCTION AND PROCESSING CONSTRAINTS

The high cost and irregularity of *electricity supply* have been common complaints for Mali's industrialists. Private generation of electricity by users is a good deal more costly than public utility generation. Mali's public rates (cited in Salinger et al, 1999) are also high, compared with rates observed elsewhere on the continent. However, investments in regional energy development and distribution should soon change the precariousness of electricity supply in Mali.

In a study of U.S. computer and clothing firms doing business overseas (McMillan, Salinger, and Pandolfi, 1999), firms ranked *local workforce development* as a key factor in deciding where to do business, after infrastructure and economic/political stability. Workforce development involves both skilled and unskilled labor. Workforce competitiveness is therefore not simply a function of the degree of literacy and numeracy, wage rates, and physical productivity of unskilled workers. U.S. firms accord equal importance to the availability of skilled middle and upper level management to initiate new enterprises, employ labor effectively, innovate manufacturing/ procurement/ logistics processes as necessary, implement quality standards/ incentives, implement productivity standards/ incentives, respond to international trade requirements such as customs regulations and just-in-time

delivery, manage customer relations, introduce new products or design adaptations, utilize information technology for internal management as well as external relations, maintain levels of financing adequate for continued investment in new technology and new capacity as necessary, and identify workforce training requirements. Mali's only textile training facility in Ségou is closed. Small tailoring schools do exist, but there is no formal training in Mali for the textile and fashion industries, management skills, or quality/pricing aspects of export production. A full training audit specific to the textiles sector should be undertaken to see what is presently being supported by donor agencies and non-governmental organizations, as well as formal training institutes, both in Mali and the francophone region.

Salinger, et al (1999) propose strategies for *increasing the capacity use and thus profitability* of local textile mills. Several new product lines should be explored to improve throughput in existing industrial capacity, including the production of cotton picking bags and bale wrapping<sup>9</sup> and new "industrial fabrics" products.<sup>10</sup> Also, in order to be a competitive supplier to global markets, the urgent upgrade of worker and environmental health and safety standards is required. Once profitability is increased, the mills can contemplate upgrading machinery. Clothing firms, too, need help identifying some larger contracts for export in order to improve profitability and undertake needed investments in modern cutting, stitching, and finishing equipment.

In 1999, a key issue affecting textile spinning and weaving mills' *access to raw material* (cotton fiber) was the local purchase price from CMDT. At that time, depending on the world price one used as a reference, COMATEX was getting a substantial price advantage from CMDT. The mill had access to as much local fiber as it needed at a fixed ex-factory price that represented a substantial subsidy relative to world parity prices. At the same time, international investors seeking to launch a greenfield investment in a cotton spinning mill in Mali for the export of cotton thread were being denied access to raw material at the same price. This issue seems to have subsequently been resolved, given the current low world market price for cotton, but it is likely to resurface when world prices rise.

## MARKETING AND TRADE FACILITATION

A key constraint with respect to textiles, cotton, and handicraft exports is the crisis in *freight logistics*. Connections by land to the two closest seaports is adequate for the export of commodities, the delivery of which may not be time sensitive. However, the delivery of garments and handicrafts into time-sensitive consumer markets requires fast, reliable freight connections with foreign markets. Mali's railway line to Dakar, due to be privatized soon, is presently quite slow. Overland truck transport to Abidjan is marked by frequent stoppages and unofficial taxation. The air freight market in and out of Mali has been rendered a virtual monopoly of one company, due to the expiration of both Air Afrique and Sabena airlines, with a concomitant decline in service and increase in charges.

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<sup>9</sup> Because spinners around the world prefer the use of cotton picking bags and bale wrapping to preserve uncontaminated cotton fiber, Mali fiber exports should be packaged with 100% Mali cotton products, for which a world price premium should be obtainable on world markets.

<sup>10</sup> Including pocketing and waist banding, curtain lining, substrates for coating, upholstery, automotive uses, outdoor furniture, mattress ticking, and interlinings.

Not surprisingly, *financing issues* also pose a problem for producers preparing to export. Most are not financially ready to support the start-up costs (such as purchasing materials, dyes, trims, etc.) to craft or manufacture larger orders. Overseas clients need to be selected carefully to identify those who understand and are willing to work with smaller, more manageable quantities. Counter to global market operations in most other parts of the world, many Malian artisanal exporters typically expect a 50 percent advance from international buyers in order to finance the purchase of raw materials and organize production. U.S. firms contracting for offshore manufacture generally do not pay advances of this magnitude. In China, India, and elsewhere, local export agents generally play that financing role, covering their costs in the final fee payment. Malians who are unable to adapt to that system will likely not participate to a large extent in this more competitive, commercial environment. When confronted with this broader international reality, one of the handful of larger scale Malian exporters said he would be willing to try an alternative pricing scheme in order to accommodate orders without advance payments.

There is a clear need for *development of modern export agents* in Mali. Services which would normally be provided by export agents include intermediation with foreign buyers, pre-shipment financing, management of production assignments to local producers, oversight of quality standards, managing adherence to time schedules, packaging and arranging for shipping, freight facilitation, as well as the financial facilitation mentioned above, working with the foreign buyer and covering remuneration to local producers. A small number of exporters in Mali today already manage large volumes of exports in traditional product lines. However, they usually handle goods that do not have the same degree of manufacturing or quality expectation as the more upscale products that are likely to be developed. Current exporters are not equipped to handle more sophisticated color, quality, and mixed media issues. Training of existing exporters and longer term collaboration with them will be required to help them understand technical and finishing, color, quality, and pricing.

Modern professional pursuit of *market access to foreign buyers* is normally pursued via commercial representation in key commercial centers. Foreign buyers include not only large retail outlets, but smaller importer/wholesalers, catalogue companies, museums and tourist centers, on-line craft retailers, and corporate buyers. Malian firms and associations will need assistance developing such commercial representation in at least one key market, such as New York. Alternatively, some non-profit organizations, supported through a combination of fees and funding from donor and private sources, provide these “maker-to-market” linkage services to foreign artisanal organizations.<sup>11</sup> Selected promotional activities should also be considered to increase the visibility of Malian products in foreign markets.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

Exporters from Mali need relief with respect to taxation of imported inputs. Temporary admission and/or duty-rebate schemes, which already exist from a regulatory point of view, need to work effectively so that duties on imported raw materials and inputs are either not charged ex-ante or are

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<sup>11</sup> These groups include Action for Enterprise, Aid to Artisans (ATA), Marketplace: Handwork of India, PEOPLink, SERRV, Ten Thousand Villages, and Traditions Fair Trade.

reimbursed ex-post. Having to pay local duties will increase the final FOB cost of goods substantially, especially for high-end, crafted goods.

### **IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION**

Encouraging the development of labor-intensive manufacturing is an important aspect to developing pro-poor patterns of economic growth. Mali is still largely a rural, agriculture-based economy. The development of value-added processing activities which take advantage of one of Mali's primary commodity exports (cotton fiber) and/or its sophisticated textile processing labor skills (weaving, dyeing, embroidery, tailoring) would be a boon in terms of providing alternative employment opportunities, especially for Malian youth.

The expansion of vertical industrial integration in this sector, whereby outputs from spinning-weaving or continuous processing (knitting) processes are fed directly into garment manufacture for export, is one alternative. While significant capital investments would be required to make Malian industry internationally competitive in this regard, garment manufacture is by far the more labor-intensive side of the textile-clothing industry and formal sector employment could be expanded.

Alternatively, the promotion of cottage enterprises, focused on the crafting and manufacturing of textile-based wearables and home furnishing items, would also generate significant new employment in the less formal, more rural labor market.

# 17. Electricity

Reliable electricity supply at affordable prices will be the key to the expansion of manufacturing activities in Mali in the coming years. Malian consumers pay the highest rates in West Africa for an electricity supply characterized by outages and voltage fluctuation. Over the next few years, completion of the Manantali dam hydro project will reduce the long-run average cost of electricity, as hydropower will make up a far larger proportion of Mali's energy supply. There will also be international transmission lines constructed, linking Mali to Côte d'Ivoire and Guinea, to enable trading in electricity within West Africa. A rural electrification program, if economically feasible, would result in significant poverty reduction and growth of trade.

## RECOMMENDATIONS

The following are the major recommendations for the electricity subsector:

- Develop a program to encourage industrial processing during hours of low electricity tariffs (night shift).
- Provide training on the challenges and opportunities presented by regional electricity trading to electricity company officials, ministry officials, members of the electricity regulatory commission, and economic operators.
- Encourage the reduction of technical and non-technical losses. With the nascent regulatory authority, develop clear guidelines for merit order priority, i.e. who gets shut off when.

## TRADE OPPORTUNITIES AND MARKET ACCESS REQUIREMENTS

Prior to the advent of the hydro dam at Manantali, installed capacity in the network totaled approximately 50 MW in hydro capacity (Sélingué, Sotuba and Félou), plus an additional 70 MW in thermal capacity (Darsalam and Balingué), for a total generation potential of 243 GWh from hydro sources and 90 to 250 GWh from thermal sources. Net energy production in 1999 for the whole system totaled 394 GWh, while energy consumption was 302 GWh. The difference between production and consumption was captured in a loss rate of 25 percent.

Where hydropower accounted for 79 percent of electricity in 1989, by 1999 that ratio had fallen to 54 percent. With the expected 300 to 400 GWh flowing to Mali from Manantali, the hydro/thermal ratio will revert to 75 to 80 percent, lowering the long-run average cost of electricity in Mali. Yet any potential drought affecting water levels at Manantali, coupled with continued high technical and non-technical losses in the grid thermal system, could cripple Mali's economic development, in the face of strong growth in the number of electricity subscribers.

The dam at Manantali was completed in 1988 for the purposes of irrigation. It spans the Senegal River in the region of Kayes, at a point roughly equidistant between the cities of Bamako and Kayes.

The hydroelectric plant with 5 turbines of 41 MW each began production in January 2002. Two distribution networks extend from the plant to the east and west.

The Manantali region relies on a single rainy season from July to September for restocking the water supply. Manantali will add 200 MW of installed capacity and roughly 600 GWh per year of production to the current energy mix, but Mali can only lay claim to 52 percent of that capacity. This suggests that the maximum energy available to Mali (forgoing additional energy purchases from Senegal and Mauritania) would be 360 (assuming 700 GWh produced at Manantali in a good year), plus 370 GWh from existing hydro and thermal sources for a total 730 GWh. Within a few years, Mali's growing demand will outstrip the capacity of Mali's share of electricity from Manantali.

The growth rate of electricity consumption in Mali averaged 6.7 percent per year from 1986 to 1999. The long-term demand function in Mali is driven more by additions to the number of subscribers than overall population growth. Demand will therefore be a function both of per capita income and the level of investment in energy infrastructure to meet that demand.

Through the development of the West African Power Pool (WAPP), an ECOWAS-led initiative to develop electricity trade within West Africa, and the West Africa Gas Pipeline, which will provide natural gas from Nigeria to Benin, Togo, and Ghana starting in 2004, regional trade opportunities should increase. Mali is already interconnected with Mauritania and Senegal, thanks to the infrastructure related to the Manantali Dam. In coming years, Mali is also likely to be able to import or export electricity via lines connecting Mali with Côte d'Ivoire and Guinea. Within the West African electricity trading system, Mali is likely to be a net importer of electricity, buying from Côte d'Ivoire via a new line reaching to Sikasso in the southeast. Mali may be able to export some electricity to Senegal or Mauritania by means of the existing infrastructure for the Manantali dam project.

## TRADE REGIMES AND INSTITUTIONAL CAPABILITIES

L'Energie du Mali (EDM) is the agency responsible for production and distribution of power and water in the Republic of Mali. A public agency until March 2000, EDM was privatized through the transfer of 60 percent of its capital (2.5 billion FCFA) to a strategic partnership made up of EDM and Saur International/IPS to create a new private company known as EDM-SA (Société Anonyme). Saur International/IPS is itself a joint venture between the French firm Saur International and the infrastructure company founded under the auspices of the Aga Khan, IPS. As of 21 November 2000, when the contract was signed, EDM-SA inherited the management responsibility for power production and distribution from EDM. In the future, EDM-SA anticipates 20 percent state ownership; 20 percent ownership shared among private citizens, employee share-holders and private operators in the West African region; and 60 percent remaining in the hands of Saur International/IPS.

EDM-SA manages a two-tiered system of power production and delivery, comprised of the main grid and smaller unconnected service zones. A grid extending from Bamako eastward to Ségou, and toward the south to Yanfolila (supplying these cities as well as Kati, Koulikoro, Fana, Dioïla, Markala and Kalana) supplies 86 percent of the power generated in the country, and services 77 percent of all EDM customers, which numbered 82,245 at the end of 1999. The remaining consumers, located in urban areas scattered around the country, rely on 16 small plants, all but one of

which are thermal. The transmission grid covers approximately 40,000 km<sup>2</sup> (about 3.2 percent of Mali's area), comprised of 351 km of high tension (150 kV), 69 km of medium tension (66 kV down to 5.5kV), and 860 km of low-tension wire (OMVS 2000).

EDM made great strides over the 1990s in generating more power and connecting more households and businesses to existing power sources, with the number of low tension and medium tension subscribers both more than doubling over that time. The newly privatized EDM has set an objective of more than 300,000 subscribers by 2019, of which 257,000 would be connected to the existing grid and the remainder would access power from individual stations. EDM has identified priority regions and sub-regions for development according to their relative economic importance and level of urbanization, and has established a calendar for construction of new thermal plants in these areas. EDM has also shown improvement in recent years reducing the arrears owed by customers. Further, EDM hopes to improve non-technical loss rates from 23-25 percent to 14 percent by 2005 and to 12% by 2010, more in line with coastal West African countries such as Ghana.

Queried about their trade capacity needs, EDM staff responded by calling for training in how to take advantage of regional electricity for the EDM staff, and for economic operators, ministry officials responsible for electricity restructuring, and members of the electricity regulation commission. The training could include the following topics: the concepts and challenges of electricity interconnection, the institutional environment for the electricity sector in a context of integrated electricity infrastructure, economic and financial regulation of electricity grids, the role of regulatory organizations, concepts and techniques for tariffication, and economic and financial analysis of trading electricity.

Manantali is managed by the Société de Gestion de l'Énergie de Manantali (SOGEM), created for this purpose by the Organisation pour la Mise en Valeur du Fleuve Sénégal (OMVS). OMVS is an international organization established in 1972 whose member states include the three countries that will benefit from the Manantali dam: the Republic of Mali, the Islamic Republic of Mauritania and the Republic of Senegal. Mali is entitled contractually to 52 percent of the total energy transmitted by Manantali.

## PRODUCTION AND PROCESSING CONSTRAINTS

About 92 to 93 percent of the country's 11 million residents—in rural and poor urban areas—have no access to power. Landlocked and ranking among the largest (1.24 million km<sup>2</sup>) and least densely populated (7.9 hab/km<sup>2</sup>) of the ECOWAS countries, Mali faces a particular challenge in finding an economical means to link 8 million rural Malians to any power grid (République du Mali 1999). The national grid is being expanded as depicted in Figure 1.

**Figure 1. Mali's National Electricity Grid**



SOURCE: AIRD. For general descriptive purposes only, this map reflects the range and location but not the specifics of the existing grid.

Further, Mali has some of the poorest scores in the world in terms of sectoral efficiency factors. Technical and non-technical losses in Mali rank among the highest in West Africa at 23-25 percent. Even as the infrastructure grows, low efficiency rates may be endemic to Mali given the long distances between populated areas, the low proportion of subscribers to the population, and the generally low population density. Also, the age and relative lack of maintenance of the existing infrastructure in the main grid, along with unauthorized takings, or theft of power, have caused losses.

In a recent survey, well over half of the small and medium enterprises reported spoilage or destruction of equipment or merchandise due to voltage fluctuation. Large users of electricity in Mali usually maintain their own autonomous generation capacity. HUICOMA, for example, maintains capacity of 2kW for their cottonseed processing operations. Even small and medium enterprises often maintain back-up capability through small diesel generators.

## REGULATORY ENVIRONMENT AND COMPETITIVENESS

Mali has subsidized electricity provision for most of the last decade. Since the mid-1990s, it has been apparent that Mali's tariffs were below long run marginal cost (World Bank 1998a). Mali has had several small increases during the last 5 years that targeted industrial (6-7 percent increase) and large residential consumers (12 percent increase), but the government recognized that significant additional tariff increases across all sectors are needed (USAID 1999).

The cross-subsidies within the current tariff structure generally appear to be both socially and economically optimal, since the poorest households benefit from the largest subsidies, and industrial economies of scale are reflected in the rates (AIRD, p.21). In Mali, where the industrial load factor is higher than the residential, it generally costs less on a marginal basis to serve customers with higher load factors because assets are used more intensively. Industrial customers take service at higher

voltages, reducing losses, and the step-down transformers and low voltage lines required to serve customers with lower load factors are not necessary. Therefore, industrial distribution costs are lower than for other customers, offering the rationale for industrial tariffs in Mali being typically around two-thirds of residential tariffs (World Bank 1998a).

Industrial (medium tension, MT) customers and regular household (low-tension, LT) consumers are cross subsidizing household consumers at the bottom of the income scale. With the estimated recurrent cost of electricity in 2000 at 96.98 FCFA/kWh (16.2¢/ kWh) for 2000, customers consuming the lowest amount of electricity receive a subsidy of 34 percent (see Table 15). This is denoted in the scale as the “social rate.” The only other category of electricity user clearly and substantially subsidized is towns and cities.

All MT customers also benefit from reduced rates, which is justifiable, as less conversion is required from a HT to MT line, and because larger consumers can achieve economies of scale in energy delivery. It is likely that the energy price at regular hours, 70 FCFA/kWh between 6 a.m. and 6 p.m. (28 percent lower than the average cost for the system), more closely approximates the actual recurrent cost of MT electricity than the price during peak hours, 98 FCFA/kWh 6 p.m. to midnight. Businesses with an ability to operate during off-peak hours, from midnight to 6 a.m., have a considerable incentive to do so given the price of 43 FCFA/kWh that prevails. It is noteworthy that "peak" is considered the evening hours in Mali, rather than regular business hours, reflecting the low proportion of industrial electricity consumers relative to households and businesses in need of light during the evening.

Mali is participating in the development of the West African Power Pool (WAPP), which is an ECOWAS-led initiative to develop the rules and procedures for trading electricity within West Africa. By being open to trade in electricity, according to the Purdue University least-cost optimization model for the region, Mali can reduce the total costs of investment and system operation by half, compared with scenarios where demand is met solely by national production, including high-cost small-scale generation (AIRD). This diversity of supply will lend far greater reliability and economic certainty to Mali's electricity service, presenting a far more hospitable climate for investment.

**Table 13. EDM Price/Cost Analysis**

Tariff Structure—Calendar 2000/1		Recurrent cost 2000/1 (FCFA/kWh)			
		96.98			
<b>Low-Tension</b>					
<i>Social rate (2-wire 5-amp meters)</i>					
Proportional price (FCFA/kWh)		<i>Rate</i>	<i>TVA</i>	<i>Total Rate</i>	<i>Subsidy/3</i>
Tranche 1	0-50 kWh/m	64	0	64	34%
Tranche 2	51-100 kWh/m	99	0	99	-2%
Tranche 3	101-200 kWh/m	99	18%	117	-2%
Tranche 4	>200 kWh/m	115	18%	136	-19%
 <i>Normal rate (2 wire&gt;5-amp meters, 4-wire meters)</i>					
Proportional price (FCFA/kWh)					
Tranche 1	0-200 kWh/m	112	18%	133	-15%
Tranche 2	>200 kWh/m	131	18%	155	-35%
 <i>Public lighting rate (FCFA/kWh)</i>					
First 120 hours of use		112	18%	133	-15%
Additional		77	18%	91	21%
 <b>Medium- Tension</b>					
<i>Single rate</i>					
Power level < 25 kW		98	18%	115	-1%
 <i>Binary rate</i>					
Annual premium (FCFA/kW subscribed)		16746	18%	19760	
Proportional price (FCFA/kWh)					
	Peak (18h-24h)	98	18%	115	-1%
	Regular (6h-18h)	70	18%	83	28%
	Off-peak (0h-6h)	43	18%	51	56%

Notes:

1. Arrêté Interministériel de 19 janvier 2000.
2. MMEE, Rapport Financier 9/00, p. 64: This rate is provisional.
3. Calculated on the basis of pre-TVA rate.

## IMPLICATIONS OF EXPANDED TRADE FOR GROWTH AND POVERTY REDUCTION

In recent years, the Republic of Mali has endured a pattern of insufficient and unreliable power supply. Those with access to electricity, largely in southern and urban areas of the nation, experience frequent and costly blackouts. While electricity reliability has improved around Bamako, due to the partial coming on line of hydroelectric power from the Manantali dam, the rest of the country to the east and south of the capital has seen little improvement. Mali has the highest-cost electricity in West Africa.

These limitations pose a severe constraint for economic development in Mali. The electricity sector holds one of the keys to building Mali's capacity for trade. The high cost and low reliability of the electricity system seriously hamper development of value-added businesses, in particular agribusiness processing. The lack of rural electrification throughout most of the country impedes efforts to stimulate value-added activity at the level of the village.

Expanding the interconnection of Mali's electricity grid with those of its neighbors will likely benefit rural populations located near the transmission lines. A few new techniques exist to permit greater electricity coverage in rural areas, such as the shield line project (*ligne de garde*), which represents a way to serve villages within 5 to 10 kilometers of a pylon. Another technique involves using the ground as a conductor to transmit electricity to a limited population within a certain radius of large booster stations in rural areas. In the second half of the 1990s, Ghana successfully carried out a self-help rural electrification project that required participation and co-financing from the residents in order to be served. International transmission lines could also be designed to zigzag towards villages within a short distance from the economically optimal route to enable the international linkages to become a catalyst for greater coverage of the national grid.

There is no question that the poor will benefit from greater access to electricity. The UNDP has observed a steep increase in the Human Development Index (HDI) correlated with higher per capita energy consumption among countries whose per capita energy consumption is less than about 1 ton of oil equivalent (i.e., the vast majority of developing countries). This causal relationship means that modest increases in per capita energy consumption for the poorest countries can lead to enormous improvements in quality of life.



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