PD-ABI-849
88866

IMPACT

FOOD SECURITY AND NUTRITION MONITORING PROJECT

A U.S. Agency for International Development
Office of Nutrition Project Managed by the
International Science and Technology Institute, Inc. (ISTI)

ENGLISH VERSION

AN EVALUATION OF THE SAP SYSTEM OF FREE FOOD DISTRIBUTION IN MALI

1990-1992

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OCTOBER, 1993

Report prepared for USAID/Mali by A.I.D. R&D/Office of Nutrition
Food Security and Nutrition Monitoring Project (IMPACT)
under Contract No. DAN-5110-Q-00-0014-00

EXECUTIVE SUMMARY

At USAID/Mali's request, a study was undertaken to evaluate Mali's emergency food information and distribution system to determine in which areas improvements might be made, specifically with respect to targeting the neediest populations of Mali and making an impact on their consumption and nutritional status.

The study team consisted of Joyce King, team leader/nutrition expert and Simon Hunt, economist/famine warning system expert from the University of Oxford's Food Studies Group. The King/Hunt team worked in Mali from September 1 to October 11, 1992. The original scope of work was revised, in consultation with USAID/Mali, to reflect field realities with respect to security problems in the north and rainy season constraints, and also to reflect time constraints and the lack of monitoring or other data on amounts of food received by, or follow-up nutritional status of, beneficiaries. The essence of the scope of work was retained, however, and it was agreed that the central questions the team would attempt to answer were:

1) Were the populations correctly identified for food distributions?
2) Did the intended populations receive the food, and at what cost? and with what effect? and
3) Are there better ways of attaining the results achieved with food distributions?

The team was directed and assisted by several members of USAID/Mali's Agricultural Division and, in most of their two and a half weeks of field work, were accompanied by Malian staff from the *Comité National d'Actions d'Urgence et de Réhabilitation* (CNAUR) and the *Système d'Alerte Précoce* (SAP) and by a USAID Famine Early Warning System (FEWS) staff member. CARE was an able and unofficial guide in Timbuktu. The team visited the town of Timbuktu, two Circles in Mopti and three Circles in Koulikoro Region. The team observed beneficiary selection and cereals distribution in Timbuktu, interviewed government officials and non-governmental organization staff in Bamako and in the areas visited, and reviewed the most relevant documents, studies and field trip reports.

Summary Diagnosis

Three elements make up Mali's emergency food information and distribution system: the information system; the programmed response; and the targeted distributions. Two of these elements have been greatly improved since 1988:

1) The **information system**, on which distribution decisions are based, has become an impressive, well-organized and efficient activity that is now widely respected throughout West and sub-Saharan Africa. The system has demonstrated very considerable ability in data collection, data processing, and publication. Above all, it has become increasingly capable, through greater credibility and authority, of promoting consensus in the analysis of acute food problems among decision-makers and implementers at national and regional levels.

2) The **programmed response**, which links the information system to decisions to distribute, has similarly become increasingly effective. The response recommended by the SAP information system has in the last two years been fully endorsed by both government and donor administrators. Today, the allocation of the food distributed and the quantities to be delivered almost exactly match those recommended by the SAP information system. However, there remains a serious flaw in this stage of the process, a flaw which requires urgent attention -- delay in actual food delivery. Security problems have interfered with desired delivery schedules, especially in Mopti and Timbuktu Regions. Beyond this, however, the time required for administrative decision-making for the release of cereals stocks constitutes the single largest cause of delay.

3) The third element of the system--**the distribution** of cereals at the periphery level to the household from a location in the target zone, *arrondissement* or *cercle* still requires improvement if the potentially beneficial effects on consumption are to be realized. Target households frequently receive only a small, and ultimately ineffective, transfer of cereals.

The effective structure of Mali's present-day information and free cereals distribution program is, to a large extent, determined by its historical antecedents. In the 1970s, deficit production was closely related to poverty and famine in the minds of donors and administrators. The instrument used to address these problems was free food distribution. To keep down the administrative costs of these distributions, free food could only be distributed on the basis of equality rather than equity. Thus, it is food unavailability that is perceived as the cause of acute food insecurity, not inadequacy of entitlements. Further, all members of the population, rather than those of targeted households, within a region are perceived as equally eligible beneficiaries.

In the 1980s and 1990s, subsequent approaches to the analysis of food poverty and to the development of policy and programs in response to it, have continued to bear the hallmark of the 1970s. Indeed, it may well be that the chain of causality has been reversed, inasmuch as the constraints and inflexibility of free food aid as a programmatic instrument have imposed themselves on the scope and range of the food poverty analysis that is performed. Food poverty continues to be analyzed on a regional basis, and household differences are largely subsumed by a regional analysis.

Efforts to improve cost-effectiveness of the system are likely to be constrained by two implicit assumptions: i) the belief that food availability is the problem; and ii) that food poverty is undifferentiated. Consequently, programs are expected both to distribute food and to distribute food to all members of the population, whether above or below a target food poverty line. Thus, if foods are to be distributed, their costs will exceed their value on the local market. And, if all members of the population within a particular geographical region receive the distributions though they are not all below the "target poverty line", costs will be higher per targeted poor family. The costs will not be proportionately higher, however, because of the large fixed-cost component in the distribution system. Further, the opportunity costs of greater efficiency must be taken into consideration.

Recommendations

Although most of the Mali information and distribution system works well, the poor performance of targeted distribution within the target zone, *arrondissement*, or *cercle* considerably undermines the overall effectiveness of the system. Three changes in this part of the system may considerably improve its effectiveness:

1) **A distribution monitoring system should be implemented, at a reasonable cost.** A monitoring system that would not only monitor the size of the actual distributions received by the intended beneficiaries, but also their effects in terms of consumption, nutrition status, sowing decisions, and asset holdings would shift the current emphasis away from process and toward effect or impact. Publication of the results of monitoring would also create a significant deterrent to misappropriation and malpractice;

2) **The SAP should continue, at its current levels of funding, to expand its efforts to build consensus at the peripheral levels of the distribution system.** Extending consensus to the periphery of the distribution system will not only help to reinforce commitment to distribution according to the recommendations made by the SAP, but may also help the SAP to adjust its recommendations to take account of the real difficulties experienced in distributing grains. These include inadequate consensus and agreement within a target area on who should be targeted with what quantities of grains and changing levels of poverty within households or population segments within a region that prompt local decision-makers to adjust SAP's distribution priorities.

3) **The transparency of food distributions should be increased, especially in target areas.** Entitlements to free cereals should be made known to beneficiaries as early as possible after decisions have been taken.

These significant adjustments in the distribution system should be accompanied by improvements in the information system, including:

1) use of the SAP research unit to conduct small-scale household and community surveys aimed specifically at understanding the differences in poverty levels within communities;

2) finetuning of the process of identifying food insecure households within regions and within arrondissement groupings, not only for the short-term but also for the medium- and long-term; and

3) development and use of statistical models to calibrate the monitoring data already being collected in order to improve forecasting and targeting.

Attempts to improve efficiency in the first stage of the distribution and response system should center principally on reducing the time taken to endorse SAP recommendations. As

the delay in decision-making occurs **after** endorsement by the *Programme de Restructuration du Marché Céréalier* (PRMC) and the *Comité d'Orientation et de Coordination* (COC), one method of relieving the bottleneck would be to introduce a system whereby COC-endorsed recommendations could act upon a "standing order" with respect to food distribution. For example, if within one month of approval by COC and PRMC, the *Ministère d'État Chargé de l'Administration Territoriale et de la Sécurité* (MEATS) and the Ministry of Finance had not overruled the recommendations, then the *Comité National d'Actions d'Urgence et de Réhabilitation* (CNAUR) and the *Office des Produits Alimentaires du Mali* (OPAM) would be authorized to go ahead with the recommended distributions.

It was not the purpose of this study to discuss in detail other alternative methods of intervention that would improve the cost-effectiveness of the program. However, the team held detailed discussions during field trips on the particular alternatives of expanded public works programs and of food stamp programs, and follow-up studies and trials are recommended for these types of alternative interventions.

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ACRONYMS AND GLOSSARY

Acronyms

AEC	*Aide à l'Enfance Canadien*
AEN	Norwegian Religious Aid Agency
AID	Agency for International Development
ARI	Acute Respiratory Infection
BCG	*Bacillus Calmette-Guerin*, tuberculosis vaccine
CADB	*Céllule d'Appui au Développement à la Base*
CDC	Centers for Disease Control/Atlanta
CILSS	*Comité Inter-États de Lutte Contre la Sécheresse dans le Sahel*
CMDT	*Compagnie Malienne de Textiles*
CNAUR	*Comité National d'Actions d'Urgence et de Réhabilitation*
CNESA	*Commission Nationale d'Évaluation et de Suivi de la Stratégie Alimentaire*
COC	*Comité d'Orientation et de Coordination*, under Ministry of Finance
DHS	Demographic and Health Surveys
DTC	Diptheria, Typhoid, *Coqueluche* (Whooping Cough)
FAO	Food and Agriculture Organization
FEWS	Famine Early Warning System
GANS	*Groupe Action Nord-Sud*
GIEWS	Global Early Warning System of FAO
GRM	*Gouvernement de la République du Mali*
H/A	Height for Age
MEATS	*Ministère d'État Chargé de l'Administration Territoriale et de la Sécurité*
MTs	Metric Tons
NCHS	National Center for Health Statistics
OHV	*Office de Haute Vallée*
ONG	*Organisation Non-Gouvernementale*
OPAM	*Office des Produits Alimentaires du Mali*
ORS	Oral Rehydration Salts
PADEM	*Projet Mis-en-Place de Dispositifs Permanents d'Enqûetes Auprès des Ménages*, Household Survey Project
PEM	Protein Energy Malnutrition
PRMC	*Programme de Restructuration du Marché Céréalier*
PVO	Private Voluntary Organization
SADS	*Suivi Alimentaire Delto-Seno*, Delto-Seno Food Surveillance System
SAP	*Système d'Alerte Précoce*
SD	Standard Deviation
SIM	*Système d'Information sur le Marché*
SNS	*Stocks Nationaux de Sécurité*
UNDP	United Nations Development Program
UNICEF	United Nations Infants and Children's Emergency Fund

USAID	United States A.I.D. Mission
W/A	Weight for Age
W/H	Weight for Height
WHO	World Health Organization

Glossary

Degrees of Need in SAP-covered Geographical Areas of Mali: Prognoses and Diagnoses made by SAP

FA	Famine
CA	*Crise Alimentaire*, Food Crisis
DA	*Difficultés Alimentaires*, Food Difficulties
DES	*Difficultés Socio-Economiques Sévères*, Severe Socio-Economic Difficulties
DEL	*Difficultés Socio-Economiques Légères*, Slight Socio-Economic Difficulties
RAS	*Rien à Signaler*, Nothing Significant to Report

PRMC Donor Group

Group of seven food aid donors: World Food Programme, French, German, Canadian, Dutch Cooperation, USAID, and representatives of UNDP and FAO.

Administrative Areas of Mali

The administrative divisions of Mali are: starting with the largest geographical units called Regions, of which there are eight *Cercles*; and the smallest units, or *arrondissements*. SAP covers 28 *Cercles*; six Regions and 168 *arrondissements*. These comprise most of the geographical region above the 14th Parallel (see Administrative Map) and about one half of the Malian population.

Figure i.1: **Mali: Administrative Regions**

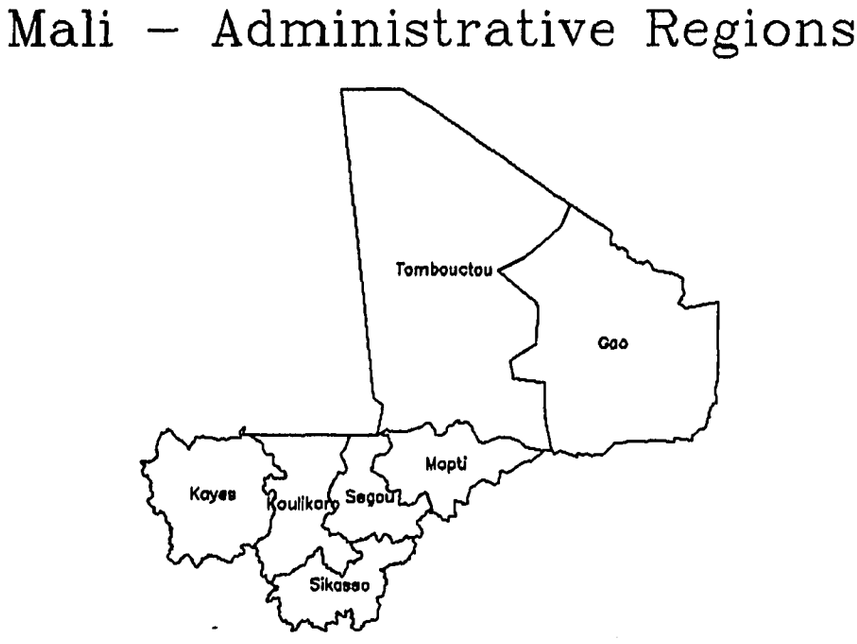
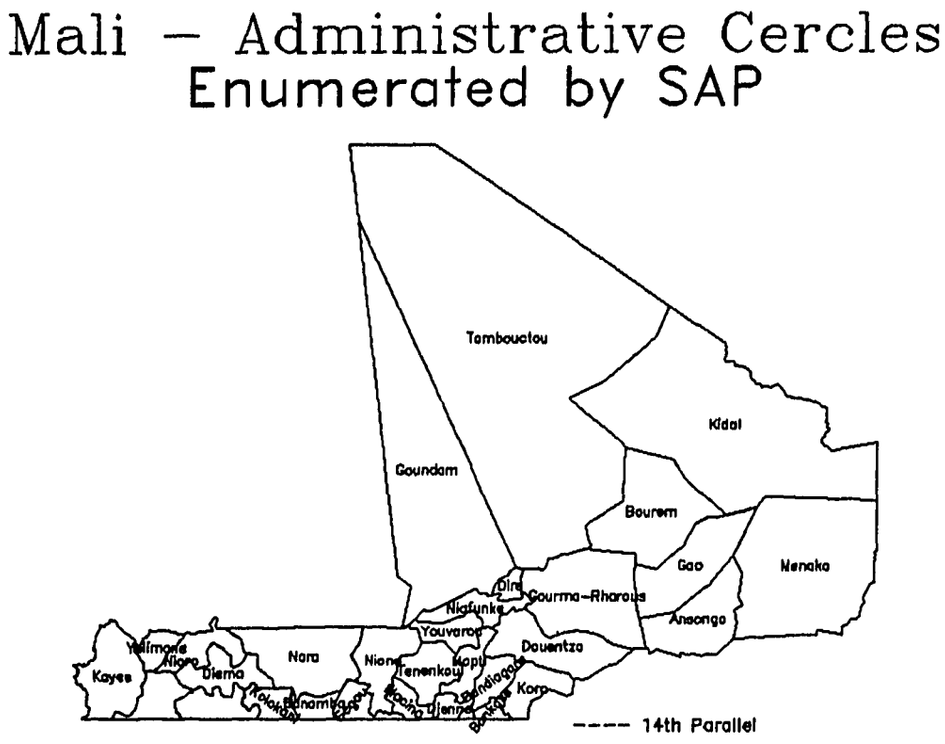


Figure 1.2: Mali: Administrative Cercles above the 14th Parallel



PART I

INTRODUCTION, CONCEPTUAL FRAMEWORK, AND SAP PERFORMANCE

1. Introduction and Outline of the Study

1.1 In the past, free food distributions were used to encourage popular support for a particular administration or program. For example, prior to the change of government in early 1991, food aid distributions were made to pave the way for presidential visits to particular areas of the country. Today, there are two principal systems by which free food is distributed in Mali:

a) The SAP (*Système d'Alerte Précoce* or Early Warning System)-Government system which uses food insecurity information collected by the SAP from administrative *arrondissements* located above the 14th Parallel to trigger a programmed response of free cereals distribution, the latter being agreed upon by both government and by the donor group on cereals marketing restructuring, the *Programme de Restructuration du Marché Céréalier* (PRMC).

b) The Private Voluntary Organization (PVO)-Government system which uses SAP and other sources of information to identify food-insecure population groups and, with the cooperation of government and the financial support of bilateral donors, distributes free food to populations that lie outside the scope of those populations covered by the SAP. Such populations might include food-insecure households located in areas not covered by SAP's information system: politically-insecure areas above the 14th Parallel; food-insecure populations below the 14th Parallel; and those population groups too small to qualify for SAP distributions (less than 5,000) that in specific locations face special food difficulties.

1.2 The principal task of this study is to assess, along a number of dimensions, the cost-effectiveness of the most significant of these two systems, namely the SAP-Government system. Making such an assessment entails: first, an analysis of how the system performs with respect to its stated objectives (Part II); second, a study of the value of the stated objectives as well as the principal methods of achieving them (Part III); and third, consideration of alternative objectives and methods.

1.3 The remainder of Part I provides:

i) a brief historical background to the genesis of the SAP-Government system of free cereals distribution (Section 2);

ii) an outline of SAP's stated and implicit objectives (Section 3);

iii) a brief overview of SAP's aggregate performance (Section 4); and

iv) a conceptual frameworks for understanding:

   a) how the cost-effectiveness of income transfer programs such as the SAP-Government system might be assessed; and

b) how the transfer of cereals to households might have an impact on household welfare and behavior, including levels of household and individual food consumption and nutrition (Section 5).

1.4 Part II of the study is outlined as follows:

i) Section 6 analyses the methods that are employed by the SAP information system to identify groups of individuals and geographic regions with food and nutritional problems;

ii) Section 7 uses available data to estimate the financial costs of the particular cereals distributions that were made during the period 1988-1992;

iii) Section 8 also uses available data, in particular field trip reports, including that of the present team visit, and transportation contracts, to estimate timing of deliveries against recommendations as well as the targeting of those populations recommended for distribution; and

iv) Section 8 also summarizes the cost data of Section 7 and the timing and targeting data of Section 8 and assesses the benefits of particular distributions to the target population in terms of: their efficiency for increased individual and household incomes (income transfer efficiency); their impact on increased food consumption (consumption efficiency); and their impact on improved nutritional status (nutrition efficiency).

1.5 Finally, in Part III and Section 9 of the study options are discussed for the improvement of cereals distribution within the framework of existing objectives and methods. A short discussion is also included on the implications and options for adjusting present objectives and methods to ensure better targeting and welfare amelioration of populations at risk of famine, food insecurity[1] and malnutrition.

1.6 Appendix I details the field work methods that were employed by the study team during a six week visit to Mali in September and October 1992, while Appendices II, III, and IV outline the Rapid Rural Appraisal approach that guided the field work, the persons with whom meetings and interviews were held, and the original and revised Scopes of Work for the team visit.

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[1] "Food security" refers to "the access by all peoples at all times to enough food for an active healthy life". (See World Bank, "Poverty and Hunger: Issues and Options for Food Security in Developing Countries", Washington D.C., 1986, p.2)

2. Background to the Development of the SAP

2.1 In order to understand the forces that have shaped and continue to shape the objectives and methods used by the SAP, it is useful to outline some of the circumstances and history of its development.

2.2 Food aid has been provided by international donors in Mali since the 1960s but "emergency food" has been distributed only since 1973. Major reforms in the structure of free food distribution took place after the drought of the mid-1980s. During and immediately after that drought, which ended in 1984, it was widely believed:

i) that, because of poor targeting and the late delivery of cereals to intended beneficiaries, the food aid program had done little to benefit the welfare of drought victims; and

ii) that the very significant volumes of cereals[2] that were provided under the food aid program were likely to have had significant effects upon cereals markets at a time when both government and donors were enthusiastically attempting to improve their efficiency through a major program of restructuring.

2.3 By 1986, the structure of a reformed system of free food distribution had begun to appear. The initial objective was to improve the information systems. Three systems, including the SAP, the Sahelian Famine Early Warning System of USAID (FEWS), and the *Suivi Alimentaire Delto-Seno* (SADS), were initiated in either 1986 or 1987 with the purpose of completing the existing information systems provided by FAO's Global Early Warning and Information System (GIEWS) and AGRHYMET reports on agricultural production during the cropping season.

2.4 Because of its comprehensive coverage, the range of variables monitored, and its intention to guide the government's programmatic response to the threat of famine, the monthly SAP Bulletins that began to appear in 1987 were soon regarded as the most important among the different early warning systems. The Bulletins attempted to forecast and monitor variables that reflected food and nutrition problems in 155, then 168, *arrondissements* located above the 14th Parallel. These *arrondissements* were deemed to have a structural deficit in cereals production. Despite the rapidly evolving sophistication of the SAP, in 1988 and 1989 SAP recommendations held no effective response trigger for cereals distribution. More timely responses to recommendations occurring in 1990 were consolidated in 1991 and 1992, to the extent that, in the last two years, the recommendations

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[2] For example, 86,000 tons of cereals arrived in Mali in 1985/86. Most of the delivery should have arrived in the previous year, and over 50% of the delivery was made up of maize, a staple not widely consumed in any part of the country. (Davies, Sept 1991)

made by SAP for quantities of cereals to be distributed have been well executed.

2.5 Current, improved synchronization of SAP recommendations with food distribution responses can be attributed to two factors:

a) the donors of the PRMC, as both the suppliers of cereals and the financial sponsors of the SAP, have been able to consolidate their potential for leverage, by agreeing upon and abiding by a common position under which the bulk of free food aid is targeted and distributed[3]; and

b) the change of government in March 1991 has led to greater consensus among donors and government as to the objectives, methods and management of the free cereals distribution program.

As a consequence of these two developments, Davies (1992) has suggested that by 1992:

"there is a widespread view both within government and among donors that the evolution of Early Warning and response since the mid-1980s has been a success, not least because the early discrepancies between recommendations made by the SAP and the actual distributing of food aid have largely been ironed out since 1990/91. The "fit" between SAP recommendations and distributions is now very tight, indicating that Mali offers a rare example of an Early Warning System that has succeeded in forging the missing link with response." (Davies, 1992, p.17).

2.6 From this brief outline it is possible to identify four important features which, to a large extent, determine the objectives, scope and structure of the SAP system, namely:

i) that only those regions that are structurally deficit in food production are covered by the information system and subsequently by the appropriate food distributions. This assumes that those factors that cause famine and acute food insecurity are linked largely to long-term trends in local food production rather than to other types of entitlement failure;

ii) that all transfers that are made to households are based upon food and not any other means such as cash;

iii) while market sales are an important resource to areas facing economic difficulties,

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3 There have however been recent instances when free cereals distribution has taken place outside the scope of SAP recommendations. In 1991 USAID supported the delivery of 4,000 tons of cereals for distribution in the conflict Regions of Gao and Timbuktu. Due to the insecurity in these Regions, the SAP was able to make only general conclusions about the food insecurity situation.

that the principal resource for distribution is emergency food aid, implying that provisioning difficulties would be incurred if the nature of the response were adjusted to include, for example, the means for tackling wider food security and poverty alleviation objectives; and

iv) that since 1986 there has been a largely successful preoccupation with two major elements of an effective system of cereals distribution, namely an information system and a response system. However, as this study will attempt to show, a third element--effective targeting--should now become the preoccupation of the system if it is to achieve its goals of preventing famine and relieving acute food insecurity.

These features result in a number of tensions that have only partly been resolved, including:

a) that between the desire to protect those vulnerable to famine and acute food insecurity through the provision of free cereals and the desire to avoid or minimize any harmful impact on cereals markets;

b) that between an early warning system that has the demonstrated capacity and potential to identify a wide range of famine, food insecurity and poverty problems in all parts of the country and a response system that, at present, relies largely on one type of intervention, namely the emergency distribution of cereals.

3. The Objectives of the SAP

3.1 All SAP Bulletins now carry an outline of the SAP objectives, as follows:

> "The *Ministère de l'Administration Territoriale* [now the *Ministère d'État Chargé de l'Administration Territoriale et de la Sécurité*] has established an Early Warning System (SAP) for food risk in order to better forecast food crises and to improve the distribution of necessary aid.
>
> The SAP unit aims to address the following questions:
> • What zones and population groups are at risk of experiencing food or nutritional problems?
> • What are the appropriate aid requirements?
> • How should they be used? "
>
> (author's own translation from "Bulletin SAP" August, 1992)

3.2 In practice, though, the SAP achieves more restricted objectives than those which it outlines. The information system itself focuses most of its efforts on the identification of populations at risk of either famine or very acute food insecurity in those 168[4] administrative *arrondissements* located above the 14th Parallel and in those population groups where a large proportion of households in the total population are affected. The identification of particular socio-economic groups across regions that are affected by acute food insecurity is not within the effective brief of the SAP, nor is the identification of households that are chronically or seasonally food-insecure but not at risk of famine. Similarly, because free food aid is the effective programmatic response to SAP monitoring and forecasting, the GOM-PRMC-COC-SAP system itself lacks a well-defined strategy for addressing longer-term and dynamic causes of food insecurity. Such strategic objectives may be implicit in the GOM's Master Plan for Agricultural Development and Economic Reform Policy, both of which have goals to increase production, productivity, and incomes. However, at the time of the team's visit, there existed no national poverty analysis that could enable detailed policy and program design. There is also the concern that structural adjustment programs may worsen, rather than improve, the level and intensity of poverty in the short- and medium-term.

3.3 Nutrition problems are addressed by SAP only in the sense that low levels of food consumption constitute a nutrition problem. Anthropometric statistics (data on the percentage of preschool-aged children suffering from acute malnutrition in terms of weight-for-height measurements) are collected as part of confirmatory surveys that are conducted after a "food problem" has been identified and before a food distribution is recommended. The wider issues of morbidity and nutrition, nutrition-related practices, adult and child nutrition, and

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[4] The number having been increased from the original figure of 155 arrondissements.

maternal health and nutrition are not systematically addressed.

3.4 Finally the SAP has, though only in general and partial terms, addressed the issue of improvements in the distribution of necessary aid. The SAP publishes tables that track the authorization and delivery of food aid to the appropriate administrative level. It has not, however, gone beyond that measure to examine the distribution of cereals from the administrative level to the target households in an identified location. Furthermore, though the SAP has begun to make efforts to identify programmatic responses beyond free food aid distribution, these efforts still need:

a) to be supported by a stronger analytical basis (See Part III):

b) to consider a wider range of policy and programmatic options. Currently only brief consideration is given to income transfer policy options. These might be usefully complemented by policy options that would consider measures to expand the primary incomes of households; and

c) to be integrated with policy and programmatic activities that currently lie outside its scope.

It is not clear that the SAP is the appropriate institutional forum for such an expansion of activities and responsibilities (see Part III).

4. Overview of Recent SAP Performance

4.1 Figures 4.1-4.3 and Tables 4.1 and 4.2 summarize the person months of cereals aid recommended for distribution by the SAP during given calendar years. The levels of recommended distribution for 1991, for example, reflect the performance of the harvest during the period October 1990 to February 1991. The figures and tables show clearly:

i) that the level of recommended cereals distributions fell rapidly after 1988 and would appear to reflect the desire of the PRMC to reduce the level of free food distribution[5]. The recommended distributions for 1988 represented approximately 3% of national cereals production for the 1987-88 crop year and less than 1% in the other four crop years (See Figure 4.3 and Table 4.2 below). There is a relationship between the level of food distribution and production shortfalls, evident in 1988 and, to a lesser extent, in 1991. However, there is also a trend of reduced level of food distributions proportionate to shortfalls in production over the years. This reduction of food aid level might also be attributed to the desire of donors not to disrupt the efficient development of cereals markets. Two potential paths to ensuring lack of disruption are (1) improving the management of free food distributions (SAP) and (2) reducing the levels of free food distribution (SAP).

ii) That in both absolute and proportionate terms, the largest number of person months and quantities of cereals were recommended for the northern Regions of Mopti, Timbuktu, and Gao. It is estimated that individuals in these northern three Regions have been recommended for distributions for an average of approximately 4-6 person months each during the five years from 1988-1992, or approximately 40-60 kilograms of cereals, while the more southerly and westerly Regions of Kayes, Koulikoro and Segou averaged recommendations of between 0.6-2 person months, 6-20 kilograms of cereals, during the same five year period (Tables 4.1 and 4.2).

iii) That the Region of Timbuktu has, for each year under examination, been recommended for at least some cereals distribution, while all other Regions, excluding Mopti, have been recommended for distributions in three years out of five. In the case of Gao in 1992, food insecurity explains why no recommendations for distribution were made. Gao was in receipt of cereals under USAID cereals distribution not part of SAP-recommended distributions.

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[5] From a recommended tonnage of 48,820 in 1988, the SAP in subsequent years recommended from 1% to 20% of that year's high or, respectively, 2451 MTs in 1989, 7,014 MTs in 1990, 11,050 MTs in 1991, and 760 MTs in 1992 as shown in Table 4.2.

Figure 4.1: Annual Person Months of Cereals Recommended by SAP 1988-1992

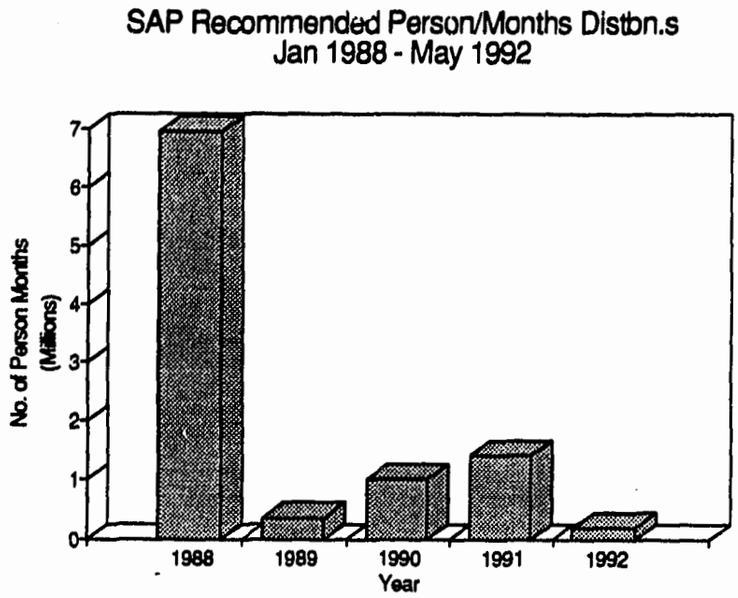


Figure 4.2: Regional Differences in the Person Months of Cereals Distribution Recommended 1988-1992

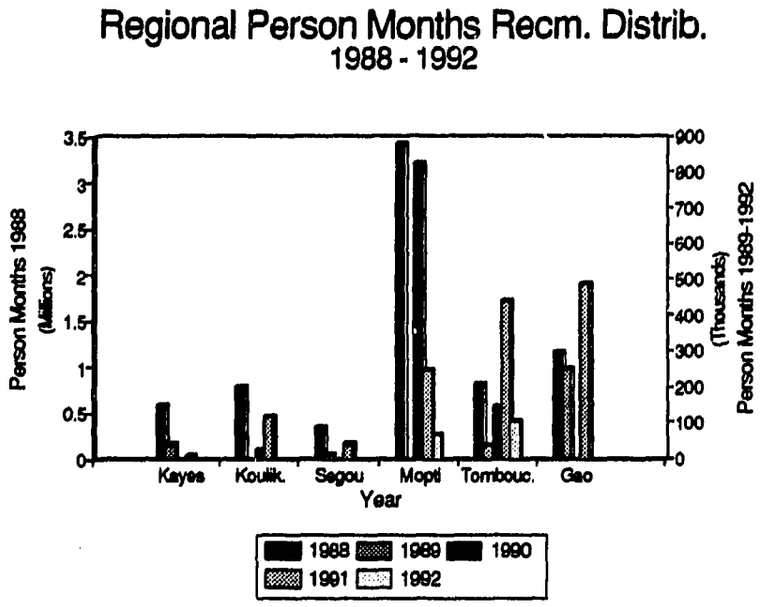


Table 4.1: Regional Distribution of Person Months Recommended for Distribution

	Kayes	Koulikoro	Segou	Mopti	Timbuktu	Gao
Population Covered by SAP*	557304	429475	656355	1119547	375344	302672
1988	599632	798738	358192	3435108	821832	1172492
1989	40911	0	15000	0	38730	254802
1990	0	27321	0	826987	148215	0
1991	9000	119161	40400	248535	441986	487912
1992				70126	107832	0
Total	649543	945220	413592	4580756	1558595	1915206
Estimated No. of Person Months Recommended Per Capita	1.2	2.2	0.6	4.1	4.2	6.3

*For Kayes, Koulikoro, and Segou, population figures for the areas covered by the SAP are estimates for 1990, derived from the DSNI census of 1987 and annual growth rate figures. The Regions of Mopti, Timbuktu and Gao are completely covered by the SAP.

Figure 4.3: Aggregated Tonnage of Cereals Recommended for Distribution 1961-1989

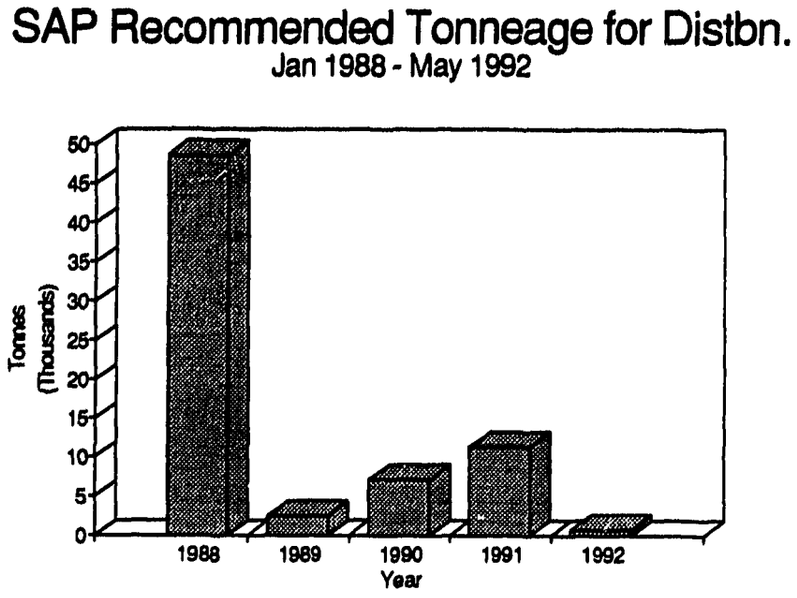


Table 4.2: Tonnage Recommended by SAP for Delivery 1988-1992

	1988	1989	1990	1991	1992
Kayes	4204	291	0	80	0
Koulikoro	5530	0	192	1100	0
Segou	2806	105	0	360	0
Mopti	22330	0	5787	2240	270
Timbuktu	5746	271	1035	4000	490
Gao	8204	1784	0	3270	0
TOTAL*	48820	2451	7014	11050	760

*The values used for SAP recommendations for populations and tonnage are those given in the first Bulletin in which a recommendation for a distribution in a particular area was made. Subsequent Bulletins, however, may make small adjustments to the size of the population and the distribution recommended. Hence there may be occasions when the aggregate figures reported in this study differ slightly from those published by other sources.

Table 4.3: SAP Food Aid Delivery Recommendations as a Percentage of National Cereals Production

	1988	1989	1990	1991	1992
Total Food Aid Recommended by SAP	48820	2451	7014	11050	760
National Cereals Production (000) Tons	1638	2195	2152	1791	2207
Recommended Food Aid as % of Production	3.0	0.1	0.3	0.6	0.03

4.2 Figure 4.4 and Table 4.4 show the total recommended target populations and their regional distribution from 1988-1992. Cumulatively, during the five-year period, 2.3 million individuals were recommended to receive food distributions[6]. The highest number, nearly 1.5 million people, was targeted for distribution in 1988, and the lowest number in 1992, when only 28,000 people were recommended for distribution. If 1988 is excluded from analysis as being unrepresentative, Table 4.4 shows that while at the aggregate level there is only a five-fold difference between the highest and lowest target population sizes, there is considerably greater inter-annual variation in target population size within the regions. In the Regions of Kayes, Koulikoro and Segou, for those years when some targeting has been recommended, the variation in target population sizes tends to mirror that of the aggregate variation. However, the inter-annual variation for Mopti and Timbuktu is at least twice that of the aggregate variation, suggesting the nature of the underlying food insecurity in those Regions, i.e. that they are prone to large inter-annual variations in income levels and, consequently, consumption levels.

[6] Some individuals have been targeted in more than one year.

Figure 4.4: Annual Total Population Recommended for Distribution 1988-1992

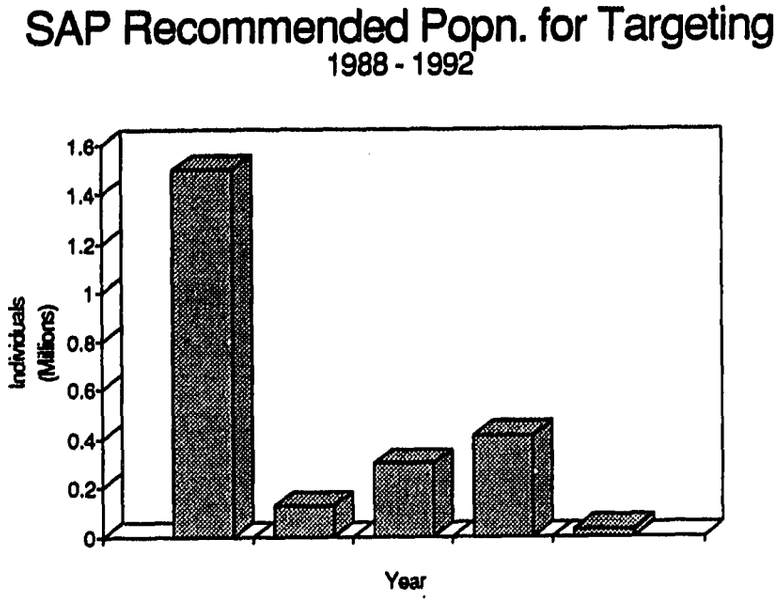


Table 4.4: Recommended Target Population Size

	1988	1989	1990	1991	1992	Total
Kayes	149908	20802	0	4500	0	175,210
Koulikoro	183020	0	9107	46557	0	238,684
Segou	65032	5000	0	20200	0	90,232
Mopti	690124	0	239196	90845	10018	1030183
Timbuktu	148177	12910	49405	123991	17972	352455
Gao	261264	84934	0	120970	0	467168
TOTAL	1497525	123646	297708	407063	27990	2353932

4.3 Tables 4.5 - 4.8 give a breakdown by Region of:

a) the month in which the SAP recommendation for distribution was first made,

b) the average number of months for which distribution was recommended,

c) the month in which distribution should start, and

d) the month in which the distribution should end, or more appropriately, the month up to the end of which the distributed cereals should last.

4.4 It appears from these tables that it was more the nature of the year under examination (for instance, early/late starting rains, poor/bad rains) and the north/south divide (i.e., the northern Regions of Mopti, Timbuktu and Gao and the southern Regions of Kayes, Koulikoro and Segou) rather than characteristics specific to individual regions that determine when recommendations for distributions are made, as well as when and for how long. For example, for 1990 most recommendations for distribution were made at the end of 1989 while, for 1991, such recommendations were made towards the end of the first calendar quarter. In 1991 the number of months for which cereals were recommended for distribution was significantly greater for the northern regions than for the south. Within the same year, the starting months for distributions occurred earlier in the calendar year for the north than for the south.

Table 4.5: Month of SAP Bulletin in Which Distribution Recommendations were First Made

	1988	1989	1990	1991	1992
Kayes	4	3		4	
Koulikoro	3.8		12	3.0	
Segou		3	1		4
Mopti	3		10	2	3
Timbuktu	3	3	1	2	3
Gao	4	1		2	

Table 4.6: Average Number of Months per Recommended Distribution

	1988	1989	1990	1991	1992
Kayes	4	2	0	2	0
Koulikoro	4.2	0	3	2.6	0
Segou	5.3	3	0	2	0
Mopti	4.9	0	3.5	2.8	7
Timbuktu	5.2	3	3	3.7	6
Gao	4.2	3	0	4	0

Table 4.7: Recommended Month in Which to Start Distribution

	1988	1989	1990	1991	1992
Kayes	6	6		7	
Koulikoro	5.8		4	6.4	
Segou	5	6		7	
Mopti	5		4	6	6
Timbuktu	5	6	4	5	6
Gao	6	6		3	

Table 4.8: Recommended Month in Which to Finish Distribution

	1988	1989	1990	1991	1992
Kayes	9	7		8	
Koulikoro	9		6	8	
Segou	9	8		8	
Mopti	9		7	8	8
Timbuktu	9	8	6	8	8
Gao	9	8		6	

4.5 Figures 4.5 and 4.6 and Table 4.9 provide an overview of the performance of the response to SAP recommendations over the period 1988-1992. Figure 4.5 shows very clearly how from 1990 onwards the government and donors have very successfully matched targeting information with food distribution response. It can be seen that in 1988 and 1989 SAP recommendations held no effective response trigger for cereals distribution, while more timely responses to recommendations that occurred in 1990 were consolidated in 1991 and 1992, to the extent that, in the last two years, the recommendations made by SAP for quantities of cereals to be distributed have been well executed.

Figure 4.5: Comparison of SAP Recommended Tonnage against Actual Tonnage Delivered 1988-1992

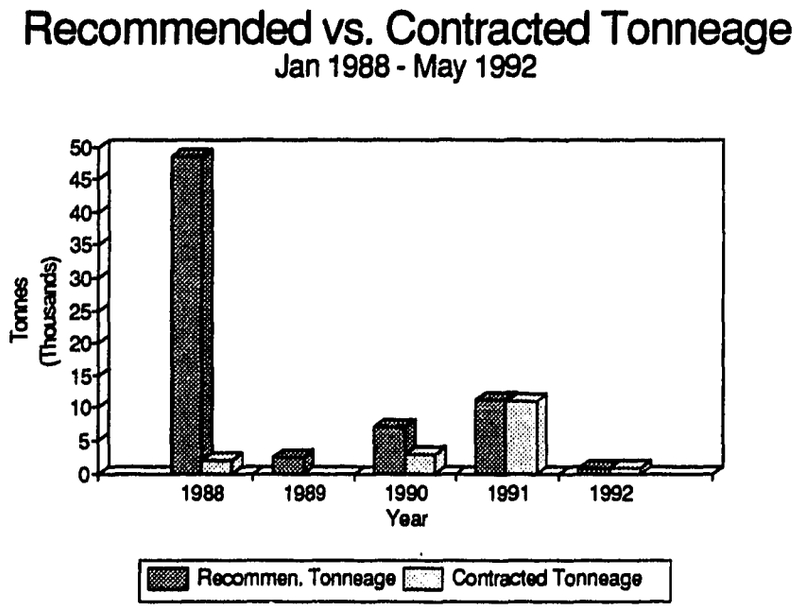


Table 4.9: Tonnage Contracted for Delivery

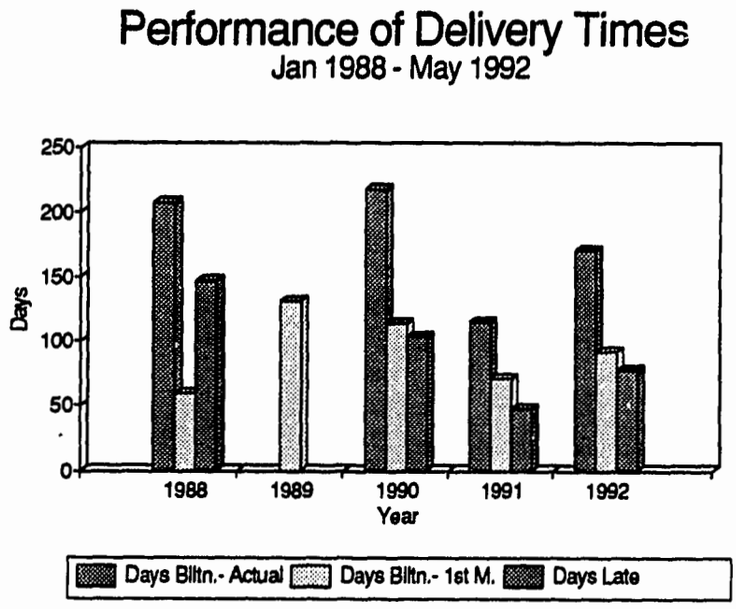
	1988	1989	1990	1991	1992
Kayes	0	0	0	80	0
Koulikoro	466	0	40	1070	0
Segou	1077	0	0	360	0
Mopti	529	0	2496	2240	270
Timbuktu	0	0	340	3824	490
Gao	0	0	0	3280	0

4.6 However, as will be shown later in the study, despite the very notable success in meeting informational assessment with programmed response, effectiveness in terms of improved food security and famine avoidance has been undermined by very significant delays in the delivery of the programmed cereals and, subsequently, by the likelihood that households targeted by the SAP do not receive the intended cereal rations.

4.7 Nevertheless, as Figure 4.6 shows, there has been improvement in the timeliness of delivery. Although deliveries of cereals are still approximately two months later than

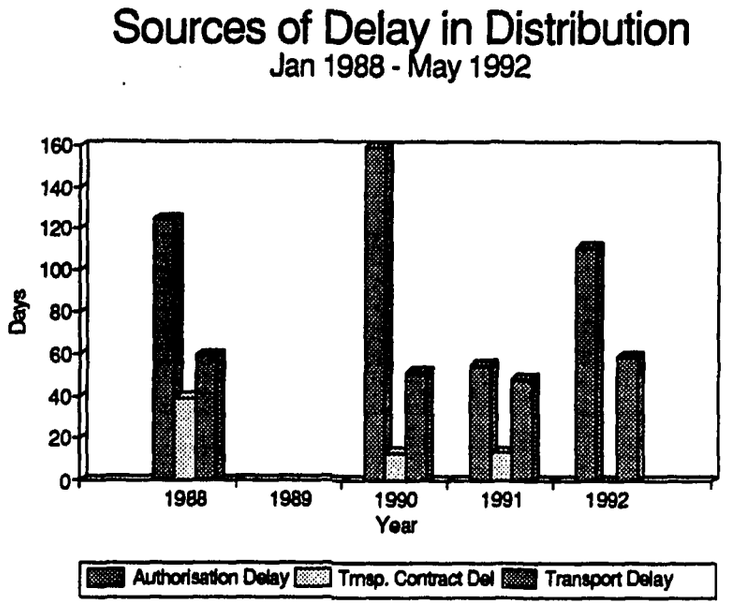
delivery dates recommended by the SAP, the degree of average lateness has steadily declined: in 1988, delays averaged five months; in 1990, delays had decreased to three and a half months; and, in 1991, despite a change of government and inevitable administrative delays, deliveries arrived on average only one and a half months late.

Figure 4.6: Performance of Delivery Times 1988-1992



4.8 The three major causes of delivery delays are: the time required for administrative authorizations for food delivery; the time required for issuing transport contracts; and the time required to complete the transport of food to the destination points. Figure 4.7 shows the evolution of these delays over the five years. While there has been excellent performance in reducing the amount of time taken to issue transport contracts, delays in administrative authorization and in effecting the transport continue to be excessive. These delays diminish the effectiveness that cereal deliveries have in reducing the acute food problems that triggered the initial emergency food requirement. Figure 4.7 illustrates that the progress made between 1990 and 1991 in reducing administrative delays from 160 days to 50 days was all but wiped out in 1992 when authorization of recommended distributions took almost three and a half months. There has not been an effective reduction in average transportation time over the five-year period either, despite the increased pre-placement of stocks: the average transportation time from agreement of contract to delivery to an *arrondissement* has remained fairly static at an average of two months.

Figure 4.7: Sources of the Delay in Delivery 1988-1992



5. Conceptual Framework for the Analysis of Free Food Distribution and its Impact on the Food and Nutritionally Insecure

5.1 An analysis of cost-effectiveness in food aid distributions simply attempts to establish the costs of distributing food aid to a target population in relation to various desirable effects or outcomes. In the case of this study, the desirable outcomes of interest include:

a) increases in per capita consumption and nutrient intake of the target population;

b) improved nutritional status in the target population and especially the nutritional; status of young children in the target population; and

c) to a lesser extent, improvements in the ability of households to acquire or maintain possession of assets that may have important implications for their food security. Such assets might include: farm equipment, seeds, zero indebtedness, and household and consumer goods.

5.2 The ratio between costs of food distribution and their desirable effects can be examined from several different angles. In the case of achieving increases in per capita calorie consumption, critical for helping to remove protein energy malnutrition, the following questions might be asked:

a) Have the food distributions of the period 1988-1992 resulted in an increase in per capita calorie consumption in the target population?

b) If per capita calorie consumption has increased, at what cost has this increase been achieved? Have these costs improved over time, and do these costs differ from one region to another, e.g. does increasing calorie consumption by 10%, cost twice as much in the Region of Gao as it does in the Region of Koulikoro?

c) What would be the cost of increasing the calorie consumption of the target population to that of the WHO/FAO recommended level of 2300 calories per capita per day, using a variety of distribution methods? These methods or channels might include: different kinds of free food distribution, including more narrowly targeted feeding through mother/child health centers; public works programs with food used as total or partial payment; and subsidized food sales.

5.3 The following subsection outlines the measurement of cost-effectiveness in more detail. Then, two conceptual frameworks are developed. The first framework attempts to outline how a food aid transfer affects levels of consumption, calorie intake, and the asset holdings in the household. The second conceptual framework goes beyond the analysis of the impact of food aid on household behavior to explore the wider issue of the determinants of nutrition and health status. Food aid and other programs that aim to transfer incomes to households frequently disappoint both planners and practitioners because of the lack of any

noticeable and immediate improvement in child nutritional status. The second conceptual framework developed has a dual focus:

i) to explain why food alone given to the household may be insufficient to improve child nutritional status, especially in the short term; and

ii) to indicate implicitly how income transfers, including food aid, may, indirectly and frequently with significant time lags, improve both nutrition and health status over the medium and longer term.

The Analysis of the Effectiveness of Free Food Aid Distributions

5.4 One of the principal objectives of this study was to examine the cost-effectiveness of the Emergency Food Distribution Program. There are two elements to this exercise, the analysis of costs and the analysis of effects. Given that it was beyond the scope of this study to perform the analysis within a formal economic social cost-benefit analysis framework, the study used a financial cost-benefit framework to understand the cost-effectiveness of the program and measured cost-effectiveness as the ratio of the financial costs of distribution to the benefits resulting from the distribution.[7]

5.5 While the measurement of financial costs is fairly straightforward, the measurement of benefits is slightly more problematic. Because no monitoring of changes in consumption levels or nutritional status had occurred during the life of the program, it was necessary for the study team to make reasonable estimates of the likely impact of the free food distribution on critical outcome variables, i.e. consumption levels and nutritional status. The analysis of the "effectiveness" of free food distribution in this study is conducted at three main levels:

(a) the effect on household incomes;

(b) the effect on household calorie consumption levels; and

(c) the effect on child nutritional status.

There is a reasonably well developed understanding of the relationship between household incomes and consumption levels in Africa, and a more theoretical understanding of the relationship between consumption levels and nutritional status. It was this theoretical and

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[7] An economic analysis would not use prevailing market prices to evaluate costs and benefits but shadow prices, and would also attempt to calculate other factors such as the various macro, sectoral, and micro disincentive effects of the distribution as well as other benefits such as increased productivity, increased micro and macro economic demand, the reduced costs of health services, and the increased returns to investment for education and nutrition.

empirical background which underpinned the approach used in this study. Thus, if studies elsewhere in the Sahel indicate, for example, that at very low levels of consumption, households might tend to spend 70% of any new income on food, e,g, a calorie income elasticity of 0.7, this information can be used to very roughly estimate the likely impact of Mali's Emergency Food Distribution Program on the consumption levels of beneficiary households. Similarly, if it is known that elsewhere in the Sahel a 10% increase in calories consumed by children under 5 who are consuming less than 80% of their Recommended Daily Allowance results in resumed child growth, this information can help in efforts to evaluate the impact of the Emergency Food Distribution Program on child nutritional status.[8]

The approach used here starts from the assumption that a food aid receipt is treated by the household as an increase of income comparable to a gift from a relative or friend, a wage payment, or even a debt repayment. Two variables are most important for the analysis of "income transfer effectiveness" namely:

i) the value to the beneficiaries (BENS); and

ii) the costs of delivery, including administration, handling, transportation, and cereals procurement (DISTCOST);

Thus the cost-effectiveness (EFFECT) can be represented as follows:

$$\text{EFFECT} = \text{BENS} / \text{DISTCOST}$$

The value of a food aid gift in income terms would be measured in terms of the value of the commodity package in the local market, less a percentage for transaction costs. Therefore, if a given food aid transfer were estimated to be worth $10 to the recipient[9] and cost $20 to distribute, the EFFECT, or the cost-effectiveness ratio, would equal 0.5. A second food aid transfer that cost $10 to deliver but which was worth $10 to the recipient would have a cost-

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[8] This is a purely hypothetical example. As this study stresses, the relationship between young child growth and calorie consumption levels is extremely complex, and such an unequivocal relationship between caloric consumption and child growth is unlikely to exist. However, given that the field work of the study team indicated very small increases in the calorie consumption levels of the children of target households, it is likely that the impact of many distributions on nutritional status was negligible.

[9] For example, three months of millet (27 kilograms) distributed to an individual in a targeted region might have a local purchase price of $11. Local traders willing to purchase 27 kilograms of millet from a beneficiary would likely charge a small premium the size of which would depend upon local supply and demand, but might be around $1. Thus the net value to the recipient in <u>financial</u> terms would be $10.

effectiveness ratio of 1.0. The latter transfer would constitute a method that was twice as cost-effective in transferring income to the household as the first example.

5.6 This simple ratio can not only help to analyze and understand changes in the performance of particular parts of a distribution program, but can also assist in making comparisons, where data are available, with alternative methods of income transfer. Thus, the efficiency of transfers undertaken in different years and in different regions can be compared. This can, in theory, not only help to improve the efficiency of the program over time and space, but also, in a wider context, allow comparison with other interventions to improve food and nutrition security, such as food for work, cash for work, and child feeding programs.

The Analysis of the Impact of Food Aid Transfers on Individual Consumption and Nutrition

5.7 The next step in understanding the benefits or effects of a food aid transfer on a household and on individuals within it is to understand how such a "transfer of income" or an increase of income might change individual levels of consumption and nutritional status and household-level asset holdings. One approach that has been largely refuted by the lack of empirical support even among famine victims suggests that food aid received by the household results in a net addition to household consumption levels. In this example, individuals in a beneficiary household who are already consuming 1,000 calories per day from millet porridge will, upon receipt of rice rations supplying 500 additional calories per day, consume a total 1500 calories, of which exactly one-third are derived from rice and two-thirds from millet.

5.8 A second approach suggests that households and householders substitute some or all of the food aid that they receive either for other types of consumption, both food and non-food, or for savings and investment, which in themselves may lead to improvements in medium-term food security. Food aid received may be sold or bartered for other types of food or non-food goods and services such as seeds, fodder, clothing, cash savings, and debt repayment. Thus, it is possible that a food aid package received by the household results in no effective increase in either calories or nutrients consumed by individuals within the household.

5.9 The answer to the question "What increase in calorie consumption, asset holdings or improved nutritional status results from a food aid income transfer?" requires empirical data which do not exist in Mali with respect to food received in the household and its effect on household members. However, using behavioral data from similar economies and similar income transfer programs and using the qualitative data collected during the team's own field work and from the field reports of other teams, it is possible to make sensible estimates of the likely magnitude of impact. Reasonable data exist, as we show below, on the "normative" value of the income transfers to households. These "normative", as opposed to

"actual", values assume that householders have received the full amount of cereals for which they have been targeted. Only in a few cases, as we shall show, has it been possible to determine what was actually received by households, and in those cases revised cost-effectiveness ratios have been calculated.

5.10 Several points need to be made about the likely effect of food aid transfers on consumption, nutritional status, and asset holdings. The impact will depend significantly on:

i) the actual volume of cereals received; and

ii) the proportion of the food which is, in the short run, consumed by the household; the proportion of the household food that is stored, sold for the purchase of other consumption goods (fuel), sold for savings or investment (seeds, a goat); the proportion of the food aid given to children under five; the responsiveness of child anthropometric status at the time of food delivery to an increase in calorie consumption levels.

5.11 Too few economic and anthropological research studies that might help to answer these questions in detail have been carried out. However, from the available research, it appears very likely that the timing of the distribution, the current income and wealth situation of the household, the household's future expectations about production and income, available and remaining coping strategies for maintaining levels of consumption, previous levels of health, and current levels of non-food health risk will be important in determining impacts on consumption, nutritional status and asset holdings. Appendix V contains a detailed discussion of the Determinants of Nutritional and Health Status. Other factors, posited in the form of questions, may also be important in understanding such effects:

- Does the distribution of food, rather than cash or other goods and services, increase levels of consumption?

- Does the distribution of cereals to women rather than men increase levels of consumption?

- Does the timing of most distributions in the period immediately prior to the rains result in the use of food as seeds rather than for consumption?

- Does the timing of distributions for the moment at which households are selling their productive assets result in the sale of food aid in order to preserve assets and, therefore, long-term livelihoods and food security?

- Do households in a given region with differences in wealth and income use food aid differently?

- Is household consumption behavior different if food aid transfers are unexpected

rather than expected? In particular, if a food aid gift is seen as a windfall by the household and, therefore, was not included as part of its food security strategy, is there an increased propensity to save, e.g. use the cereals received for seed, at the expense of consumption?

PART II

IDENTIFICATION, DISTRIBUTION COSTS AND DISTRIBUTION EFFECTS ON INCOMES, CONSUMPTION AND NUTRITION

6. Assessment of SAP Methodology

6.1 There are a number of ways in which the ability of the SAP system to identify populations at risk of food and nutritional problems can be assessed: the SAP system can be compared with other systems of assessment and analysis; or alternatively, the SAP system can be assessed against the "ideal system." If the first method is chosen, the problem arises about how to assess the degree of accuracy and authority of these alternative systems. Thus, if assessments of food crises carried out by the SAP do not match those carried out by FEWS or GIEWS or SADS, or even more informal systems used by government, donor agencies and NGOs, then on what criteria can an assessment be made by which one system is given greater value than another? Because other work has attempted to assess the SAP information system against other food security related information systems in operation in Mali, most attention will be given here to comparisons between the SAP and the "ideal information system."

6.2 The fundamental problem with such assessments revolve around:

i) difficulties in determining an acute food poverty line below which a food and nutrition crisis is said to exist; and

ii) difficulties in interpreting the range of variables that are collected and the indication they give for the food security situation of any particular population group.

6.3 In more formal analyses of poverty and food security, the analysis usually takes the following form:

i) definition of a poverty or food poverty line below which households or individuals are said to be poor or food-insecure; and

ii) the development of a series of analyses, both statistical and qualitative, that attempt to understand the determinants of a range of poverty-related outcomes (e.g., health, nutrition, education, food consumption, incomes, assets, occupations, spending habits, household structures).

6.4 Such an analysis is usually based upon a large-scale and complex household budget and nutrition survey. Although such surveys can be costly to implement, their benefits can be great. For monitoring systems, their importance is that they can facilitate the assessment and interpretation of routine data collection exercises that are used to trigger policy and programmatic response. Two examples will help to explain the case:

> The determinants of poverty in *cercle* "A:" Using data from a Household Budget and Nutrition Survey, it was found that 10% of the population in *cercle* "A" had food consumption levels

during the months prior to the rainy season below an "acute food poverty line" which had been set at 70% of FAO/WHO-recommended daily caloric needs. A statistical examination of the characteristics of these households showed that unlike other households in the *cercle*, 80% of their annual incomes were derived from crop production,with the remaining 20% of their incomes being derived from paid agricultural labor. These households had no livestock or other assets with which to absorb shocks when their agriculture-related incomes declined. Thus any shortfalls in agricultural incomes were directly and quickly translated into changes in food consumption habits, including the collection and consumption of wild foods, but also the reduction of consumption. Their food security system, or the means by which they assured short- and medium-run food availability, was both extremely fragile and sensitive to changes in the agricultural production and in the demand for agricultural labor. Among the other households in *cercle* "A", none relied on agricultural incomes (either production or wage labor) for more than 50% of their total incomes. Thus the risk to household food security due to a failure of agricultural income was significantly mitigated by non-agricultural incomes.

The determinants of child wasting in *cercle* "B: Household Budget Survey results from *cercle* "B" indicated high rates of child wasting (11%) and stunting, despite improved incomes that resulted from new investment in irrigation perimeters. Analysts that built a statistical model of the determinants of child nutrition status found that high rates of wasting in *cercle* "B were closely related to the high levels of child diarrhea which in turn was related to the principal water source of water of households in the *cercle*, namely, free-standing and stagnant water that remained in low-lying areas after the floods had receded. The lack of education as to how to treat and prevent childhood diarrhea was further correlated with these high levels of wasting. The nutrition crisis in *cercle* "B" could not be related to household food security but rather to morbidity and to child care practices. Even large amounts of free food aid would do little to reduce the level of wasting in these circumstances.

6.5 In none of the systems used to monitor food security in Mali are:

i) food poverty lines made explicit; or

ii) informed weights attributed to those variables that are collected, and their importance

for food poverty and nutrition status made explicit.

Although there may be good reasons for this, the result is that despite the considerable efforts made at consensus-building, some confusion remains among direct and indirect users of the SAP, including what the importance is of those variables that are measured and what it is that determines a food crisis.

6.6 An "ideal" system would be underpinned with extensive household- and community-level research, the product of which would include:

i) the construction of a variety of poverty lines that implied action-oriented decision rules for analysts and policy-makers[10]. If a particular minimum consumption level were the objective of policy and programmatic interventions, then baseline data would specify:

   a) the consumption levels, in calories of kilograms of cereals, below which action to support them would be taken;

   b) the proportion of the population below given poverty lines that would be necessary to trigger action; and

   c) the expected duration of food poverty that would be necessary to trigger action.

6.7 In addition, given the difficulty and expense of directly monitoring and forecasting consumption levels and their determinants, baseline research would:

i) disaggregate food insecurity by region and by socio-economic characteristics;

ii) construct verbal and statistical models that explain determinants of consumption in relation to income (e.g., own production, wages, rental income, transfers, savings, investment, asset portfolios, prices and food availability);

iii) enable the identification and calibration of variables suitable for collection and analysis within a monitoring system. For example, with sound baseline data, a monitoring system would be able to estimate with some precision the impact on consumption levels of simultaneous changes in a number of variables such as a 40% drop in production, a 35% increase in cereals prices, and a 30% drop in the production of the previous crop season.

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[10] These might be income transfers to support consumption if it were expected to fall below a given period.

The SAP Method for Identifying Food and Nutrition Crises

6.8 The SAP information system represents the first stage of the SAP famine response system. The second stage is the centralized system of distribution decisions and allocations of cereals to the *cercle*, *arrondissement* or Zone of an *arrondissement*. The third stage is the distribution of free cereals by the local administration to householders.
The first stage, the information system, comprises three major functions:

i) the collection of data;

ii) the development of consensus vis-à-vis the interpretation of that data at both decentralized and centralized levels; and

iii) the presentation of the analysis and recommendations.[11]

6.9 SAP's surveying activities are divided into three types:

i) **Seasonal** surveys of agricultural production which include crops, fishing and livestock, food stock holdings, and rainfall (See Table 6.1 for a summary). These surveying activities are conducted by the local development committee of an *arrondissement*.

ii) **Monthly** surveys, which include market prices of millet/sorghum and livestock, and a variety of household adaptive and coping strategies including: migration, moving animals, asset sales, consumption of wild foods, epidemics and pest attacks. These activities particularly focus on the distribution and intensity with which these strategies are being employed, which are similarly collected by the local development committee of the *arrondissement*.

iii) **Exceptional** surveys, include two types. The first type is a preliminary follow-up survey which is carried out by SAP staff members from the appropriate regional office. This survey/assessment is undertaken following *arrondissement*-level reports of poor and unusual food situations. If these assessments confirm a serious food situation, the second, a more formal socio-economic and nutritional survey is undertaken. This second type surveys document changes in consumption patterns, unusual changes in adaptation and coping strategies, and anthropometric measurements of preschool aged children to indicate levels of wasting. It is only this last and confirmatory survey that has any pretensions to scientific sampling and measurement; while the first surveys/assessments employ local and educated

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[11] A very useful summary of these functions and the steps used to achieve them is provided in the SAP Bulletin of May, 1992, a short summary of which is provided in Appendix VI.

guesswork, constrained within a carefully-designed questionnaire framework.

Table 6.1: Routine SAP Surveys of Production, Food Stocks and Rainfall

	Surveying Activities	Rainy			Harvest			Cold			Hot & Dry		
		Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Routine Questionnaires	Agricultural & Fishing Production	Assessment	Interim Analysis	Interim Analysis	Harvest Assessment								
	Paddy Rice Production		Assessment	<----------Surveillance---------->				Harvest Assessment					
	Long-Term Delta Agriculture		Situation Assessment		Harvest Assessment								
	Short-Term Delta Agriculture		Situation Assessment (Variable)		Harvest Assessment (Variable)								
	Irrigated Crop Production								Harvest Assessment				
	Market / Maraîchage Vegetable Gardening								Harvest Assessment				
	Food Stock Holding			Stocks Assessment									
	Livestocking				Pasture Assessment								
	Rainfall	<----------Rainfall Assessments---------->											Rainfall Assessments
	Fishing						<----------Catch Assessments---------->						

6.10 After these surveys and assessments have been carried out, the process of validation, interpretation, and consensus-building begins:

> "At the end of each month, the SAP representative with the support of the Regional Planning and Statistics Office, on the basis of the validated information, prepares a draft report which is distributed to the different regional services, international and non-governmental organizations, and discussed in regional SAP meetings. During these regional meetings, administrative, technical and NGO staff involved in food security discuss the contents of the draft report which is again rectified or added to if necessary. Finally, when these modifications have been made, the SAP technician sends the definitive version which constitutes the Regional Committee Report (*Rapport de la Commission Régionale*) to the members of the Regional SAP Committee. This is why SAP states that the food situation assessment of a zone is based on the grouping and synthesizing of different types of information from different sources rather than on data in isolation.
>
> At the end of each month, the SAP committee reports and the Regional monthly follow-up reports, together with all other information collected (questionnaires, field reports) are sent to the central SAP team. In addition to the Regional reports, this team receives depending on the period, information including:
>
> - 10-day rainfall reports, monthly bulletins and syntheses from the *Groupe de Travail Pluridisciplinaire* (GTP);
> - 10-day hydrological reports;
> - bulletins from the Plant Protection service;
> - biweekly, monthly reports from SIM/OPAM;
> - commercial stock reports, SNS and OPAM free food distributions;
> - syntheses of market prices for livestock through the OMBEVI;
> - FEWS bulletins;
> - SADS (*Suivi Alimentaire Delta-Seno*) bulletins.
>
> At the national level, the preparation of the Bulletin follows a similar procedure to that which goes on in the region. All of the technical staff produce a draft from the validated information and then distribute it to the different National SAP Work Groups (approximately 30 people).
>
> During these meetings, representatives of central-level administrative and technical offices, international and non-governmental organizations discuss the draft which is then amended and adopted as the SAP National Bulletin.
>
> During these debating sessions, SAP technical staff must clearly state which *arrondissements* or parts of *arrondissements* are experiencing or likely to experience a food or nutrition crisis before the next harvest and what measures

are appropriate to take to avert these crises."

(Authors' translation from the "Bulletin SAP", May 1992.)

6.11 It is at the central level that the categorization of *arrondissements* or parts of *arrondissement* into their appropriate food security and nutrition status levels of need is made. As Table 6.2 shows, the quantity and timing of food aid distributions results directly from this categorization. It is only when regions are categorized as having food and nutrition situations described as "*Difficultés Alimentaires*" (DA) that the region receives a recommendation for a food aid distribution. The duration and quantity of food aid that is recommended depend on the intensity and duration of the food and nutrition problem identified. For food problem classifications DA and "*Crise Alimentaire*" (CA), each person within an identified region receives nine kilograms of cereals per month[12], a half-ration[13], for three months and seven months respectively. Although a specific programmed response for famine has not yet been identified, it will include a mixed food distribution of 18 kilograms.

6.12 In recent years, a simple "expert system:" has been used to help achieve consensus in the classification of regions. This expert system implicitly defines a food poverty line and determines the intensity and duration of a particular food crisis in a particular location. Because this expert system appears to be very important, if not critical, in determining a programmed food aid response, method will be described detail.

6.13 The expert system is used at the end of every crop season (usually in November) as an aid for determining recommendations for deliveries later in the year. The system is based upon a simple point-scoring method for any given location: the more points that are scored the worse the food problem in that location, and therefore the greater the chance of food aid deliveries being recommended. The method by which points can be scored is shown in Table 6.3.

6.14 An example will help explain the scoring system and its role in aiding decision making for food aid distribution. If the food security situation in a given region is being considered for food security scoring during the cropping season, the process of arriving at a final score might go as follows:

1. What was the final food security status for this region in the previous year? A

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[12] 7 kilograms of cereals per person per month prior to 1991.

[13] The Household Consumption Survey of 1987/88 estimated per capita monthly cereals consumption of Kg. 18. Since 1991, this has formed the basis for estimates of national cereals requirements, as well as the basis of the ration distributed under free cereals programs.

status of RAS or DEL gives no score. A status of DES gives a score of 0.5, a status of DA gives a score of 1, and a status of CA gives a score of 1.5. Our hypothetical region was described as having DES (Severe Socio-Economic Difficulties) in the previous year and therefore begins by scoring 0.5.

2. In the current year it is agreed in the meeting that food availability in the current year is likely to be Bad. The region, therefore, scores a further 1.5 points (see Table 6.3), yielding a running total of 2.0 points.

3. Money resources in the region are described as being Bad, and, therefore, the region scores an additional 0.7 points (see Table 6.3, row 2), giving a running total of 2.7 points.

4. Finally, cereals supply is described as being Average, so a further 0.0 points are awarded to the region. The final total is, therefore, 2.7 points. Column 3 in Table 6.2 shows that a score of 2.7 places our hypothetical region into the category DA (Food Difficulties), which prompts a recommended distribution of 9 kgs of cereals per month per individual for three months.

Table 6.2: SAP Categories of Food and Nutrition Crises and their Implications for Free Food Delivery

Acronym and Brief Description	Fuller Description	Expert System Score	Programmed Food Entitlement
RAS Nothing to Note	At worst a slight fall in incomes for all the population and likely to result in a normal soudure for the zone.	<0.7	
DEL Mild Socio-Economic Difficulties	An average fall in incomes for all the population, resulting in a normal soudure with few difficulties of adaption.	>=0.7 and <1.7	
DES Severe Socio-Economic Difficulties	A significant fall in incomes for all members of the population forcing unusual reactions (significant outmigration, village abandonment, sale of assets), and resulting in abnormal food shortages during the soudure.	>=1.7 and <2.7	
DA Food Difficulties	All the population experiences a very significant fall in incomes. The result being an early start to the soudure and a reduction in food quantities consumed.	>=2.7 and <3.7	9 kgs. of cereals per person per month (a half ration) three months, from June 15th to Sept 15th
CA Food Crisis	All the population experiences a very significant fall in incomes. Unusual adaptation occurs with significant outmigration, sale of assets. Food consumption declines in both qualitative and quantitative terms. Wasting rates in young children exceed 10%. Long-term health will be compromised by these changes in consumption habits.	>=3.7 and <4.7	9 kgs. of cereals per person per Month (a half ration) seven months from Feb 15th to Sept 15th
FA Famine	All incomes of the population fall to virtually nothing, and are usually preceded by years of very low incomes. Without intervention deaths will result.	>=4.7	18 kgs.of food, including cereals, meat, fish, oil (a full ration) for as long a period as necessary until minimum self-sufficiency can be reached by the target population

Table 6.3: Determining Food Crises: The Point Scoring System of SAP's Expert System

	Very Good	Very Good to Good	Good	Good to Average	Average	Average to Bad	Bad	Bad to Very Bad	Very Bad
Food Availability (including existing stocks and crop forecasts)	-2	-1.5	-1	-0.5	0	0.7	1.5	2.3	3
Money Resources	-1.5		-0.7		0		0.7		1.5
Cereals Supply	-1		-0.5		0				

Critique of SAP's Method of Identifying Food and Nutrition Crises

6.15 A critique of SAP's approach to identifying regions of food and nutrition crisis follows:

i) It is evident from the above detail of the SAP method that SAP identifies regions for distribution that are not at immediate risk of famine, but that are nevertheless likely to experience acute seasonal food shortages.

ii) In its methodological summary (Bulletin of May 1992), the SAP overrules the importance of differentiation in food insecurity within regions. The argument used to support this assertion is not well developed. Certainly, if free food aid is the method with which consumption is to be supported, then it is likely to be easier to target all individuals within a region, rather than individuals of a particular socio-economic group within that region. Empirical evidence from a number of countries in the Sahel[14], however, indicates that there is very significant differentiation of poverty and food insecurity within regions of rural areas. While this does not immediately suggest that different methods of identification and distribution should be developed for Mali, it does suggest that the assumptions of rural homogeneity or community-level redistribution mechanisms, need to be tested through a series of household and community surveys.

iii) Greater discussion and empirical analysis are required vis-à-vis the objectives of the quantities and timing of food distribution that are recommended. The current objectives appear to be aimed at supporting levels of food consumption in the short-term. Support for consumption in the medium- and longer-term does not appear to be a current goal, as this would require the use of food aid to help maintain the asset portfolios of target households. Two aspects of SAP's methodology suggest this. First, the identification of target regions currently includes the sale of assets[15] as a necessary, but not a sufficient, indicator of food crisis. Second, recipient households do not receive word about food aid distributions until late in the post-harvest season, by which time food security strategies that may include sale of assets have been decided upon.

6.16 The underlying model used in the expert system has both strengths and weaknesses that either need to be made more explicit, or need to be improved upon. It is important to note that the principal purpose of the expert system is a practical one, namely, the development of consensus that subsequently enables distributions of food aid to be made. It

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[14] See Reardon (1987) for Burkina Faso, Webb et al. (1992) for Ethiopia, Staatz et al. (1990) for Mali, McKay et al. (1992) for Mauritania, von Braun (1991) for Sudan.

[15] It is not specified whether these are productive or non-productive assets.

appears to achieve this purpose well. However, from a more technical point of view, the expert system would appear to constitute a significant deciding factor with respect to food aid distributions and as such, the assumptions behind its method need to be analyzed.

6.17 The current expert system is essentially a model that attempts to approximate and predict unknown, namely average, levels of food consumption prior to the next harvest. This model, like all models, suffers from both specification error and measurement error. Specification error results from at least two factors: the variables included in the model and the weights that are assigned to these variables.

6.18 The existing model specifies that levels of food consumption are determined by the following variables: the unverified consumption classification of the previous year; current food stocks; food availability/crop production estimates; estimates of money resources that could be generated prior to the next harvest; and food supply to the market. As currently specified, the model may not take into account certain variables that should be included and may unduly weight other variables which should not be given such importance. Two examples will serve to illustrate this point. First, the presence or absence of food stocks is not often a good indicator of food security. This appears to be particularly true during periods of commercialization in rural areas, i.e. during periods when markets play an increasingly important role as food storers. Second, it is extremely difficult for an analyst or an expert to make an aggregate judgment concerning regional monetary resources. Only anecdotal evidence of the likely sources and levels of cash income appears to be available for any region. The range is highly varied: wages from migrants; wages from farm labor and non-farm labor; sale of productive assets; sale of non-productive assets; value of private transfers; and value of public transfers.

6.19 Even in the absence of the detailed household surveys that would enable the respecification and calibration of the model used in the expert system, it is likely that the underlying model could be considerably improved by an examination of the literature for similar models that attempt to estimate food consumption levels. Studies such as those of Alderman (1992), Alderman and Higgins (1992), Behrman (1990), and Christensen (1993) may well be of some use in this respect.

6.20 Finally, measurement errors in the use of the expert system are likely to be considerable. Not only are the data collection systems used by SAP likely to be fairly inaccurate inasmuch as most of the variables collected depend on estimates rather than more scientific data collection methods, but the ordinal measures used subsequently to input data into the expert system are likely to vary from one analyst to the next. For example an optimistic analyst might assess monetary resources in one region as being "good", while a pessimistic analyst might assess similar resource levels in a different region as being "bad". Subsequent scores within the expert system would reflect differences in optimism and pessimism rather than differences in food security.

The Structure of Decision-Making for Programmed Response at the National Level

6.21 Once the SAP has arrived at a consensus in its analysis of the food situation, its recommendations for food distribution are given to the various authorizing bodies of the response system. In the first instance, SAP analysis and recommendations are examined by the *Comité Technique* of the PRMC[16]. Then, SAP recommendations, combined with PRMC endorsements, are reviewed in a meeting of the *Comité d'Orientation et de Coordination* (COC). The COC, a Malian government institution headed by a technical advisor to the Minister of Finance, was created in 1982 at the request of the Council of Ministers. The Committee consists of representatives of Malian government ministries concerned with food security and donor coordination and contains two sets of subgroups: three technical groups organized around three cereal subsectors - rice, millet/sorghum, and corn/wheat - and three working groups organized along functional lines - finance, information systems, and provision of relief supplies. The COC generally meets once per quarter, if not more often, for the purpose of coordinating technical recommendations and donor support for final approval by the government. This government approval is given by the *Ministèrè de l'État Chargé de l'Administration Territoriale et de la Sécurité* (MEATS). As with the PRMC, the COC has endorsed all SAP recommendations for distribution since 1990.

6.22 After COC recommendations have been authorized by the MEATS and the Ministry of Finance, the *Comité National d'Actions d'Urgence et de Réhabilitation* (CNAUR) is responsible for ensuring the execution of COC distribution decisions. The *Office des Produits Alimentaires du Mali* (OPAM) is authorized by CNAUR to issue transportation contracts of grain from *Stocks Nationaux de Sécurité* (SNS) stores to the principal location of the *arrondissement*.

6.23 At the *arrondissement*, it is the *chef d'arrondissement*, or an authorized deputy, who receives the delivered cereals. Thereafter, the *Comité Local de Développement* is responsible for the distribution of cereals to households within the whole *arrondissement*. In those cases where a *fraction*, or zone of an *arrondissement*, has been recommended for distribution, this *Comité* is responsible for distribution to that *fraction*.

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[16] Since 1990 the PRMC has endorsed all the recommendations made by SAP.

7. The SAP Recommended Distributions of 1988-1992: Frequency, Costs, Timing and Effects

7.1 This and the following sections attempt to outline the costs and the effects of the SAP-recommended food distributions during the period 1988-1992. This section begins with a brief overview of the recommendations for delivery that were made and is followed by an examination of the financial costs of these deliveries.

7.2 In the following section, Section 8, three issues are examined:

i) the quantities of cereals that were actually received by targeted householders,

ii) the timeliness of deliveries with respect to the recommended date of distribution, and

iii) an estimate of the benefits to householders in terms of:

a) the value of the incomes that were transferred,
b) the effect, if any, on increased household consumption,
c) the effect, if any, on household nutrition status, and
d) the effect, if any, on household asset portfolios.

Food and Nutrition Crises Identified by SAP 1988-1992

7.3 Table 7.1 shows a summary of the distribution of SAP recommendations for food aid delivery for 1988-1992. The Table shows only those *arrondissements* where six or more months of distribution were recommended during the five-year period[17]. By indicating both the number of years for which distributions have been recommended and the number of months in any year for which distributions were recommended, it is possible to derive a rough estimate of the extent and intensity of acute seasonal food poverty during the five-year period.

[17] The complete listing of recommendations is given in Appendix VIII.

Table 7.1: Disaggregation Distribution of SAP Recommendations for Food Aid Delivery 1988-1992

			No. of Years in which Distrb. Recmd.	Total No. of Months Recm.	1988 No. of Months	1989 No. of Months	1990 No. of Months	1991 No. of Months	1992 No. of Months
Kayes	Kayes	Diamou	2	6	4	2	0	0	0
Koulikoro	Banamba	Boron	2	7	4	0	0	3	0
Koulikoro	Banamba	Madina-Sako	2	7	4	0	0	3	0
Koulikoro	Banamba	Sebete	2	7	4	0	0	3	0
Koulikoro	Kolokani	Didieni	1	6	6	0	0	0	0
Koulikoro	Kolokani	Massantola	2	6	4	0	0	2	0
Koulikoro	Nara	Fallou	2	6	4	0	0	2	0
Koulikoro	Nara	Guire	2	7	4	0	3	0	0
Koulikoro	Nara	Mourdiah	2	7	4	0	0	3	0
Segou	Segou	Deplaces	1	7	0	7	0	0	0
Segou	Niono	Nampala	2	8	6	0	0	2	0
Segou	Niono	Sokola	2	8	6	0	0	2	0
Mopti	Mopti	Mopti	1	6	6	0	0	0	0
Mopti	Mopti	Fatoma	1	6	6	0	0	0	0
Mopti	Mopti	Konna	1	6	6	0	0	0	0
Mopti	Bandiagara	Kardgogoura	1	6	6	0	0	0	0
Mopti	Bandiagara	Ningari	2	9	6	0	3	0	0
Mopti	Bandiagara	Sangha	1	6	6	0	0	0	0
Mopti	Douentza	Douentza	1	6	6	0	0	0	0
Mopti	Douentza	Boni	2	9	6	0	3	0	0
Mopti	Douentza	Bore	1	6	6	0	0	0	0
Mopti	Douentza	Hombori	1	6	6	0	0	0	0
Mopti	Douentza	Mondoro	3	11	4	0	4	3	0
Mopti	Douentza	N'Gouma	3	13	6	0	4	3	0
Mopti	Koro	Koro	2	6	0	0	4	2	0
Mopti	Koro	Diankabou	2	7	4	0	3	0	0
Mopti	Koro	Dinangourou	3	10	4	0	3	3	0
Mopti	Koro	Diounguni	2	8	4	0	4	0	0
Mopti	Koro	Koparkendie-Nah	2	6	0	0	4	2	0
Mopti	Tenenkou	Diouro	2	8	6	0	0	2	0
Mopti	Youvarou	Youvarou	2	7	4	0	0	3	0
Mopti	Youvarou	Ambiri	3	16	6	0	0	3	7
Mopti	Youvarou	Gathi-Lemou	2	7	4	0	0	3	0
Mopti	Youvarou	Gludio-Sare	2	9	6	0	0	3	0
Mopti	Youvarou	Sah	4	19	6	0	3	3	7
Timbuktu	Goundam	Bintagoungou	1	6	6	0	0	0	0
Timbuktu	Goundam	Farach (Fagulbine)	1	9	6	0	0	3	0
Timbuktu	Goundam	Gargando	3	12	6	3	0	3	0
Timbuktu	Goundam	Raz-El-ma	3	12	6	3	0	3	0
Timbuktu	Rharous	Bambara-Maounde	2	7	4	0	0	3	0
Timbuktu	Rharous	Haribomo	2	7	4	0	0	3	0
Timbuktu	Niafunke	Niafunke	2	9	6	0	0	3	0
Timbuktu	Niafunke	Banikane	4	21	6	0	3	6	6
Timbuktu	Niafunke	Koumaira	1	6	0	0	0	6	0
Timbuktu	Niafunke	Lere	2	9	0	0	0	3	6
Timbuktu	Niafunke	N'Gorkou	3	9	0	0	3	3	6
Timbuktu	Niafunke	Sarafere	3	12	6	0	3	3	0
Timbuktu	Niafunke	Soumpi	2	12	6	0	0	0	6
Gao	Gao	Gao	1	6	6	0	0	0	0
Gao	Gao	Djebock	2	7	6	0	0	1	0
Gao	Gao	N'Tillit	2	7	4	3	0	0	0
Gao	Ansongo	Talataye	3	8	4	3	0	1	0
Gao	Bourem	Almoustarat	3	11	4	6	0	1	0
Gao	Bourem	Bamba	2	10	4	6	0	0	0
Gao	Bourem	Temera	2	10	4	6	0	0	0
Gao	Menaka	Tidarmene	3	8	4	3	0	1	0
Gao	Menaka	Inekar	3	8	4	3	0	1	0

7.4 The SAP's estimates of the extent of poverty, as indicated by the number of years in which food aid was recommended in each *arrondissement*, suggests that the northwestern regions of Kayes, Koulikoro, and Segou have experienced significantly fewer food crises than the northeastern regions. In the latter case, Gao and Timbuktu would appear to have experienced proportionally greater levels of food insecurity than Mopti.

7.5 The intensity of acute seasonal food insecurity as indicated by the number of cases in which *arrondissements* have been recommended for distributions of six months or more, shows that in the years 1989-1992, only in 12 instances have *arrondissements* been recommended for six or more months of food aid. Fifty percent of these recommendations have been for *arrondissements* in Timbuktu Region, 25% in Gao, 17% in Mopti, and 8% in Segou.

7.6 It is more difficult to use Table 6.7 as an indicator of the medium-term food security situation of particular *arrondissements*. Of the 168 *arrondissements* that are monitored by the SAP, only two (Sah and Banikane) have been recommended for distribution in four of the five years reviewed, and only 12 have been recommended for distribution in three of the five years. Thirteen *arrondissements* have been recommended for 10 or more months of food aid distribution over the five years. These results would appear to indicate, *a priori*, that the SAP has been successful in avoiding bias in its recommendations on grounds other than the technical.

7.7 The relationship between SAP recommendations and the programmed response to those recommendations has already been commented upon in Section 4. It is worth repeating that (as Figure 4.5 and Table 4.9 show) for most purposes the distribution recommendations made by SAP have been fully endorsed and implemented by the PRMC, the COC, the Government and CNAUR since 1991. In 1988 and 1989, SAP recommendations were not instrumental in determining the actual distributions that were made. It was only with the reformed role of CNAUR in 1990, and the new government of early 1991 that SAP's role as the principal and authoritative information system for food distributions was realized.

The Financial Costs of the Distribution System

7.8 The analysis of costs can be divided into two major parts: the costs of information and administration[18] and the costs of distribution. Both sets of costs could legitimately be included in an analysis of the cost-effectiveness of the SAP information and distribution. However, it might be argued that the costs of the information system are not specific to the

[18] It has not been possible to estimate the costs of administration (e.g., meetings to authorize food distribution by PRMC, COC and Government, and the organization of transportation by CNAUR and OPAM) for this study. However, as a proportion of total costs, these are thought to be minimal.

distribution system: that because of high levels of household food insecurity in Mali, a food security and early warning system is necessary for any intervention that might protect vulnerable households and is not specific to the free cereals distribution program. However, in the context of a national food security and poverty alleviation strategy, it is important to bear in mind that alternative strategies are likely to have alternative implications for costs and benefits. In the context of an income transfer strategy that aims to support a particular level of consumption, alternative mixes of policy instruments are likely to have very different information requirements leading to different information costs. For example, cash-for-work programs in some parts of India rely on a minimal information system as work is guaranteed at a particular wage rate as and when householders demand it.

The Costs of Information

7.9 The costs of the information collected, analyzed and presented by SAP are unlikely to vary significantly from year to year. Costs are likely to be marginally higher in "poor" years as a result of the verification surveys that necessarily follow from the regional reports. Inasmuch as the SAP information system has a high fixed-cost component, it appears more appropriate to examine the average information costs per beneficiary over a period of years rather than the costs of information per beneficiary for a single year. While there are a number of different approaches that might be used to calculate average information costs, a very simple yet indicative approach is used here.

7.10 The budget for the SAP information system for the calendar year 1992 is estimated at FCFA 253 million, or approximately US$ 1.0 million. For 1991, the budget was on the order of FCFA 125 million, or about US$ 0.5 million. (Source: PRMC Secretariat mimeos). In the absence of easily available cost data for the SAP information system over the five years from 1988-1992, we shall assume that the approximate average annual costs are US$ 0.75 million[19]. Therefore the total costs of the information system might be of the order of US$ 3.75 million. The total number of beneficiaries recommended for distribution in each year from 1988 is 2,353,932 (See Table 4.4 above). The average information cost per beneficiary over the period is therefore equal to US$ 1.59. (An alternative method of assessing the same information costs would be to examine the costs of providing information for the whole of the target population i.e., those in *cercles* north of the 14th Parallel. In that case, the information costs are likely to be about US$ 0.187 per person per year.)

The Costs of Distribution

7.11 The costs of procurement, storage and distribution are made up of six principal elements:

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[19] Given the larger number of expatriate staff in the early years of the SAP, this may well be an underestimate.

i) The average purchase price at the central store of purchase in Bamako, Segou, etc.. In most instances, local sorghum and millet have been purchased under contract from the local market. In 1991, however, imported US sorghum was used to restock SNS warehouses. The purchase price in 1989-1991 ranged from an average of FCFA 60.16 (1989) to FCFA 109 (1991). The average purchase price in 1988 is estimated at FCFA 65 and in 1990, FCFA 66.

ii) The average transport cost from the central store to sub-central stores. In the absence of easily-accessible data on these costs, it has been assumed that cereals have been transported over an average of 411 kilometers at a price of FCFA 50 per ton/ kilometer. Although this price is greater than what is officially recommended, it is nevertheless a price that the data given below, provided by the *Commission Nationale d'Évaluation et de Suivi de la Stratégie Alimentaire* (CNESA), indicate has been paid by OPAM for transportation on major routes, such as the route between Bamako and Mopti.

iii) Handling costs, which are assumed to occur at three stages:

a) main store to sub-store, where the grain is handled twice, once for loading and once for unloading,
b) sub-store to *arrondissement*, where the grain is again assumed to be handled twice, and where financial costs are incurred; and
c) *arrondissement* to village, where the costs of grain handling are only incurred once,

Handling costs are estimated at FCFA 1000 per ton at each stage.

iv) Storage costs, for which detailed data are also not readily available. However, some estimates indicate a cost of storage of FCFA 1050 per ton/year.

v) The average transport cost from the sub-central stores to the central locations of the target *arrondissements*. Much of the cost data necessary to estimate this element of total costs is available from the transportation contracts issued by OPAM (See Appendices X-XV).

vi) The average transport cost from the central locations of the target *arrondissements* to target villages. No systematic data are available for this element of total costs. What data are available are derived from CNAUR, donor and team visit trip reports. These costs vary considerably, not only as a function of distance and difficulty of terrain but also in terms of payment source. In some cases, financial costs have not been

incurred[20] while, in others, the costs have been paid either from a share of the free cereals or from the *arrondissement's* own budget that comes from local taxation. The CNAUR/USAID mission to Kayes in July 1991 to monitor a distribution of free cereals not part of SAP-recommended distributions notes that an individual in the village of Gavinané paid FCFA 100,000 (approximately US$ 400)[21] for the transportation of 1.5 tons by 15 donkeys. The individual was reimbursed through cereals contributions from each family[22].

7.12 Tables 7.2 and 7.3 give regional summaries of SAP recommendations, distributions, timeliness, costs and benefits[23] [24]. While issues of timeliness and cost-benefit ratios are raised in the following section, the remainder of this section makes a number of points on the cost issues raised in both tables:

a) **Delivery Costs From Sub-Depot to Arrondissement or Cercle per Ton per Kilometer:**

Comparisons in the levels charged between regions: Records that account for

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[20] Although there will certainly be an economic opportunity cost to the transportation of grains.

[21] Although this price would appear to be excessive, it is nevertheless indicative of one part of the costs that have to borne in distributing cereals to the point of final consumption.

[22] See Sow, 22 June 1992.

[23] Costs and benefits are estimated at the local market value of the cereals received by the beneficiaries. Thus if 20 Kgs. of millet were distributed to individuals in Mourdiah in June, and the market price of millet in the closest market for which data is collected (Kolokani) is FCFA 50 in the same month, then the value of the cereals to the beneficiary is calculated at FCFA 50 x 28 = FCFA 1400.

[24] Tables 7.2 and 7.3 present annual averages of regional data presented in Tables a.6 through a.17 of Appendices X through XV. The tables in these appendices are grouped in pairs, with each pair presenting data for a given Region. Data in the second table of each pair of tables are based on data presented in the first table of the pair. Data presented in Table 7.2 are regional averages taken from the first tables of each pair, while data in Table 7.3 are regional averages taken from the second tables of each pair. Where the individual data presented in Tables 1.6-1.15 of Appendices X-XV can not be meaningfully averaged, these data have not, in fact, been averaged for presentation in Tables 7.2 or 7.3. For example, since dates cannot be meaningfully averaged, the dates presented in Column Q of Tables a.6, a.8, a.10, a.12, a.14, and a.16 in the appendices have not been averaged, and Column Q of Table 7.2 is, therefore, blank.

transport costs have improved very considerably since 1990[25]. Column (S) in Table 7.2 indicates that average transport rates in FCFA per ton/kilometer are approximately the same for the three Regions of Gao, Timbuktu, and Mopti[26] at approximately FCFA 80/ton/km. The few observations for Segou indicate very significantly lower transport costs than for other regions: FCFA 46/ton/km. for deliveries made in 1991.

Inflationary Change in Unit Transportation Charges:

Only for the Mopti and Timbuktu Regions is there any indication of transport price changes over time. In Mopti, there appears to have been some price inflation during 1990-1992, but this inflation appears to be in line with national level inflation. In Timbuktu, no such inflation appears in the average data that are available. While this lack of change may be more apparent than real, there may be at least two possible explanations: first, the lack of alternative business due to insecurity may keep transport prices low in Timbuktu[27] and second, the presence and availability of PVO vehicles in Timbuktu may further help to keep prices low.

b) **Store to Arrondissement Transport Costs:**

Columns AF, AG, and AH of Table 7.3 indicate the proportion of delivery costs from stores to *arrondissement* (AG) to total per kilogram costs of distribution (AH). Not surprisingly, these transport costs rise progressively from Mopti to Timbuktu to Gao, with the per Kg. costs in Gao being twice those of Mopti. This rise in costs is due to the larger distances between stores and target *arrondissements.*

Transport Costs as a Proportion of Total Costs:

Given the fairly stable nature of transportation prices, it is not surprising that their proportion to total costs changes significantly as a function of the purchase price of cereals[28]. In years when high-priced cereals were distributed (e.g., the distributions of 1992 which for our purposes distributed grains bought in 1991), transport costs accounted for 20%-25% of total costs.

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[25] Transport cost data prior to that year needs to be treated with some caution.

[26] The number of observations for Koulikoro are too few to be reliable.

[27] However, supply factors such as increased costs for spare parts, fuel, and losses may push the price upwards.

[28] In the equation used to calculate costs, it is only final transport costs and purchase price that are effectively allowed to vary, storage and handling costs being held constant.

c) **Cost-Effectiveness of Income Transfers:**

Two simple cost-benefit ratios are developed in columns AI and AJ of Table 7.3. The **normative** cost-benefits described in column AI describe the ratio of costs in the distribution of grains to the target location divided by the benefits of those grains to the recipient; the latter being valued at the local market price for millet in the first month recommended by SAP for distribution. The **actual** cost-benefits described in column AJ refers to the ratio of costs to benefits when the benefits are valued at those market prices prevalent when the grain was actually delivered to the *arrondissement*. Ratios of 100% indicate that the costs of delivering the cereals to the *arrondissement* are equal to the price of those grains in the local market. Higher ratios indicate that the costs of delivery were greater than the value of the cereals distributed. As can be seen, in most cases the costs of distributing the cereals are greater than their value in the local market.

In Section 8 (below), significantly higher cost-benefit ratios are derived when benefits are calculated in terms of the reported actual receipts of grain, and not the invariably higher receipts that were recommended by SAP. In the two examples given in Table 8.2, cost-benefit ratios greater than 400% are calculated.

As can be seen from comparing the two columns, lateness in delivery does not always contribute to a deterioration in the cost-benefit ratio. If prices continue to rise in local markets after the recommended month of delivery and until the actual time of delivery, then costs are not estimated to increase while benefits are calculated to rise.

Table 7.2: Regional Summaries of SAP Recommendations and Distributions 1988-1992

Year	Annual Totals and Averages	Total Persons Mths. Recm. for Distbn. (A)	Recm. Target Popn. Size (B)	Tons Recm. (C)	Tons Contracted for Deliv. (D)	No. Mths. of Distbn. (E)	Year of Distrb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm. (I)	Date of Final Govt. Signature (J)	Date of Tmsn. Contr. (K)	Date of Tmspt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	FCFA/Tonne (P/D/O) (S)
1988	TOTALS AND AVERAGES: Kayes	599632	149908	4204		4	8	6	9	4										
1989	TOTALS AND AVERAGES: Kayes	40911	20802	291		2	2	6	7	3										
1990	TOTALS AND AVERAGES: Kayes																			
1991	TOTALS AND AVERAGES: Kayes	9000	4500	80	80	2	1	7	8	4										
1992	TOTALS AND AVERAGES: Kayes																			
1988	TOTALS AND AVERAGES: Koulikoro	798738	183020	5530	466	4.2	10	5.8	9	3.8							10[illegible]			129
1989	TOTALS AND AVERAGES: Koulikoro																			
1990	TOTALS AND AVERAGES: Koulikoro	27321	9107	192	40	3	1	4	6	12							1250000			83
1991	TOTALS AND AVERAGES: Koulikoro	119161	46557	1100	1070	2.6	7	6.4	8.0	3.0							18516000			71
1992	TOTALS AND AVERAGES: Koulikoro																			
1988	TOTALS AND AVERAGES: Segou	358192	65032	2806	1077	5.3	3	5	9	3							10[illegible]6			44
1989	TOTALS AND AVERAGES: Segou	15000	5000	105		3.0	1	6	8	1										
1990	TOTALS AND AVERAGES: Segou																			
1991	TOTALS AND AVERAGES: Segou	40400	20200	360	360	2.0	3	7	8	4							6250000			46
1992	TOTALS AND AVERAGES: Segou																			
1988	TOTALS AND AVERAGES: Mopti	3435108	690124	22330	529	4.9	34	5	9	3							3877655			32
1989	TOTALS AND AVERAGES: Mopti																			
1990	TOTALS AND AVERAGES: Mopti	826987	239196	5787	2406	3.5	12	4	7	10							35610866			71
1991	TOTALS AND AVERAGES: Mopti	248335	90845	2240	2240	2.8	13	6	8	2							17412500			75
1992	TOTALS AND AVERAGES: Mopti	70126	10018	270	270	7.0	2	6	8	3							4665650			83
1988	TOTALS AND AVERAGES: Tombouktou	821832	148177	5746		5.2	13	5	9	3										
1989	TOTALS AND AVERAGES: Tombouktou	38730	12910	271		3.0	2	6	8	3										
1990	TOTALS AND AVERAGES: Tombouktou	148215	49405	1035	340	3.0	3	4	6	12							3777600			80
1991	TOTALS AND AVERAGES: Tombouktou	441986	123991	4000	3824	3.7	18	5	8	2							75549550			80
1992	TOTALS AND AVERAGES: Tombouktou	107832	17972	490	490	6.0	4	6	8	3							11815000			83
1988	TOTALS AND AVERAGES: Gao	1172492	261264	8204		4.2	20	6	9	4										
1989	TOTALS AND AVERAGES: Gao	254802	84934	1784		3	7	6	8	1										
1990	TOTALS AND AVERAGES: Gao																			
1991	TOTALS AND AVERAGES: Gao	487912	120970	3270	3280	4	24	3	6	2							6[illegible]275			79
1992	TOTALS AND AVERAGES: Gao																			

Table 7.3: Regional Summaries of Timeliness and Cost Benefits Ratios in SAP Deliveries 1988-92

Year	Annual Totals or Averages	Timing and Delivery Performance								Costs and Benefits Performance								
		Total Days Between 1st Recm. AND Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. AND 1st Month Deliv. (Q-I) (U)	No. of Days Late Of Actual Delivery (Q-O) (V)	Days 'twean 1st Recm. AND Final Govt. Signature (J-I) (W)	Days 'twean last Govt. Sgn. AND Issue Trans.Contr. (K-J) (X)	Days 'twean Sgn. Trans. Contract AND Delivery (Q-K) (Y)	Sgn. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*I*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*I*Mth.Kg.) (AE)	Kg.Costs of Grain to Accrued. Excluding Transport Contract. (see text) (AF)	Kg.Costs of Delivery Contract (see text) ((FY)/1000) (AG)	Per Kg. Costs to Accrued. (AF+AG) (D/1000) (AH)	Total Normative Cost/Ben Ratio (AB/AD) (AI)	Total Actual Cost/Ben Ratio (AB/AC) (AJ)
1988	TOTALS AND AVERAGES: Kayes		61															
1989	TOTALS AND AVERAGES: Kayes		92															
1990	TOTALS AND AVERAGES: Kayes																	
1991	TOTALS AND AVERAGES: Kayes		91															
1992	TOTALS AND AVERAGES: Kayes																	
1988	TOTALS AND AVERAGES: Koulikoro	172	61	112	126			73%		129	125	4704	5250	92	22	113	101%	91%
1989	TOTALS AND AVERAGES: Koulikoro																	
1990	TOTALS AND AVERAGES: Koulikoro	191	121	70	167	20	4	87%	2%	80	80	1680	1680	87	31	118	148%	148%
1991	TOTALS AND AVERAGES: Koulikoro	133	104	29	79	31	22	60%	19%	140	130	2506	2335	93	16	109	78%	84%
1992	TOTALS AND AVERAGES: Koulikoro																	
1988	TOTALS AND AVERAGES: Segou	225	60	165	126	39	60	57%	26%	103	115	4200	4830	92	11	102	102%	90%
1989	TOTALS AND AVERAGES: Segou		151															
1990	TOTALS AND AVERAGES: Segou																	
1991	TOTALS AND AVERAGES: Segou	165	91	74	100	42	23	61%	14%	120	130	1680	1820	93	19	111	93%	86%
1992	TOTALS AND AVERAGES: Segou																	
1988	TOTALS AND AVERAGES: Mopti	208	61	148	125			62%										
1989	TOTALS AND AVERAGES: Mopti																	
1990	TOTALS AND AVERAGES: Mopti	230	111	122	157	14	69	67%	30%	82	93	2142	2310	87	17	104	127%	113%
1991	TOTALS AND AVERAGES: Mopti	128	113	8	73	13	42	60%	30%	140	133	2853	2783	93	16	108	80%	83%
1992	TOTALS AND AVERAGES: Mopti	157	92	65	111		46	71%	29%	85	80	4165	3920	136	17	153	180%	198%
1988	TOTALS AND AVERAGES: Timbuktu		51															
1989	TOTALS AND AVERAGES: Timbuktu		92															
1990	TOTALS AND AVERAGES: Timbuktu	206	121	85	167	6	32	81%	15%	80	90	1680	1890	87	29	140	125%	111%
1991	TOTALS AND AVERAGES: Timbuktu	144	79	65	45	4	110	20%	44%	135	136	3391	3501	93	26	116	87%	87%
1992	TOTALS AND AVERAGES: Timbuktu	179	92	87	111	0	68	62%	38%	152	80	6384	3360	136	21	157	105%	196%
1988	TOTALS AND AVERAGES: Gao		61															
1989	TOTALS AND AVERAGES: Gao		151															
1990	TOTALS AND AVERAGES: Gao																	
1991	TOTALS AND AVERAGES: Gao	79	28	51	40	9	23	29%	30%	100	100	3630	3630	93	32	125	125%	125%
1992	TOTALS AND AVERAGES: Gao																	

8. The Benefits of the Distributions: Income Transfer, Consumption and Nutritional Efficiency

8.1 Three factors are critical to determining the value of cereals distributions to identified beneficiaries:

i) the type and quality of the cereals received;

ii) the quantities actually received rather than the quantities which normatively should have been received; and

iii) the time at which those cereals were received.

Other things being equal, it is the value of the benefits that will help determine the level of change in consumption, nutritional status, and asset holdings. These issues are examined in this section.

The Type and Quality of the Cereals Received by Beneficiaries

8.2 In all cases since 1988, the SAP has recommended the distribution of either sorghum or millet. In terms of market value, visual analysis of sorghum and millet price behavior in local markets would indicate that the two commodities are close substitutes with similar price levels in most rural markets. In terms of imputed value, there is likely to be little distinction between sorghum and millet for beneficiaries[29].

8.3 While there may be minimal differences in the value of sorghum or millet to the beneficiary, little, if any, information is available as to the quality of the grain that has been distributed. In particular, there is no information as to whether the quality and taste of grains are perceived as being inferior or superior to that of grain which is available in local or regional markets. The quality of grain distributed will not only depend on the quality of the grain originally purchased by OPAM, but also on the subsequent quality of storage and handling. Long periods with low levels of offtake from national food security stock are likely to contribute to a significant deterioration in the grain that is distributed.

8.4 The issue of grain quality is not only important for the valuation of recipient benefits, but also in two other respects:

i) Inasmuch as poor quality grains may have higher levels of impurities (dust, bran, and grit) than superior grains, it is likely that their nutritional value on a weight-for-weight basis is lower to that of superior grains of the same type; and

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[29] However, there may well be significant taste preferences.

ii) As inferior quality grains may require longer periods of labor time to process or may have inferior taste characteristics, they tend to increase the preference for these grains among the lowest income households. Higher-income households with higher opportunity costs for their time and higher incomes with which to purchase better-quality grains will tend to consume smaller quantities of poor-quality grains than their lower-income counterparts. In some cases, this may mean that higher-income or wealthier households in receipt of inferior-quality cereals will tend to redistribute those cereals to lower-income households within their community.

The Quantities Actually Received by Identified Households

The Normative Amounts Received

8.5 Between 1988 and 1990, per capita recommendations for distribution per month were set at seven kilograms of cereals. After 1990, the amounts were adjusted upwards to nine kilograms per person/month. The issue about the quantity of cereals distributed has largely been driven by the wider debate of national cereals requirements and national food balances.

8.6 As previously pointed out in Section 6, the current levels of normative per capita cereals distribution (i.e., those cereals that are intended for distribution to beneficiaries) is based on estimates of average cereals consumption as derived from the national consumption survey of 1988-89. Nine kilograms of cereals is 50% of the average per capita monthly consumption of 18 kilograms of cereals.

8.7 To date, the debate has been weak insofar as it lacks an analysis of the patterns of consumption and food requirements among those populations targeted. In particular, three types of information need to be sought:

a) Actual consumption levels of target populations during the months in which they are normally targeted. If a distribution of half a month's average consumption assumes that individuals already have access to a further nine kgs. during the month, then this assumption which is pivotal to the distribution program needs to be supported by further research.

b) Greater specificity in the target levels of consumption that are being sought by the distribution program.

c) An understanding of the changing food requirements during the *soudure*. The high labor demands that are placed on most household members during the crop season implies that food requirements are higher during this period than they might be during the remainder of the year.

The Actual Amounts Received

8.8 While fruitful attention, has been directed at improvements in information systems and in the response to that information since 1988, little attention has been paid to monitoring the impact of the distribution system on the principal target variable: namely, the levels of individual and household consumption. The few available trip reports, the forthcoming University of Berlin study and this team's own field work, indicate that improving performance in this area should be the next concern to which government and donors address their efforts.

8.9 Table 8.1 shows the cereals receipts that were reported by targeted beneficiaries were by and large very significantly below those levels which they normatively should have received. In locations where individual beneficiaries should have received 28 Kgs., more frequently, three and four kgs. were recorded. As the Table indicates, only a few studies or reports show cereals receipts for a given period that are greater than 20 kgs. per capita.

8.10 It is important to note, however, that the data given in Table 8.1, except for those from the University of Berlin study, have not been collected in a rigorous scientific manner. During the present visit referred to in the table, the team consulted four groups of villagers or camps with an average of 15 to 20 villagers present in each case. Of these, few were women. Therefore, generalizations should not be made that suggest that in all cases, or even the majority of cases, beneficiaries have not received total or approximate recommended levels of distribution. However, in the absence of alternative data, the available statistics are likely to be taken as indicative of a serious weakness in the third stage of the SAP distribution system.

Table 8.1: Reported Quantities of Cereals Received by Intended Beneficiaries

Source	Location	Year of Recommended Distribution	Recommended Quantity per Individual	Reported Quantity per Individual	
Present Team Visit (1992)	Mourdiah (Koulikoro Region)	1991	27	3.5	
Present Team Visit (1992)	Dourou (Mopti Region)	1991	27	3.3	
Present Team Visit (1992)	(Mopti Region)	1991			
University of Berlin (1992)	Dogon Plateau (Mopti Region)	1991	27	•	In approximately 20 villages individuals received approximately 3 Kgs. In one village per capita receipts exceeded 20 Kgs.
CNAUR (1991a)	Korientié Arrond., Mopti	1990	21	20	
CNAUR (1991a)	Bandiagara *cercle*, Mopti	1990	21	•	recipients were reported to have been satisfied by the distributions and were able to start planting
CNAUR (1991a)	Douentza *cercle*, Mopti	1990	28 (2 Arrond) AND 21 (1 Arrond.)	•	10 Kgs. per capita in worst-off villages, and 5 Kgs. per capita in better-off villages.
CNAUR (1991b)	Niafunké Arrond., Timbuktu	1991	28	•	approx. 55% was distributed. This averages to 15.5 kgs.
				•	in some locations individuals received 3.5 Kgs. and in other locations 47 Kgs.
				•	in Banikane *arrondissement* transparency in administration led to successful distributions
				•	in Sareymou at least 18% of the total recommended failed to be distributed due to misappropriation. This represents a loss of approximately 5 Kgs. per capita

Note: CNAUR references are cited from Davies (1992).

The Reasons for Differences Between Normative and Actual Amounts Received

8.11 There are a number of reasons, some obvious and some less obvious, that have been advanced for the low levels of cereals possibly received by target households:

i) Misappropriation: Misappropriation is discussed first not because it is likely to represent a large source of leakage, but rather because it has become an extremely sensitive topic in the management of many income distribution systems worldwide. In particular, it is important to note that the real question vis-à-vis misappropriation is not whether it exists or not but rather whether it been reduced to a tolerable minimum. The present team found no evidence of any particular cases of misappropriation. Indeed, it was not directly the task of the team to search for such

cases. Furthermore, anecdotal and hearsay evidence suggests that while misappropriation may have been a problem in the past, levels have been significantly reduced as improvements in administrative controls have been implemented.

This said, it is worth pointing out that particular cases of misappropriation have been identified. The CNAUR report (1991b), cited by the Davies (1992) evaluation of the 1991 distributions in Niafunké, Timbuktu Region, indicated significant losses due both to local transportation payments and to malpractices. As Table 8.1 indicates, only 55% of the recommended tonnage was eventually distributed in Sareymou, CNAUR (1991b) reporting that the remaining 45% (27 tons) was misappropriated by the *chef d'arrondissement.*

ii) Payment of Transport Costs: It has already been shown for the case of Kayes that local transport costs can significantly reduce the value of the cereals. The CNAUR study (1991b), cited by the Davies (1992) evaluation of Niafunké and Diré distributions in Timbuktu Region during 1991, revealed that six of 40 tons was sold to pay for local transportation in one *arrondissement*. In another *arrondissement*, five out of 30 tons was sold. In the latter case, the per capita consequence was an immediate reduction of 4.5 Kgs. for a three-month distribution, or 16% of the total amount recommended.

iii) Dilution: Despite recent attempts by SAP to refine the identification of populations by geographical fine-tuning, i.e., specifying parts of *arrondissements* rather than entire *arrondissements* for distribution, local pressure to distribute equitably may result in failure to carry out the recommendations as SAP intends. Such pressure may be placed on government staff at the *arrondissement* level or on the local development committees. In the case of the present team's field work, it was found that on the Dogon plateau free food aid had been distributed to a considerably larger number of villages and households than had been recommended by SAP. The net effect was a dilution of benefits, inasmuch as the cereals delivered were distributed among a population six or seven times larger than that recommended.

A number of important points were raised that help explain the reason:

a) As taxpayers, many householders felt that they had the right to free food distribution whether or not they lived in the targeted region.

b) The incidence of poverty within the population of the *arrondissement* appears, *a priori*, to be high compared with national averages. It is, therefore, not surprising that households both inside and outside the target region perceive that their level of poverty is deserving of income transfers. In the face of such pressure and in the absence of agreement about which population groups are considered at special risk it is not surprising that distributions have been made to a wider population than was intended.

c) The public face of Dogon community redistribution mechanisms requires that households and individuals be seen to be treated equally, not equitably. If food aid distribution occurs within a Dogon community then all individuals, whatever their differences of wealth and income, should be seen to receive equal quantities of cereals. Thereafter, richer households are reported to redistribute to poorer households "in the middle of the night."[30]

iv) Expenditure on other local priorities: In some cases it has been reported that government officials have sold cereals in order to finance current or capital expenditure on other projects or programs, such as repairs to government buildings (CNAUR, 1991b).

v) Redistribution to populations in need other than those targeted by SAP: If those committees or officials do not agree with the targeting decisions made by SAP, or if the food situation changes after decision-making so that one population group experiences food shortages which are more pronounced than those of the originally identified groups, then food aid can be and has been redirected to meet locally-perceived food security priorities, for example, refugees.

vi) Local transport costs: As has been shown above, if local transport costs have to be financed from the sale of free cereals the net benefits to target households can be significantly reduced.

The Timing and Targeting of Actual Deliveries against Recommended Deliveries

8.12 Delays in the distribution of cereals, while not significant for the costs of a distribution program, do have important implications for the size of benefits that accrue to target populations. Late deliveries can lead to:

a) a reduction in the total value of the income transfer, inasmuch as late delivery tends to occur in the late crop season or in the post-harvest season when prices have begun to fall;

b) poor health and nutrition, resulting from low calorie intake, that reduces households' energy and work capacity during the crop season, contributing to greater food insecurity in the following year; and

c) the loss of the opportunity afforded by the provision of food aid immediately prior to the planting season to increase planted areas and, therefore, improve food security in the following year.

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[30] As stated by village elders in Dourou during the present team's field visit.

8.13 Table 7.3 above decomposes the delays in distribution to determine the principal sources of those delays. Column T indicates the average number of days between the date on which SAP recommendations were made and the actual delivery date, by region and by year. In almost all cases, at least four months separate the two dates, and in most cases, at least six or seven months elapse between the date of recommendation and the actual delivery date. However, Column V indicates that, for targeting purposes, the most important variable is the number of days by which the delivery was late against the delivery date recommended by the SAP. As Table 7.3 indicates, on average, deliveries have been made very much later than recommended: two, three and four months later. However, within regions, noticeable reductions in delivery times have been made. In Koulikoro, the distributions of 1991 were one month late as opposed to three and a half months late in 1988. In Mopti, for the same years, distributions were one week late as opposed to four and a half months late. In Timbuktu, no significant improvements have been sustained in reducing late deliveries.

8.14 Column V indicates that, in most cases, SAP provides a critical period of between two and four months from the date of recommendation to the start date for distributions. From the averages given in Table 7.3, there appears to have been little discernible increase in this time period. Although this suggests that SAP has not been able to improve its forecasting of critical variables for predicting consumption levels, the number of recommendations for early deliveries, i.e, in conditions where Crise Alimentaire has been declared, will similarly tend to reduce available response time. In no way does this reflect poor performance in forecasting.

8.15 Columns W to AA attempt to identify further sources of delay between the date of recommendation and the date of actual delivery. Columns Z and AA show that, on average, two-thirds of the delay is accounted for by the time taken in completing administration authorizations, the balance of the time being taken in making the actual deliveries. Column W shows that the minimum time between the date of SAP recommendations and the completion of final administrative authorization was 1.5 months and that, in some cases, authorization took up to four months. Because of the delays in decision-making for the distributions of 1992, no real reductions in decision time have been achieved in the period 1988-1992.

8.16 Column X shows that CNAUR and OPAM have achieved very significant time reductions in issuing transport contracts. In the northern regions, one or two weeks is all that is required on average to complete these contractual processes. In other regions the delay remains at 1 to 1.5 months.

8.17 Column Y indicates the average time between the settlement of transport contracts and the date at which actual deliveries are made. On average, most deliveries are made between one and two months after completion of contracts. However, it is not clear to what extent the delay in other elements of the distribution procedures compound the delay in deliveries. Delays in date of first recommendations and in the completion of the final administrative procedures may not allow delivery to be made before the onset of the rains or the flooding of

the Niger.

The Income Transfer Effect

8.18 In the absence of monitoring data on the effectiveness of the distribution system in transferring incomes to the household level, there remains the possibility of providing general estimates on the normative income transfer benefits to recipient households. The method used in the estimation of these income effects has already been outlined in Section 7. This subsection uses data collected by the present team to study the specific distributions made in Mourdiah (Koulikoro Region) and Dourou (Mopti Region) in 1991. Income transfer benefits are examined and then, in the absence of reliable data, the benefits for improved consumption, nutritional status, and asset holdings are discussed briefly at a more theoretical level.

8.19 Table 8.2 shows the costs and benefits of two real cases of food aid distribution in 1992 that have been validated by the team's field work. The table shows that while **normative** cost-benefit ratios[31] are reasonably favorable and are likely to perform well against other types of distribution systems, the **actual** cost benefit ratios[32] do not perform well, largely as a result of the small distributions that are actually received by the target population. In these cases, the costs of the distribution are 4.62 and 6.95 times greater than the benefits to the target population.

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[31] These refer to the value of the benefits that would have accrued to the beneficiary if they had received the recommended quantity.

[32] This ratio refers to the value of the cereals that were actually reported to have been received by the beneficiary.

Table 8.2: Costs and Benefits of Free Food Deliveries to Mourdiah & Dourou, 1991

Region	Koulikoro	Mopti
Arrondissement	Mourdiah	Dourou
Year	1991	1991
Tonnage	60	180
Ttl. Bamako Value	3960000	11880000
Ttl.Handling Costs	300000	900000
Ttl. Trans. Costs	1136400	18540000
Ttl. Cost to Destin. (not including: Storage, Admin., Depreciation etc.)	5396400	17460000
Cost/Kg. to Destin. (not including: Storage, Admin., Depreciation etc.)	89.94	103
Recm. Distbn./Indiv.	27	27
Normative Cost of Transfer	2428	2781
Price Millet/Kg. in 1st Month (as Recm. for Distbn.)	150	120
Normative Value to Target Beneficiary	4050	3240
Normative Cost/Benefit Ratio	0.60	0.86
Reported Kg.s Recd./Indiv.	3.5	3.3
Actual Value to Target Beneficiary	525	400
Actual Cost/Benefit Ratio	4.62	6.95

Consumption Effects

8.20 Cereals distributions of 3.5 and 3.3 kilograms of cereals in Mourdiah and Dourou are likely to have little effect upon levels of consumption or levels of nutrition, although, if most of the grain were used as seed[33], there may well have been an important investment effect. Despite these poor outcomes, a discussion of an approach to understanding how food transfers may affect levels of consumption, nutritional status, and asset accumulation may be useful for understanding the effects of larger food transfers.

[33] As one respondent in Mourdiah suggested.

8.21 Calorie consumption is of particular importance for ensuring levels of health and energy and for avoiding hunger. A mounting body of empirical studies has shown that changes in the levels of income, such as those induced by an income transfer, have important implications for changes in calorie consumption. Calorie-income elasticities are used to indicate the effect of a change in income on a change in calories consumed. Thus, a calorie-income elasticity of 0.5 indicates that a 10% increase in income would result in a 5% increase in calories consumed. While studies conducted in the late 1980s indicated unexpectedly low calorie-income elasticities for low-income consumers, on the order of 0.15 and 0.2, recent evidence from Ethiopia (Webb, 1992) shows very much higher elasticities when food insecurity is acute. This suggests that at the very low incomes associated with acute food insecurity, small increases in income result in large increases in calories consumed. For example, Webb (op.cit.) reports calorie-income elasticities of the order of 0.7 to 0.9 for Ethiopian households during the famine years of the mid-1980s.

8.22 For Mali, if the same behavior holds, this suggests that marginal income transfers that are distributed when household food availability is at low levels can promote important increases in calorie consumption levels. Thus, if a given income transfer[34] increased household/individual incomes by 20%, an increase in calorie consumption levels of 14%-18% might be expected. Summary statistics of this nature may well provide a practical way of determining the size of income transfer bundles necessary to raise a target population to a predetermined food poverty line.

Effects on Child Nutrition Status

8.23 No nutritional status data are collected that might demonstrate a nutritional impact from the foods distributed. As noted earlier, SAP nutrition surveys are diagnostic tools and do not follow up on populations to whom food has been delivered. Similarly, the PVOs do not measure the effects of food distributions on populations. The cereals distributions observed during the team's field work in Mourdiah and Dourou suggest that the amounts actually received by at least some households may be too small and for too short intervals to **improve** nutritional status. However, the recommended ration sizes, with the potential calorie-income elasticities noted above in situations of acute food insecurity, could have effects on nutritional status and malnutrition-related mortality. Since malnutrition rates are highest during or just after the *soudure*, food distributions provided in these months constitute the most effective use of food assistance in raising household consumption levels in terms of extra energy for greater adult productivity and to maintain or stop deterioration in the nutritional status of infants and children and at-risk women. However, the small amount of information available with respect to intrahousehold division of food show that the

[34] Available research does not yet indicate whether an income transfer made in cereals has a different effect on the size of calorie income elasticities than does an income transfer made in cash.

youngest children are unlikely to be favored. Dettwyler's anthropological findings that children are expected to determine their food requirements suggest that the youngest may not be assured of an equitable share of the free food. The delays in deliveries cited earlier will, of course, adversely affect prospects of nutritional impact. While inadequacies in current field monitoring do not permit identifying likely possibilities for demonstrating nutritional impact, special surveys are very costly. Without a good likelihood that the food distribution process delivers sufficient quantities of food to needy households to make a nutritional impact possible, it would be wasteful to undertake these costly baseline studies and follow-up field surveys.

8.24 It is likely that, given the amount of ration, the frequency and intensity of delivery, the special characteristics of the soudure season, and intrafamilial behavior, even the undiluted, programmed level of food distributions might maintain, but not improve, child nutritional status. Food distributions were first recommended at seven kilos per person per month and later increased to nine kilos per month. The value of these rations in calories is 824 and 1059 respectively, and rations of this size would meet 37 and 49 percent of WHO-recommended daily calorie requirements. The ration level assumes that additional calories are available in the home for a maintenance diet. These amounts were given for one month, two months, three months or, unusually, for four to six months. Children under five years old are normally measured in nutrition surveys because they are the most vulnerable in a population and are assumed to suffer most when food is in short supply. It is possible, but not certain, that the nutritional status of these children would be maintained, i.e. would not drop below its normal level, over the difficult soudure months. However, it is unlikely that child nutritional status would be improved, given what is known about household food dynamics in Mali, i.e. the ration would not be sufficient to counter household and individual problems affecting child nutritional status. These problems include, for the family, past year mortgaging against household food stocks and lingering debts and the competing forces for mother or caretaker time. In addition, the literature suggests that small children must fend for themselves in obtaining food available to the family and are particularly affected by diarrhea and malaria which are highly prevalent during the soudure. Working adults, less vulnerable to disease, have a better chance of deriving nutritional benefits from the rations provided during the soudure, and these nutritional benefits could have an impact on productivity. However, women, chronically overworked and frequently pregnant or nursing, has less of a chance than other adults.

8.25 Food availability and/or consumption do not automatically reflect nutritional status. Findings of the nutrition studies that have been carried out in Mali are consistent with respect to the lack of positive correlation between food secure households and adequate nutritional status of preschool age children. Nutrition surveys, such as that in the CMDT zone (ENMPM 1984-5), a surplus cereal production zone, showed a rate of over 20% of acute malnutrition (80% or below weight-for-height NCHS reference), a rate normally considered of famine significance. Sundberg's recent study attempted to correlate possession of agricultural equipment with nutritional status. While there was a positive correlation between agricultural equipment and higher grain production, there was not a positive relationship with

nutritional status. These and other anomalous examples of negative correlation between poor food supply and relatively good nutrition status, e.g., SAP surveys, seem to confirm that other factors, not within the purview of SAP or CNAUR, intervene to affect the nutritional status of children. The literature suggests that morbidity from malaria, diarrheal disease and other childhood illnesses, and especially improper infant feeding practices, are prominent factors related to nutritional status.

8.26 Poverty and resulting low consumption is, of course, a contributing factor to poor health and productivity. Adams (1992) suggests that repeated seasons of poor consumption at a time of intensive physical effort are likely to be responsible for the high prevalence of depleted energy in older women and that the longer-range effects of inadequate consumption of preschool children are not really known. During the 1988 and 1989 *soudures* in villages of Region II, Adams recorded the drawdown of weight for both children and adults during the stresses of the rainy, *soudure* season, with subsequent weight for height catch up in the less demanding periods of greater availability. Stunting rates, however, do not catch up in the same population, but can catch up in succeeding cohorts of children.

Income Transfers and their Effects on Asset Holdings

8.27 Very little research has been conducted on asset accumulation and depletion[35] in low-income African households. Even less is known about the impact of income transfers on patterns of accumulation and depletion. One hypothesis suggests that, when income transfers are unexpected and when households have already well-defined expectations of food availability and consumption for a particular season, the marginal rate of investment tends to be higher than at other times.

8.28 Some anecdotal evidence for Mali suggests that households in receipt of cereals grains prior to the planting season use a large proportion of those cereals for investment in a future crop. Again, more research is required before a better understanding of the effect of income transfers on asset holdings can be acquired.

[35] Examples of asset accumulation might include debt repayment, postponement of asset sales, and conversion of food stocks to seed rather than to consumption.

PART III

OPTIONS AND RECOMMENDATIONS

9. Summary Diagnosis and Recommendations

9.1 Three elements are necessary to make Mali's emergency food information and distribution system effective: the information system; the programmed response; and the targeted distribution. Two of the three elements have undergone considerable improvement since 1988. The **information system**, on which distribution decisions are based, has become an impressive, well-organized and efficient activity that is now widely respected throughout West and Sub-Saharan Africa. The system has demonstrated very considerable ability in data collection, data processing, and publication. Above all, it has become increasingly capable, through greater credibility and authority, of promoting consensus in the analysis of acute food problems among decision-makers and implementers at national and regional levels. This information system capability helps to assure that its analytical recommendations subsequently are followed through programmatically.

9.2 The second element of the system, the **programmed response**, which links the information systems to decisions to distribute, has similarly become increasingly effective. The response recommended by the SAP information system has in the last two years been fully endorsed by both government and donor administrators. The allocation of the food distributions and the quantities to be delivered now almost exactly match those recommended by the SAP information system. However, there remains a serious flaw in this stage of the process which requires urgent attention, and that is the delay in actual food delivery. Security problems have interfered with desired delivery schedules, especially in Mopti and Timbuktu Regions. Beyond this, however, the time required for administrative decision-taking for the release of cereals stocks constitutes the single largest cause of delay.

9.3 It is in the final stage of the system--**the distribution** of cereals at the periphery level to the household from a location in the target zone, *arrondissement* or *cercle*, that much of the potentially beneficial effects on consumption are lost. Target households frequently receive only a small, and ultimately ineffective, transfer of cereals.

9.4 From this summary diagnosis, two different sets of points or recommendations, are made:

a) those concerning the context and choice of income transfer mechanism, and

b) those concerning opportunities for improving the cost-effectiveness of the existing system of information and distribution.

Free Food Distribution: Issues and Options for Alternative Approaches to Income Transfers

9.5 The effective structure of Mali's present-day information and free cereals distribution program is, to a large extent, determined by its historical antecedents. In the 1970s, deficit

production was closely related to poverty and famine in the minds of donors and administrators. The instrument used to address these problems was free food distribution. To keep down the administrative costs of these distributions, free food could only be distributed on the basis of equality rather than equity. Thus, the unavailability of food is conceived as the cause of food insecurity, and all members of the population within a region are perceived as equally affected beneficiaries. The inadequacy of entitlements (ownership or exchange entitlements) are not perceived to be the cause of acute food insecurity.

9.6 Subsequent approaches in the 1980s and 1990s[36] to the analysis of food poverty and to the development of policy and programs in response to it have continued to bear the hallmark of the 1970s. Indeed, it may well be that the chain of causality has been reversed, inasmuch as the constraints and inflexibility of free food aid as a programmatic instrument have imposed themselves on the scope and range of the food poverty analysis that is performed. Food poverty continues to be analyzed on a regional basis, and household differences are largely subsumed by a regional analysis or at best, as is the case for SADS, a production systems analysis.

9.7 While the system of information and distribution has improved remarkably over the past five years, future improvements in the cost-effectiveness of the system are always likely to confront two constraints. These constraints are the product of two implicit assumptions, namely:

i) that food availability is the problem, and

ii) that food poverty is undifferentiated.

In consequence, the program is required, first, to distribute food, and second, to distribute food to all members of the population, whether above or below a target food poverty line.

9.8 While it is accepted that, in some cases, food availability plus food entitlement failures are the causes of acute food insecurity, this is not true for all cases for which SAP-recommended distributions have taken place. The consequences for the costs of the program are clearly visible in the tables of Section 7. Indeed, the costs of a free food distribution program are always likely to be difficult to maintain at a consistently low level, especially in the context of a national program of cereals market liberalization, if the benefits to target populations are measured in terms of their local market value (see Sections 7 and 8). This implies that any system of free food distribution, if it is to keep costs low in relation to benefits, must supply cereals at lower cost than their local market value. As local markets become more and more efficient, the opportunities for parastatal trading to achieve costs below those of the market become increasingly difficult. When these costs, which are not borne by local traders but by a free food distribution system, are taken into account, the task

[36] See, in particular, Sen, A., Poverty and Famines, Oxford: Clarendon Press, 1981.

effectively becomes impossible. Normative cost-benefit ratios for distributions consistently fall below unity only when purchase price in one year is very significantly lower than in the following year of distribution. Of course, a free food distribution system might be worthwhile even when the costs of food distribution equalled or surpassed the local market price, if the system addressed a food deficit in the targeted zone and fed those who were hungry. Nevertheless, the question persists as the potential for providing benefits with program alternatives that do not entail food distributions.

9.9 The second constraint to reducing long-term costs of distribution is the current practice of distributing to all members of the population within a particular geographical region. If 60% of the population are effectively below the target food poverty line at the recommended time of distribution, this then implies that 40% of the population received food distributions when the decision rule indicates that it should not have. Because of a large fixed-cost component to the distribution system, this does not automatically result in a 40% increase in program costs. Nevertheless, when large numbers of individuals above a food poverty line receive food, this does imply significant increases in program costs. However, the opportunity costs of greater efficiency must be taken into consideration.

9.10 This study does not discuss in detail other alternative methods of intervention that would improve the cost-effectiveness of the program. However, the team held detailed discussions during field trips on the particular alternatives of expanded public works programs and of food stamp programs, and follow-up studies and trials are recommended for these types of alternative interventions.

Improving the Existing System of Information and Distribution

9.11 Continuing the analysis of the cost issues raised above, this subsection attempts to explore the ways in which small increases in costs might help to raise significantly the consumption effects of free cereals distribution.

9.12 Although most of the Mali information and distribution system works well, the poor performance of targeted distribution within the target zone, *arrondissement*, or *cercle* considerably undermines the overall effectiveness of the system. Three changes in this part of the system may considerably improve its effectiveness:

i) **A distribution monitoring system should be implemented, at a reasonable cost.** A monitoring system that would not only monitor the size of the actual distributions received by the intended beneficiaries, but also its effects in terms of consumption, nutritional status, sowing decisions, and asset holdings would shift the current emphasis away from process and toward effect or impact. Publication of the results of monitoring would also create a significant deterrent to misappropriation and malpractice;

ii) **The SAP should, at its current levels of funding, continue to expand its efforts to build consensus at the peripheral levels of the distribution system.** Extending consensus to the periphery of the distribution system, will not only help to reinforce commitment to distribution according to the recommendations made by the SAP, but may also help the SAP to adjust its recommendations to take account of the real difficulties experienced in distributing grains. These include inadequate consensus and agreement within a target area on who should be targeted with what quantities of grains and changing levels of poverty within households or population segments within a region that prompt local decision-makers to adjust SAP's distribution priorities;

iii) **The transparency of food distributions should be increased, especially in target areas.** Entitlements to free cereals should be made known to beneficiaries as early as possible after decisions have been taken.

9.13 These significant adjustments in the final part of the distribution system should be accompanied by improvements in the information system, including:

i) use of the SAP research unit to conduct small-scale household and community surveys aimed specifically at understanding the differences in poverty levels within communities;

ii) finetuning of the process of identifying food insecure households within regions and within arrondissement groupings, not only for the short-term but also for the medium- and long-term; and

iii) development and use of statistical models to calibrate the monitoring data already being collected in order to improve forecasting and targeting.

9.14 Attempts to improve efficiency in the first stage of the distribution and response system should center principally on reducing the time taken to endorse SAP recommendations. As the delay in decision-making occurs **after** endorsement by the PRMC and COC, one method of relieving the bottleneck would be to introduce a system whereby COC-endorsed recommendations could act upon a "standing order" with respect to food distribution. For example, if, within one month of approval by COC and PRMC, the MEATS and Ministry of Finance had not overruled the recommendations, then CNAUR and OPAM would be authorized to go ahead with the recommended distributions.

APPENDIX I: FIELD WORK

The study team, comprised of Joyce King, team leader/nutrition expert, and Simon Hunt, economist/famine warning system expert, spent six weeks in Mali from September 1-October 11, 1992. Following discussions with the USAID Mission Agricultural Office which had requested the study, the original scope of work was revised to reflect field realities with respect to extremely poor security in the northern Regions of Gao and Timbuktu and parts of Mopti and Segou, where the major part of the food distributions were delivered, rainy season problems affecting field travels especially in the Kayes and Mopti Regions, time constraints in the face of long distances and, above all, lack of monitoring data on foods received by beneficiaries and on nutritional status.

The team spent 2.5 weeks in the field, visiting parts of three of the seven Regions: the town of Timbuktu, two *cercles* of Mopti Region, and three *cercles* in Koulikoro Region. Because travel was hampered mainly by poor **pistes** and difficult access to villages, the team saw only two Chefs de Villages and four groups of villagers or camps with an average of 15 to 20 villagers present in each case. Of these, few were women. The selection of sites for visits and interviews was purposive and hence based upon a case studies approach.

The revised scope of work indicated that the team would attempt to answer three central questions:

1) Were the populations correctly identified for food distributions?

2) Did the intended beneficiaries receive the food? At what cost? With what effect? and

3) Are there better ways of attaining the results achieved with food distributions?

The team was assisted by several members of USAID and during most of their field work, were accompanied by Malian staff from CNAUR and SAP and by a USAID FEWS staff member. CARE was an able and unofficial guide in Timbuktu. The team observed beneficiary selection and cereals distribution in Timbuktu, interviewed government officials and non-governmental organizational staff in Bamako and in the areas visited, and reviewed the most relevant documents, studies and field trip reports.

The major questions raised with respondents were: What foods had been received? When were they received? How were they divided? How much did each person get (or when memory failed, how long did the food last for most households? Other questions centered on coping mechanisms in the face of food scarcity (e.g. wild foods consumed, rationing, sale of assets, inter-village and intra-village cereal loans), concern for children, access to health facilities, and household size. Discussions were divided into four major sections: 1) foods received through the Government's program; 2) the execution of SAP's targeting in the field;

3) other assistance from NGOS or religious missions and the type of projects; and 4) preferred options for future assistance in case of food scarcity, mainly food or cash for work alternatives.

Appendix IV shows the original and revised Scopes of Work. Appendix II is an outline of the framework questionnaires employed during the field visits. Appendix III provides a list of the persons consulted during the mission, and Appendix XVIII lists the principal documents reviewed.

APPENDIX II: THE STRUCTURE OF QUESTIONS GUIDING FIELD INTERVIEWS

Chef d'Arrondissement or Cercle or Village

Food Security Situation in Area

- Over time?
  - Which years?
  - Are these same as year/months in which distribution took place?
- Adaptation mechanisms?
- Coping Mechanisms?
- Differentiation between and within communities?

Past Distributions

- When were they received?
- How much was received?
- How were they distributed?
- Who were the beneficiaries?
  - Were these different from those recommended by SAP?
  - Why?
- When did the beneficiaries receive cereals?
- How much did the beneficiaries receive?
- Have there been other distributions from other sources:
  - when,
  - how much, and
  - to whom?
- How much time/administration of SAP distribution?

Solutions

- Pair wise or matrix ranking exercise?

	Effectiveness in Reaching Beneficiaries	Cost Effectiveness or Efficiency	Ease of Administration	Ease of Implementation	Special Comments
Solution 1					

	Effectiveness in Reaching Beneficiaries	Cost Effectiveness or Efficiency	Ease of Administration	Ease of Implementation	Special Comments
Solution 2					
Solution 3					
Solution 4					
Solution 5					

Solutions in detail?

Income Transfers

- Public Works
  - Identification
  - Implementation
  - Administration
  - Effectiveness
  - Efficiency
- Food Stamps
  - Food Availability
  - Food Price Instability
  - Local Market Infrastructure
  - Price Inflation
  - Identification
  - Administration
- Food Subsidization
- Asset Support
- Targeted Grants/Cash Transfers
- Nutrition Programs MCH
- Timing and Targeting

Primary Incomes

- Farm
  - Cropping

- Livestock
- Fisheries
- Non-Farm
  - Informal Sector
  - Migration

Social and Physical Infrastructure

- Health Services
  - Type?
  - Availability?
  - Affordability?
- Education
  - Type?
  - Availability?
  - Affordability?
- Water and Fuel
  - Type?
  - Availability?
  - Affordability?
- Roads and Communications
  - Type?
  - Availability?
  - Affordability?

<u>Local Trader: Large and Small Scale</u>

Trading Activities

- What commodities?
  - food and cereals
  - non-food
- What services?
  - transport
  - credit
- What other value added?
  - processing
  - manufacturing

Size of Enterprise

- Labor
  - How many employees?
  - What characteristics?

- Capital
  - Buildings (Stores, Outlets etc.)
  - Equipment: Transport
  - Equipment: Tools and Machinery

- Credit/Debt
  - Size
  - Source

Flexibility

- Life of Enterprise
- Trading Volumes
  - By Year
  - By Season
- Trading Location
- Source of Market Information

Market Structure and Performance

- Size of Cereals Market
  - No. of Enterprises by Type and Size
  - Traded volumes by year and season

- Trend and Seasonality in Demand
  - By Product
  - By Region
  - By Consumer Type
  - (Credit, Investment, Savings, Consumption, Sales)

- Trend and Seasonality in Supply
  - By Product
  - By Region
  - Wholesaling by Farmers
  - direct Retailing by Farmers

The Role of Food Aid

- Disincentives
  - Market Overhang
  - Impact on Structure and Performance
  - Impact on Demand

Poor Householder or Rich Householder (Previously Identified using a Wealth Ranking Exercise)

Food Security Situation in Area

- Over time?
  - Which years?
  - Are these same as year/months in which distribution took place?
- Adaptation mechanisms?
- Coping Mechanisms?
- Differentiation between and within communities?
- Differentiation between and within households?

By season and year

- How is food distributed in household?
- How is work allocated in household?
- Health and nutrition of household?

Past Distributions

- When were they received?
- How much was received?
- How were they distributed?
- Who were the beneficiaries?
  - Were these different from those recommended by SAP?
  - Why?
- When did the beneficiaries receive cereals?
- How much did the beneficiaries receive?
- Have there been other distributions from other sources:
  - when,
  - how much,
  - and to whom?
- How much time/administration of SAP distribution?

- How is food distributed in household?
- How is work allocated in household?
- Health and nutrition of household?

Solutions

- Pair wise or matrix ranking exercise?

	Effectiveness in Reaching Beneficiaries	Cost Effectiveness or Efficiency	Ease of Administration	Ease of Implementation	Special Comments
Solution 1					
Solution 2					
Solution 3					
Solution 4					
Solution 5					

Solutions in detail?

Income Transfers

- Public Works
  - Identification
  - Implementation
  - Administration
  - Effectiveness
  - Efficiency
- Food Stamps
  - Food Availability
  - Food Price Instability
  - Local Market Infrastructure
  - Price Inflation
  - Identification
  - Administration
- Food Subsidization
- Asset Support

- Targeted Grants/Cash Transfers
- Nutrition Programs MCH
- Timing and Targeting

Primary Incomes

- Farm
  - Cropping
  - Livestock
  - Fisheries
- Non-Farm
  - Informal Sector
  - Migration

Social and Physical Infrastructure

- Health Services
  - Type?
  - Availability?
  - Affordability?
- Education
  - Type?
  - Availability?
  - Affordability?
- Water and Fuel
  - Type?
  - Availability?
  - Affordability?
- Roads and Communications
  - Type?
  - Availability?
  - Affordability?

APPENDIX III: PERSONS CONSULTED DURING MISSION

IMPACT/ISTI

Anne Swindale, Food and Nutrition Specialist
Frederique Lambrakis, Program Coordinator

AID/Washington

Robert Kidd, Food for Peace Officer, Africa Region
Eunyong Chung, Office of Nutrition

American Academy for Development

Claudia Fishman

Government of the République du Mali (GRM)

M. Dembele, *Ministère d'Etat Chargé de l'Administration Territoriale et de la Sécurité*
M. Zana Ousmane Dao, Director, *Céllule d'Appui au Développement à la Base* (CADB), MAT
M. Dian Sangare, *Chef de Section,* CNAUR
M. Bekaye Haidara, *Chef de Section* PVO
M. Mary Diallo, *Conseiller Technique, Diapositif Opérationnel Système d'Alérte Précoce* (SAP), CNAUR, MAT
Dr. Bah Alti Tamboura, *Superviseur des Enqûetes*, (SAP), CNAUR, MAT
M. Dasse Mariko, *Coordinateur*, SAP
M. Marc Vereecke, *Directeur, Céllule d'Etudes et de Recherche*, SAP.
M. Zoumana Bamba, *Institut du Sahel*
M. Djibril Semega, *Director of Nutrition Section/Planification Familiale, Ministère de la Santé*

American Embassy/Bamako

Peggy Blackford, Deputy Chief of Mission
Mary Curtin, Political Officer

USAID/Bamako

Dennis Brennan, Director
John Breslar, Program Officer
Larry Harms, Agricultural Development Officer
Moussa Simaga, Drought Officer, (Project Officer)

Amadou Camara, Assistant, Drought Office, Economist
Paul Bartel, Famine Early Warning System (FEWS)
Charles May, Food Policy Advisor
Salif Sow, FEWS Assistant
Robin Poulton, PVO Project Officer
Neil Woodruff, Health Officer
Dorothy Stephens, TAACS Adviser
Carol Hart, Project Officer
Fanta Macalou, Child Survival Program Specialist

Institute of Development Studies, Sussex, UK

S. Davies, Economist

CARE/Bamako

Peter Buijs, Deputy Director
Joseph Wollmering, Timbuktu Coordinator of Emergencies

UNICEF/Bamako

Elly Barclay, Nutrition Adviser
Anne Marie Carter, Assistant Nutrition Office

Save the Children/USA

Peter Laugharn, Deputy Director
Modibo Maiga, *Coordinator of Groupe Pivot Survie de l'Enfant*, Nutrition Expert

World Vision

Torrey Olsen, Technical Adviser

World Food Program

Evelyne Togbe-Olory, *Administrateur de Programmes Secrétaire Permanent*, PRMC

REGION II, DE KOULIKORO

M. *Le Gouverneur de la Région de Koulikoro* Bila Sina Guindo
Mme Gory Rokia Keita, Chef, *Division Economique*
M. Konate, Directeur Régional Plan, Stat, Inf.

Cercle de Banamba

M. Benke Simpara, *Chef de Village* of Banamba
M. Djebil Simpara, son, spokesman

Cercle de Kolokani

M. Hamadou Barry, *Administrateur Civil et 2eme Adjoint*

Cercle de Nara

Arrondissement de Mourdiah

M. Birama Diarra, *Président du Conseil d'Arrondissement*
Mme Samogo Djereba Traore, *Secrétaire de l'Arrondissement*
M. Fatie Diarra, *Infirmier d'Etat Santé*
M. Douty Diarra, *Receveur, Office National des Postes*
M. Moussa Coulibaly, *Coordinateur, Groupement Recherche Action de Développement* (GRAD)
M. Cheick Oumar Diabate, *Eaux et Forêts*
M. Talibi Diarri, *Association des Parents et d'Elèves*
M. Seydou Kante, *Direction Régional de l'Action Cooperative* (DRACOOP)
M. Idrissa Keita, *Elevage*
M. Lassana Keita, *Agriculture*
M. Soumaila Bagayoko, *Dep. Gendarmerie*
M. Massamou Niare, *SN Protection Vegetaux*

REGION DE TIMBUKTU

M. *Le Gouverneur de la Région de Timbuktu*

Cercle de Timbuktu

M. Mustafa Thera, *2eme Adjoint, Region, Représentant du Cercle de Timbuktu et Chef de l'Arrondissement Central*
M. Trekoro Sangare, *Chef d'Arrondissement de Bourem-Inaly M. Boureima Diallo, Chef d'Arrondissement de Ber*
M. Nampry Bayayogo, *Chef d'Arrondissement d'Aglal*
M. Faring Bah, *Chef d'Arrondissement de Tineguel-Hadj*

CARE/Timbuktu

Joseph Wollmering, Coordinator
Mohamed Albouhary, Interviewer/Field Food Distributor
Aguida Mahatmadane, Interviewer/Field Food Distributor
M. Attaher, Interviewer/Food Distributor

Beneficiaries of food aid, nomads in Tintelout

International Red Cross/Timbuktu

Henry Dominique, *Délègue Comité International de la Croix Rouge*

UNICEF/Timbuktu

Jean Coursinault, Project Director of Food Security
Dramane Abby, Director of Nutrition Survey, 4 villages

Ile de Paix/Timbuktu

M. Coppens, Adviser PIV (Paddy Rice Project)

ACORD/Timbuktu

M. Mohamed Ag Attaha

REGION V, DE MOPTI

M. Le Gouverneur Lt. Col. Djingarey Toure
M. Mamadou Ioca Tapo, *Conseiller aux Affaires Administratives du Gouverneur de Région*

Cercle de Bandiagara

M. Moriba Sinayoko, *Commandant de Cercle*
M. Moussa Sangara, *Chef d'Arrondissement Central Bandiagara, 2eme Adjoint to Commandant de Cercle*
M. Assana Diawara, *Chef d'Arrondissement de Dourou*
Village of Dourou

M. Ahmadou Sagara, Chef du Village
M. Adou Sagara
M. Bokar Kamega
M. Daouda Sagara
M. Hamidou Sagara

Cercle de Koro

Arrondissement de Koporokendie-Na

M. Boikary Traore, *Chef d'Arrondissement*
M. Ousmane Bagayogo, *Premier Adjoint et Commandant du Cercle de Koro*
M. Le Chef d'Arrondissement de Koro
M. Gouanssama Diarra, *Chef d'Arrondissement de Diankabou*
M. Aboubacar Maiga, *Chef d'Arrondissement de Diangourou*
M. Alidina Ba, *Chef d'Arrondisssement de Dioungani*
M. Alamine Traore, *Chef d'Arrondissement de Toroli*

APPENDIX IV: ORIGINAL AND REVISED SCOPE OF WORK

SCOPE OF WORK FOR ASSESSMENT OF IMPACT OF MALI'S EMERGENCY FOOD INFORMATION AND DISTRIBUTION SYSTEM

PURPOSE

To assess the impact of Mali's emergency food information and distribution system on the nutritional and economic well-being of rural people in drought-prone areas.

A. On the basis of review of documents, interviews with donor, GRM and NGO officials; and discussions with local authorities and rural people, and other possible sources of data and information, the contractor will assess the following items: (The assessment will cover the food distributions which took place in the years 1990, 1991, and 1992.)

1. The location and identity of the beneficiaries of actual PRMC-funded distributions relative to:

   a. location and identity recommended by the SAP;
   b. location and identity recommended by the COC; and
   c. location and identity of those in greatest need.

2. The timing of actual PRMC-funded distributions to beneficiaries relative to:

   a. timing recommended by the SAP;
   b. timing recommended by the COC; and
   c. timing at which food was needed for alleviating nutritional problems.

3. The quantities of actual PRMC-funded distributions by village and household relative to:

   a. quantities recommended by the SAP;
   b. quantities recommended by the COC; and
   c. actual quantities needed by individual households and villages to alleviate nutritional problems.

This assessment should be made on the basis of disaggregated information based on household and village information rather than overall average quantities based on aggregated data.

4. The quantities and timing of NGO or AID bilateral food distributions carried out by the GRM relative to quantities and timing needed to alleviate nutritional problems.

5. Factors which account for quantities or timing of food distributions being at variance with:

a. SAP recommendations,
b. COC recommendations, and
c. actual timing or quantities needed.

6. The proportion, numbers and locations of households which have been consistently designated for every one of the past years as needing emergency food distributions; the extent to which such households and locales suffer from emergency food problems as opposed to chronic ones.

7. The overall numbers of people whose nutritional status has substantially and positively benefitted from the food distributions).

8. The overall numbers of people whose economic status has positively benefitted from the food distributions (e.g., those whose nutritional status would have been adequate even in the absence of the food distributions, but who would likely have been obligated to sell farm equipment, disinvest, or remove themselves from food or income-earning opportunities in the absence of the food distributions.

9. The cost-per-beneficiary of the emergency food information and distribution system, specifically counting only:

a. Those people whose nutritional status is likely to have been substantially and positively affected by the food distributions.

b. Those people whose economic and/or nutritional status is likely to have been substantially and positively affected by the food distributions.

10. Options for further consideration by the GRM donors and NGOs regarding sustainable and effective response to chronic and emergency nutritional needs in rural areas within the overall budget allocated to date to food information and distribution, to include but not necessarily be limited to, the following:

a. adjustments in the current system to render it more effective;

b. decentralizing GRM food stock management and distribution decisions to local or régional authorities;

c. substantially increasing NGO involvement in needs assessment and food distribution;

d. combining the current system with a self-selecting food for work system;

e. combining the current system with a self-selecting cash for work system; and

f. concentrating on targeting interventions specifically on women and young children in chronic food deficit areas and emergency food need areas.

B. The contractor will use and/or gather the best information available to make the assessment detailed in item A above. This will include substantial secondary information coming from CNAUR and SAP food monitoring reports, NGO anthropometric surveys, trip reports by AID and other PRMC donors, and a range of other sources. Extensive reliance on NGO and SAP nutrition surveys where they exist in areas recommended for distribution or non-distribution may provide one importance source of information.

C. The contractor will make careful sampling decisions, discussed with AID staff and justified in the report, regarding:

a. The use of secondary sources of information by location;

b. The use of secondary sources as opposed to direct primary data collection;

c. The methods of primary data collection (e.g., anthropometric measurement vs. recall interviews versus indirect questions) used to assess asset disinvestment decisions or animal sales and migration decisions; and

d. The specific locales and populations in which to concentrate efforts.

D. The contractor's assessment will be an overall assessment of the impact of the current emergency food information and distribution system, not an assessment of a limited part or location of the system. The sampling mentioned in item C serves to gain an assessment of the overall system in its disaggregated impacts, rather than to choose one small part of the system or isolated locality on which to concentrate.

E. The contractor will pay particular attention to direct or indirect evidence regarding the impact of the current system on the nutritional status of women, young children, and infants. The contractor will assess the extent to which women and men have equal access to food distribution.

F. The contractor will coordinate efforts with a German assessment team doing a more in-depth, but geographically limited, study of food distribution in the Douentza area. The contractor will not do in-the-field assessments in the Douentza or Youvarou areas because in-depth data collection is already planned or ongoing there, but will become informed of and rely on the results of these efforts.

G. The contractor will participate in several national, GRM, or other meetings to discuss and assess the current emergency food information and distribution system.

H. One week prior to departure from Mali, the contractor will provide USAID with 10 copies in English and 25 copies in French of the draft final report. Subsequent to presentation of the draft report, the contractor will participate in a series of meetings with SAP, COC, and NGOs whose purpose is to generate further comment and input from these meetings into the final report. The contractor will send 15 copies in English and 30 copies in French of the final report to USAID/Mali within four weeks of departure from Mali.

Qualifications:

The contractor will provide two consultants, a nutritionist or nutritional expert and a consumption economist, to work for twelve person weeks on the assessment. Each must possess the following qualifications:

A. advanced degree in area of specialization;

B. substantial experience in nutritional monitoring and/or food and nutrition program management or assessment; and

C. fluent reading and speaking knowledge of French (3+/3+) in order to operate effectively almost entirely in French.

In addition one or the other of the consultants must possess the following qualifications:

A. in-depth primary data collection experience in rural Africa using Rapid Rural Appraisal techniques; and

B. broad knowledge (if not direct experience) in a range of food and nutrition intervention programs ranging from South Asian or Botswana employment guarantee and food for work programs, mother and child feeding programs, emergency food distribution programs, and food for work programs.

Revision of Scope of Work based on meeting with USAID Bamako:

1. The IMPACT evaluation team members Joyce King and Simon Hunt met on September 8, 1992 with the USAID/Mali Project Officers Moussa Simaga and Larry Harms as well as other USAID staff immediately involved with the work the team is to perform, including Paul Bartel and Salif Sow of FEWS and Amadou Camara who assists Moussa Simaga on Drought Emergency and is a member of the PRMC. The major purpose was to discuss the Scope of Work, the realities of field work in light of security and rainy season constraints, and the administrative requirements of the team.

2. National sampling envisaged in the SOW would not be feasible given security (Northern zones) and accessibility (Kayes) constraints. It was agreed that some portions of the SOW

were "probably never possible to carry out," (Larry Harms) namely the link of nutrition status and food distributions within a sampling frame, as envisaged under the second paragraph of paragraph 3. and with the guidance provided under Section C, items a-f. Paragraph 7 above was to be considered deleted--i.e., determination of "the overall numbers of people whose nutritional status has substantially and positively benefitted from the food distributions," since related follow-up studies do not exist, Paragraph 8 concerned with numbers of people economically affected by the distributions was also to be considered deleted since no related follow-up studies exist, except for some educated guessing. Likewise, Paragraphs 9a. and 9b. of the cost study cannot be ascertained by any rigorous scientific means but may be given an estimate.

The team cannot travel throughout the regions where most of the food distributions were made and where most of the nutritional surveys (though not directly related to the food distributions) were carried out. Preliminary study of distributed amounts further confirm unlikelihood of nutritional status impact; however, ascertaining other impacts is important. USAID and the team agreed that optimal efforts would be made to carry out the basic intent of the SOW as practical and feasible, namely to answer the questions: Were the populations correctly identified for food distribution? Did the intended populations receive the food? At what cost? and With what effect? and Are there better ways of attaining the results achieved with food distributions.

In subsequent conversations, it was also confirmed that the German assessment team work mentioned under Section C.g. would not be analyzed and presented during the evaluation team's presence in Mali.Moussa Simaga also indicated that foremost attention should be paid to the SAP distributions and criteria, with less concern with PVO food deliveries, which have essentially been included in the SAP recommendations.

APPENDIX V: THE DETERMINANTS OF NUTRITION AND HEALTH STATUS[1]

5.1 Considerable implicit importance has been attached to the nutritional benefits of the free food distribution program and it is likely that these benefits have been overstated. Because nutrition status and health status are closely related and because young children and mothers are most frequently vulnerable to rapid deterioration in their health and nutrition status, the conceptual framework outlined here focuses upon the determinants of maternal and child nutrition and health.

5.2 Figure a.1 illustrates the biological determinants of child health status and some of their socio-economic correlates at the household and individual levels[2]. Figure a.1 not only specifies the factors that determine child health status, but also provides many of the determinants of maternal health. Three groups of factors are seen as the principal household- and individual-level determinants of child health status: a) perinatal and maternal; b) household environmental; and c) nutrition factors.

5.3 Before Figure a.1 is explained in more detail, its limitations need to be drawn out. These are principally that the model is essentially static rather than dynamic. It implies simple relationships between determinants and outcomes, rather than the more complex, multifactorial relationships that actually occur. One of the most striking features of the epidemiological literature is not only the complexity of the determinants of health status, but also their dynamic nature over time, with the severity and duration of many illnesses depending upon the past health status of the child and the multiple factors that have determined it over time.

Health Status

5.4 Although much of the epidemiological and demographic literature is divided according to separate mortality, morbidity and nutrition disciplines, it is useful for the purpose of this study to group them together under the generic heading of "health status". The grouping is justified on several accounts, but in particular there are strong statistical, if not causal, interrelationships between mortality, morbidity and malnutrition in both young children and mothers. Many of the causes of disease, (i.e., diarrhea, acute respiratory infections (ARI) such as pneumonia, measles, and malaria) are also among the leading causes of mortality. Furthermore much of the epidemiological evidence indicates that disease is more likely to be severe or fatal among malnourished children than among those that are well nourished.

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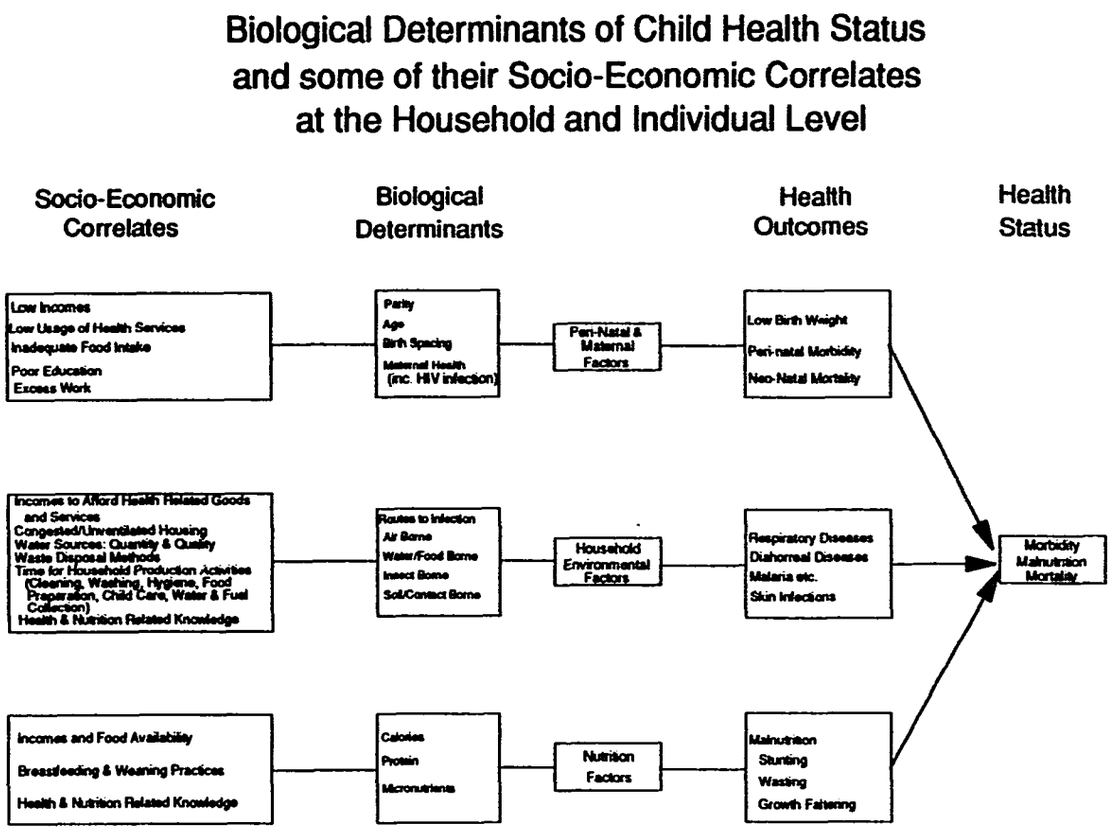
1 The conceptual framework outlined here relies heavily on previous work undertaken by one of the authors.

2 See also Mosley and Chen, 1984.

Figure a.1: Child Health Status: Biological Determinants and Socio-Economic Correlates



Maternal Factors in Determining Child Health Status

5.5 **Biological Determinants:** One of the principal determinants of health in the newborn child is that of its health at birth, which in turn is determined by maternal and reproductive factors, including maternal health during pregnancy, the birth-spacing between children, the birth order or parity number of the child, and the age of the child's mother.

5.6 Episodes of illness or chronic illness, weight loss, heavy work and lack of rest during pregnancy, all affect the growth of the fetus. The result is a newborn child with a low birth weight (less than 2.5 Kgs.) and of much greater risk from the major causes of neonatal mortality such as malaria and diarrhea.

5.7 Increasingly during the 1990's, the presence or absence of the HIV (Human Immuno-Deficiency Virus) among mothers, will become an important cause of poor health and mortality among infants and young children in Mali. Transmission rates can be high between mothers and their fetuses, between 30% and 60%, and fatality rates even higher at 100%. At present, the risks to both maternal and child health of HIV and AIDS (Acquired Immune Deficiency Syndrome) can only be controlled by a reduction in infection rates, there being no means currently available of curing either the infection or the disease.

5.8 The age of the mother has similar consequences for the baby's birthweight and the availability of protective breastmilk. In young mothers, who have not reached full physical maturity (17 years and under), there are relatively greater risks of low birthweight babies than in older women. This generally accounts for the higher percentage of low birthweights in first-born children. In older women, the risks to the newborn derive both from pregnancy-related risks such as toxemia and uterine rupture, and from breastfeeding risks. For women over the age of 35, who are nearing the end of their child-bearing years, the ability to produce breastmilk may also have declined. Low breastmilk secretion and low breastmilk consumption increase the risk of infection for the infant due both to the loss of the antibody protection that breastmilk provides and to the introduction of infection from non-breastmilk foods and water.

5.9 Similarly, a birth order or parity of over seven often signifies similar risks for the young child. As with older mothers, a mother who has been bearing children for a large number of years may face a declining ability to secrete breastmilk.

5.10 Birth-spacing affects all children within a family because of the increased time demands it places upon the mother. Newborn children tend to receive more of a mother's time than older children and as a result older children, who may still be quite young, receive less care, and in particular less breastfeeding than their younger siblings. This increases their risks of infection and mortality.

5.11 While not a maternal risk factor in the sense used here, low or no antenatal care, birth injuries and births unattended by trained assistants, have high health risks for both

children and their mothers. It has been estimated that approximately 80% of mothers during their first antenatal visit were found to be at high risk[3]. Similarly newborns are at particular risk of neonatal tetanus if their umbilicus is not adequately dressed after birth.

5.12 Analogous reproductive factors, (too many children, too frequent pregnancies, at too young or old an age), have a potentially damaging effect upon maternal health as well as the health of newborns. Although little research has been conducted on the determinants of maternal mortality in sub-Saharan Africa, it appears likely that pregnancies outside the 20-35 age range, parities of 4 and above, and birth-spacing at intervals of less than three years, place mothers in a high-risk maternal mortality category[4].

5.13 **Socio-Economic Correlates**: At a structural level, poverty and low incomes are the principal socio-economic factors that determine the level of maternal risks to child health status. Mothers that place their young children at risk because they are too young, too old, or have had too many babies over too short a period, are likely to be those from low-income groups in both rural and urban areas. Similarly, poor maternal health during pregnancy is likely to be correlated at an aggregate level with poverty and low income.

5.14 More specifically, the consequences of poverty and the proximate socio-economic causes of maternal risk to the health of young children are likely to be a mix of interrelated factors. Maternal health can be closely related to the income of the household and therefore the level of work that women in the household have to perform and the availability of food- and health-related goods and services. Wider environmental factors, such as seasonality and their socio-economic consequences, may play a further important role in determining maternal health. During the rainy season, risks of diarrheal and malarial infections increase, as do heavy agricultural labor requirements. The rainy season is a time when household food stocks are low and food prices high. Household and maternal food consumption decreases with overall consequences for increased risks to the mother's health.

5.15 The socio-economic correlates of maternal HIV infection, although still poorly understood, increasingly point to poverty as one of the principal correlates of HIV transmission through sexual intercourse. Women who have unprotected sexual intercourse with a number of different partners are often those whose livelihoods, and those of their families, are threatened. Prostitution is one obvious means by which women can maintain or increase their incomes, and may constitute an important mechanism for the transmission of the disease.

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[3] Essex and Everett, (1977).

[4] Wendy Graham, (1991).

5.16 Reproductive patterns are similarly determined by a range of socio-economic factors. The fertility rate[5] evidently bears a direct relation to parity, birth spacing, and the mother's age, with high fertility rates increasing parity and reducing the time between births. The determinants of the fertility rate are extremely complex. They are often related to levels of poverty, education status, and household labor requirements, though old age security requirements are not always good indicators of fertility.

5.17 Poverty and low incomes do however have an impact upon the usage and availability of antenatal and postnatal health services, which themselves can have an important impact on high parity and low birth-spacing. Increased attendance of mothers at antenatal clinics and trained birth attendants at delivery can have a significant impact on perinatal morbidity and mortality for both children and women.

Household Environmental Factors in Determining Child Health Status

5.18 Beyond the age of one month the principal causes of young child mortality in Mali are malaria, diarrhea, measles and acute respiratory tract infections such as pneumonia and pertussis. The principal routes for the transmission of these infections are insects (malaria), contaminated food and water (diarrhea), contaminated air (measles, pneumonia and pertussis), while neonatal tetanus and skin infections are transmitted through skin contact with infected materials such as the skin of others, instruments, and soil (See Figure 5.1).

5.19 While the risks of infection may well be different between locations (malaria may be more prevalent in some areas of the country than in others), these are better described by "community-level" variables. Within a community, the risks of infection from one of these principal diseases will vary from household to household. Water use behavior, for example, may differ considerably, with some households using clean piped water, others buying river water from traders, and others collecting river water locally. Each type of water use behavior will carry different risks of infection related to the degree of cleanliness of that water. All other things being equal, it is to be expected that there will be household-level differences within a community in the incidence of diarrhea as a result of differences in water use behavior.

5.20 While the reasons for the interhousehold differences in water use behavior, or indeed other behavioral differences which result in different risks to infection, are beyond the scope of this study, it is worth briefly reviewing the different relationships between the principal infections and their socio-economic correlates in order to emphasize the point.

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[5] The Total Fertility Rate is the number of children that would be born per woman, if she were to live to the end of her childbearing years and bear children at each age in accord with prevailing age specific fertility rates.

5.21 Malaria is transmitted by the anopheles mosquito. Within a given community, interhousehold differences that would affect the impact level of malaria would include behavioral differences in the prevention of transmission (e.g., house-spraying, use of mosquito nets), prevention of the disease developing (e.g., medical/chemical prophylaxis), and methods of managing and curing the infection (e.g., access to health care and to drugs).

5.22 In the case of diarrhea, household behavior will create differences with respect to preventing the infection and in the management of the disease once it has developed. In the case of drinking water use, variations in household behavior will result not only from differences in water sources and their degree of pollution, but also in subsequent handling practices. While the source of water may be unpolluted, inappropriate methods of household water storage and handling along the chain of usage can subsequently introduce contamination. Personal hygiene, household sanitation, and breastfeeding practices all play a significant role in differentiating households and their risks from diarrheal infection.

5.23 Comparable conditions apply for diarrheal risks from food sources and food handling. Food handling and food storage that encourages bacterial infestation (e.g., poor storage of cooked and uncooked food, unhygienic utensils, and poor handwashing) will further distinguish diarrheal risk between households. Likewise, household differences will occur according to methods of managing episodes of diarrhea (e.g., the use of liquids, oral rehydration therapy, and local rehydration methods).

5.24 Acute Respiratory Tract Infections (ARI): In the case of airborne infections such as measles, pneumonia, and pertussis, household differences in prevention and case management will result in differences in infection risk and in health status. In the cases of both measles and pertussis, interhousehold variation in immunization coverage will significantly contribute to levels of ARI risk. Beyond this, differences in housing congestion, housing ventilation, breastfeeding practices, health care knowledge, the management of infection, and access to health care facilities will similarly result in further interhousehold variation.

Nutrition Factors in Determining Child Health Status

5.25 The third major set of factors important for the determination of child health status are nutrition factors (See Figure a.1 above). While it is not frequently the case in Mali that inadequate food intake is the cause of death in young children, it is nevertheless the case that inadequate or unbalanced food intake can not only give rise to specific diseases related to undernutrition (e.g., marasmus, kwashiorkor, Vitamin A deficiency, anemia and goiter), and also be responsible for stunted mental and physical growth. Most importantly, inadequate food intake can weaken a child, resulting in greater risk of infection, and likelihood of more serious attacks, with longer periods of recovery and increasingly greater risk of mortality.

5.26 In particular, low levels of food intake and low levels of food absorption by the child, result in the most common nutritional disorder: Protein Energy Malnutrition (PEM). In mild forms, PEM results in the temporary failure of child growth and development. In its severe forms, PEM can lead to the permanent stunting of child physical and mental growth.

5.27 While the causes of poor nutritional status are often related to infection rather than nutrition, both household incomes and food availability are frequently seen as a cause and as a correlate of inadequate food intake. Low levels of income are closely related to low levels of food availability. The latter inevitably result in low levels of food consumption by household members. Furthermore, low levels of food availability are closely related to a range of poverty outcomes including poor housing and sanitation, high workloads for women, and poor access to health care and education.

5.28 Among those households with adequate food availability to meet household needs, nutrition problems of particular importance those related to breastfeeding weaning practices, and to balanced diets. In particular, the early termination of exclusive breastfeeding, the early termination of partial breastfeeding, and the introduction of contaminated breastmilk substitutes and weaning foods have been of particular concern to nutrition and health practitioners. Not only do these practices tend to substitute high quality food (i.e., breastmilk) with lower quality foods, but the poorly-prepared substitutes which were made using unsterile practices result in: (a) increased risk of diarrheal infection; and (b) deprivation of the antibodies naturally present in breastmilk that give protection against diarrhea, pneumonia and measles.

Household Incomes and the Socio-Economic Correlates of Health

5.29 The socio-economic correlates of health status that have been outlined in the previous subsections can be categorized as either a) resources and assets (e.g., time, educated or knowledgeable household members, healthy household members), or b) goods and services (e.g., food, health care, medicines, housing, clean water). The total amount of goods and services which a household can acquire at one time depends upon their income during that time. Because both money and/or time is spent on acquiring goods and services[6], and because each household has only limited supplies of time and money, choices have to be made about the level of expenditure of time and/or money on each item making up the goods and services. For example, time choices are frequently made by

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6 This applies to *free goods* such as health care and education for which time needs to be spent if they are to be acquired (time spent travelling, waiting in line, and/or attending classes). Likewise urban households spend their limited cash on food while rural households tend to spend their limited time on food cultivation and processing. Similarly, mothers spend their limited time on food cultivation, breastfeeding, childcare, water collection, etc.

mothers about what amounts of time to spend on the collection and boiling of water, as against cultivation, or breastfeeding.

5.30 The value of the resources available to the household at any one time is dependent upon the value of all income-generating assets owned by the household (land and capital available for rent, assets available for own production, entitlements to gifts and transfers from the state, from institutions and from other households), and the total value of all household members' time[7]. The total level of expenditure on goods and services by the household at any one time must therefore be less than, or equal to, the amount of resources of time and income that are available to it. Time and available income limit the ability of the household to improve its level of welfare. The scarcity of time limits the ability of the household to generate incomes through employment or own production, and to produce commodities for final consumption. The scarcity of cash income limits the ability of the household to purchase goods and services in the market.

5.31 Finally, the real price of goods and services limits the purchasing power of resources and incomes. In the case of money or nominal incomes, the level of purchasing power will fall as the level of money prices increases. In the case of time resources, their real expenditure value will increase or decrease if the time taken to complete activities increases or decreases. Thus, if travelling time to health posts decreases, then the resource cost of health care falls and the real resources of the household increase.

5.32 Consequently, within a community where resource and income levels are significantly different from one household to another, it is likely that there exist similarly significant differences in the household availability of those goods and services necessary for ensuring good health. Thus in households with high levels of resources and incomes, it would be expected that more resources could be spent on food, health care, housing, and sanitation. Such households would have a greater likelihood of securing the health of household members than resource-poor households in the same community which would be able to secure proportionately fewer of the same goods and services.

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7 The value of household time depends upon the number and age of household members, their education, health and skills level, and the opportunities they have for income generation.

APPENDIX VI: FAMINE, FOOD INSECURITY AND MALNUTRITION IN MALI

National Food Availability

6.1 At the national level, average per capita cereals and per capita calorie availability increased rapidly in Mali during the 1980s. Disaggregated data show that the growth of cereals availability has been a consequence of increased domestic production and not of increased imports, either commercial or food aid. Disaggregated data show that significant production growth has occurred for the principal cereals crops--millet, sorghum, maize and rice. Insofar as maize and rice are concerned, a number of complex factors would appear to explain growth in the production of these crops, namely: improved rainfall; increased irrigation; an improved price incentive framework under structural adjustment; and increased penetration of commercial markets. For millet and sorghum, largely subsistence crops for which production levels are more affected by weather and pests than by those market prices which change during structural adjustment, it is likely that production growth has largely been the result of favorable rainfall. That is not to say, however, that sorghum and millet prices and their prices relative to other goods and services or their opportunity costs of production have not changed during structural adjustment.

6.2 However despite a rapidly improving aggregate food security position, different degrees of access to available food and cereals mean that some regions and some socio-economic groups continue to be vulnerable to famine as well as to acute and mild chronic and seasonal food insecurity. In their extreme form, these extent of access to food results in famine. In less severe form, the degree of access results in varying intensities of chronic and seasonal food insecurity.

Famine in Mali

6.3 Famine, defined here as "extreme, geographically-concentrated food consumption shortfalls that result in chronic loss of bodyweight and a rise in mortality"[8], is "a relatively rare event in Mali"[9]. Davies (op. cit.) suggests that only two famines have occurred in Mali in the last 50 years: in 1972-73 and in 1983-84. Furthermore, these famines were localized and have, unlike the famines in Ethiopia, Mozambique, Sudan and Somalia, affected only small numbers of people.

6.4 The absence of widespread famine in Mali is likely explained by the absence of major armed conflicts. There is, however, increasing sensitivity of some food security systems in the north of the country to the impact of prolonged droughts, to low levels of

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[8] See Patrick Webb et al., "Famine in Ethiopia: Policy Implications of Coping Failure at National and Household Levels", IFPRI, Washington D.C., 1992, p.17.

[9] See Davies, (1992), p.11.

food production, and to adverse grazing, inland fishing and employment opportunities. In the case of the other African countries cited above, such conflicts have been the final and proximate cause of famine, which has led in some cases to the presence of famine as a structural feature of the rural economy.

Household Food Insecurity in Mali

6.5 While the number of studies implicitly or explicitly addressing issues of food security and poverty analysis has increased significantly since the mid-1980s, there continues to exist one major analytical weakness in the current debate. While data collection , analyses, and comparisons of poverty and food insecurity for particular agro-climatic regions, e.g. the northern Sahelian deficit regions as compared with the food surplus regions of the south, and for particular production systems, e.g. rainfed millet/livestock systems compared with flood recession or irrigated rice production, little attention has been paid to differences in the distribution of food insecurity or poverty within a particular region or production system. While analysts within Mali accept that there are differences in wealth and income within communities, the implications of these differences for differentiation in levels of poverty, food security, famine, and nutritional risk have yet to be translated into ongoing analysis and policy and programmatic response.

Malnutrition in Mali

6.6 No national data on nutrition and health have been collected in Mali with the exception of the 1987 Demographic and Health Survey. However, many small-scale studies have been conducted during the last decade by SAP and other surveyors. SAP surveys are analyzed further on. Non-SAP surveys showing child anthropometric results are summarized in Tables a.1 and a.2 (below)[10].

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[10] A full discussion of anthropometric indicators is included in Appendix XVII. Here it is noted briefly here that many anthropometric statistics categorize according to a variety of cutoff points below the median values of the statistic for a normal healthy population. The reference population that is used is usually that of the Harvard/NCHS standard. The Waterlow classification is shown in below, and it can be seen that a child with a height-for-age percentile below 80% of the median height of the healthy children in the reference population is classified as being severely stunted. Children with low heights for their age have usually undergone repeated periods of slow or no growth in height, and are referred to as stunted. The condition is often chronic, and growth once lost may never be recovered.

Weight for Height refers to a child's body weight for a particular height in relation to the body weight of a normal healthy child of the same height. A wasted child is one that has either failed to put on weight or else has lost weight.

6.7 Differences in the spatial distribution of malnutrition--between rural and urban areas and between food-deficit and food-surplus areas--are difficult to determine from available data. Tables a.1 and a.2 below show that levels of severe wasting recorded by surveys between 1987 and 1990 fall between a range of 3.6% to 25.4% of the relevant age cohort; the latter percentage being indicative of an extremely serious problem of wasting. The data that is available is not, however, standardized by age cohort or season. Therefore it is not possible to directly compare these two outcomes in order to make a definitive statement about the distribution, in this instance, of child wasting. Because of differences in the sampled age cohorts 1-84 months in the low prevalence case and 1-36 months in the high prevalence case[11], it would be incorrect to assume that wasting prevalence was higher among children in Macina as compared with children in the OHV (*Opération Haute Vallée*) region located below the 14th parallel. It is significant that results of the DHS survey, that sampled throughout the country during the same season, the recorded levels of severe wasting were very high for all areas, and showed little significant difference either on the basis of rural/urban divisions or upon north/south divisions. These results are even more

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Tables a.1 and a.2 use standard deviations from the median as the relevant cut-off points. In both the cases moderate and severe wasting and stunting are frequently classified as being between -2 and -3, and below -3 standard deviations respectively.

The Waterlow Classification of Child Anthropometric Status

	% Height for Age of the Median of the Reference Population (H/A) (Stunting)	Weight for Height of the Median of the Reference Population W/H (Wasting)
Normal	> 95	> 90
Mild	87.5 - 95	80-90
Moderate	80-87.5	70-80
Severe	<80	< 70

[11] Poor weaning and young child feeding practices show that for most population groups in sub-Saharan Africa wasting prevalence is very significantly higher among 12-36 month old children than it is for children over 36 months old), and because of the difference in crop production in the two years surveyed (1988-89 being a good crop year, and 1990-91 being a generally poor crop year).

important to note inasmuch as the 1986-87 crop year was, on the whole, a year of above-average production.

6.8 The stunting data of Table a.2 do appear to show significant rural/urban and intrarural differences in prevalence rates. Again, the 1987 DHS results showed that the levels of severe and acute stunting in urban Bamako were half of the levels recorded in the most northern Regions - Mopti, Timbuktu and Gao. Similarly, levels of stunting in these northern Regions would appear to be less pronounced than those of the more southern Regions of Kayes, Koulikoro, Segou and Sikasso.

6.9 SAP data from nutrition surveys permit spot checks of localized nutritional deprivation at the level of *arrondissements*, and occasionally in *cercles* and among displaced populations. Although limited in country coverage, their data since 1988 (see Appendix VII), essentially confirm that cereals distributions were made in areas where wasting levels were high. Areas at high risk - Mopti, Timbuktu and Gao - have not been the sites for recent nutrition surveys due to serious security problems in the northern regions. Few NGO surveys have been made since disturbances in the area, but a glimpse into the situation in the VIth Region (Timbuktu) is offered by UNICEF with a recent study of 526 children in four villages several kilometers from Timbuktu "in the arm of the Niger River." Sixty percent of the children were malnourished by weight-for-age indicators and 16% of them severely malnourished. Eighty-eight percent were ill at the time of the survey or shortly before it and 75% had diarrhea at the time of the survey.

6.10 Older SAP survey data and a recent longitudinal study made in 7 Kolokani villages (Adams, 1992) confirm the wisdom of seasonal targeting of food interventions. They show that acute malnutrition varies seasonally with lowest rates in the November-March period and the highest rates generally in the June-September period coinciding with the *soudure* or pre-harvest hungry season.

Table a.1: Prevalence of Young Child Wasting: Results from Studies 1987-1990 *

Region	Cercle (Arrond.)	Age Group (Months)	Date of Study	Size of Sample	% -2 S.D. Wt/Ht	(% -3 S.D.) Wt/Ht	Sur-vey-or
Kayes & Koulikoro		3-36	Mar-Aug 1987	452	9.4	(1.3)	DHS
Bamako	Bamako	3-36	Mar-Aug 1987	126	10.5	(0.9)	DHS
Bamako	Quartier Bankoni	6-60	1989	466	8.2		INRSP
Koulikoro	Banamba	6-72	1990	450	7.8		MS-DRSP/Koulik.
Sikasso	Kolondieba Circle	0-36	1990	155	7.35		ENMP
Sikasso	Koutiala	1-36	Nov 1990	236	5.4	(0.5)	NCP
	Dioro	1-36	Nov 1990	189	12.5	(0.1)	NCP
Segou	Macina	1-36	Dec 1990	212	25.4	(5.2)	NCP
OHV	North & South	1-84	Nov 1988 Feb 1989 Aug 1989	268 277 256	4.9 3.6 4.3		MSU/CESA/USAID
Sikasso/ Segou		3-36	Mar-Aug 1987	681	11.6	(1.4)	DHS
Mopti/ Timbuktu/ Gao		3-36	Mar-Aug 1987	270	12.3	(1.2)	DHS
Mopti	Djenne	6-60	Apr-May 1987	600	8.9 - 13.3		MissionFran-caise
Mopti	Douentza Circle		1990	446	13.9		ENMP
Mopti	MoptiKoro	0-72	1987	1200	6.26		Medecins duMonde
Timbuktu	Timbuktu/Dire/Goundam	0-36	Nov-Dec 1987	251	10.37		UNICEF
Timbuktu	Timbuktu Circle	6-72	1989	466	8.2		DRSP/Timbuktu
Mali-Urban		3-36	Mar-Aug 1987	388	10.7	(1.8)	DHS
Mali-Rural		3-36	Mar-Aug 1987	1142	11.1	(1.1)	DHS

* This compilation of nutrition data follows on that completed by Shelly Sundberg (Sundberg S.,(1988)). It includes principally studies that were made between 1988-1991 and earlier ones that were not included in her summary.

Table a.2: Prevalence of Young Child Stunting: Results from Studies 1987-1991

Region	Cercle/ Arrond./ Qtr.	Date of Study	Size of Sample	Age in Months	% -2 SD Ht/Age (% -3 SD)	% <90% Height /Age	Surveyor
Bamako	Bankoni	Apr 1991	466	6-60	19.7 (8.2)	11.9	SAP
Bamako	Sebenikoro	Apr 1991	461	6-60	15.9 (3.9)	9.6	SAP
Bamako	Lassa	Apr 1991	187	6-60	33.5 (9.7)	18.9	SAP
Bamako	Niamakoro	Apr 1991	473	6-60	18.7 (5.5)	9.1	SAP
Kayes/ Koulikoro		Mar-Aug 1987	279	3-36	21.6 (8.4)		DHS
Sikasso/ Segou		Mar-Aug 1987	319	3-36	25.0 (10.3)		DHS
Mopti/ Timbuktu/ Gao		Mar-Aug 1987	225	3-36	30.6 (10.1)		DHS
Bamako		Mar-Aug 1987	103	3-36	15.7 (2.8)		DHS
OHV*		Nov 88	268-199	0-84	28.1 (13.1)	52	MSU
		Feb 89	277-204	0-84	22.5 (14.7)	51	
		Aug 89	256-210	0-84	22.9 (10.0)	39	
Sikasso/ Segou	Dioro, Macina & Koutiala	Nov-Dec 1990	637	1-36	39.6		NCP

* OHV sample sizes differ for standard deviation measurements and the percentage height for age measurement. Column three shows the two figures,respectively for SD and percentage height for age.

APPENDIX VII: SELECTED NUTRITION SURVEY DATA 1988-92

Table a.3: National Child Anthropometric Summary Data (Demographic & Health Survey 1987)

	Weight/ Height (Wasting)	Height/Age (Stunting)	Weight/Age (Underweight)
Regions I and II	9.4	21.6	25
Regions III and IV	11.6	25	31
Regions V, VI and VII	12.34	30.6	41
Urban	10	20	26
Rural	11	27	34

Table a.4: Results of SAP Anthropometric Surveys 1988-1991

Region	Arrondissement	Mth./Year	W/H <80%	W/H <70%	W/H -2SD	W/H -3SD
Kayes	Sadiola	8-1988	7.6	0.5	8.2	0
Kayes	Tambacara	4-1991	11.3	0	na	na
Kayes	Lakamane	4-1991	5.3	0	na	na
Kayes	Simbi	4-1991	9.3	0	na	na
Koulikoro	Balle	12-1986	4.9	0	na	na
Koulikoro	Balle	6-1987	14.2	1	na	na
Koulikoro	Balle	8-1987	10.7	1.8	na	na
Koulikoro	Didieni	6-1988	8.5	0.9	na	na
Koulikoro	Bamako Qtrs.					
Koulikoro	Niamakoro	4-1991	7.5	0.4	13.8	1.5
Koulikoro	Bankoni	4-1991	7.4	0	12.7	0.4
Koulikoro	Sebenikoro	4-1991	5.2	0.4	10.2	0.4
Koulikoro	Lassa	4-1991	3.2	0	6.5	1.1
Segou	Monimpebougou	6-1991	11.9	0	na	na
Mopti	Douentza Cent.	9-1986	8	0	na	na
Mopti	Kendie	9-1986	7.5	0	na	na
Mopti	N'Gouma	9-1986	14.5	0	na	na
Mopti	N'Gouma	3-1987	7.3	1.1	na	na
Mopti	Sah	3-1987	11.4	2.7	na	na
Mopti	Niono Central	4-1987	11.1	2.6	na	na
Mopti	N'Gouma	2-1988	10.4	2.1	na	na
Mopti	Ningari	2-1988	5.1	0.4	na	na
Mopti	Sah	5-1988	8.6	1.3	na	na
Mopti	Madougou	6-1990	9.5	0.4	na	na
Mopti	Koro	7-1991	5.2	0	na	na
Timbuktu	C-Rharous	7/8-1986	10.2	0.8	na	na
Timbuktu	C-Rharous	2-1987	7.1	0.4	na	na
Timbuktu	N'Gorkou	7-1987	10.2	3.2	na	na
Timbuktu	C-Timbuktu	8-1988	16.2	2.2	20.6	0
Gao	Almoustarat	7-1986	21.4	0	na	na
Gao	Bourem Central	7-1986	16.7	0	na	na
Gao	Almoustarat	10-1986	43	3.5	na	na
Gao	Tessit	10-1986	1.5	0.5	na	na
Gao	C-Ansongo	11/12-1986	8.3	0.5	na	na
Gao	C-Bourem	11/12-1986	13.7	2	na	na
Gao	Temera	12-1987	8.2	0.2	na	na
Gao	Menaka and Tidarmene	4-1988	2.8	0	na	na
Gao	Talataye	4-1988	4.7	0	na	na
Gao	Temera	1-1989	5.8	0.2	0	0

APPENDIX VIII: SAP METHODOLOGY

Authors' Translation from the SAP Bulletin of May 1992

I. SETTING

The droughts of 1973-74 and 1984-85 caused dramatic famines in many parts of the Sahel in Africa. Confronted with the difficulty of providing adequate responses to enormous problems, governments, and donors resolved to establish permanent warning systems for discerning at-risk populations experiencing, or at risk of, food and nutrition risks.

It was apparent that the detailed information required with respect to food and nutrition shortage was only available after the crises had passed and that the opportunity of timely response was lost. While of interest to know the overall cereal deficit of a country like Mali, that offered little insight with respect to the quantities of aid needed at the level of an **arrondissement**. Learning about deficits when people have already been in a famine situation means a delayed intervention which does not really help when needed most.

Thus it was a time to ask questions such as: Which areas and populations are at risk of food and nutritional crisis? When are they at risk and for how long? What are the estimated needs?

From this base, the Ministry of Territorial Administration and donors put into place the Early Warning System in Mali (SAP). Since SAP's establishment in June 1986, it has been under the sponsorship of the AEDES, *Association Européenne pour le Développement et la Santé*, Brussels.

After work by various SAP task forces, the traditional at-risk zones were determined (i.e. zones having already experienced some degree of food crises and where the likelihood of new crises appeared strongest). It was determined that all of the area of Mali north of the 14th Parallel was at risk.

Initially, SAP surveillance was concerned with 155 **arrondissements** in Kayes, Koulikoro, Segou, Mopti, Timbuktu, and Gao. In 1988, 13 **arrondissements** in the Segou and Macina *Cercles* were added bringing the total number of **arrondissements** to 168. This surveillance area covers nearly half of the Malian population, around four million people.

The basic principles of SAP methodology are: permanent collection of multi-sectoral data linked to food availability of the population; a rapid collection and analysis of data; and timely and wide dissemination of the data analysis.

The initial 1986 methodology has greatly evolved, the process of decision-making has been significantly improved, particularly with the implementation of the "expertise system."

However, this progress is not always seen outside of the SAP because of limited knowledge about the methods and criteria used. The principle of the questionnaires has not changed, but the assessment of food risk has become increasingly based on multidisciplinary information sources rather than on a single indicator. Thus, a poor agricultural harvest coupled with an absence of food reserves (which might be the most visible indicators) does not necessarily lead to a prognosis/diagnosis of food crisis if the coping mechanisms and other resources are sufficient. The recommendations for making food distributions are made only when the prognosis/diagnosis is that the resources of the concerned population segments will be inadequate for them to meet basic needs.

It should be noted that SAP is not a decision-making body. It is an advisory body putting at the disposal of national and international decision-makers vital information on the food and nutritional situation of populations at risk.

II. SAP METHODOLOGY

SAP is an information system based on the collection of information, the validation and synthesis of information, and the dissemination of the information.

Regional SAP Offices

Information is gathered through the SAP network covering 168 **arrondissements** under 28 *cercles* in the regions of Kayes, Koulikoro, Segou, Mopti, Timbuktu and Gao. Responsibility for data collection is that of the SAP Representative assisted by the Director of Planning and Statistics. Three data instruments are used: routine questionnaires, special questionnaires and monthly update surveys.

Phase I Routine Questionnaires.

Phase I questionnaires provide agricultural, pastoral and fishing data. They are filled out by local development committees as follows:

a) Rainy season agriculture: a preliminary July assessment; an interim analysis in August and September; October harvests.

b) Paddy rice: a preliminary August assessment; surveillance from September to December; harvest in January.

c) Long-term Delta Agriculture: Situation in August, harvest in October.

d) Short-term Delta Agriculture: Situation report which varies in timing; harvest report, which also varies.

e) Irrigated crops: Harvests in February, or as required.

f) Market gardening: Harvests in February, or as required.

g) Assessment of stocks held by farmers: September.

h) Assessment of livestock pasture: October.

i) Questionnaires on rainfall: June-November.

j) Status of fishing: November to May.

These questionnaires provide the basis for a qualitative follow-up of the three principal activities in the SAP zones, namely agriculture, livestock and fishing.

Phase II

Monthly Updates

To assure the continual update (12 months of the year) of information received, the local development committees (CLDs) fill out the Phase II questionnaire, commenting on the following socio-economic indicators:

- unusual migrations of workforce, households, abandoned villages;
- unusual movements of animals;
- market availabilities and prices of staples and of livestock;
- foods consumed; and
- unusual events, epidemics, food poisoning, animal disease, unusual establishment of settlements, etc.

Exceptional Questionnaires

These include follow-up survey questionnaires, socio-economic and medico-nutritional, which are carried out by SAP personnel following specific field surveys.

Questionnaires for Follow-up Surveys

More an interview guide than a proper questionnaire, these data instruments permit SAP technicians to gather information with respect to a crisis diagnosis: invasion of insects, abandoned villages, consumption of unusual foods, unusual events obtained from villages, households and individuals.

Socio-economic and nutritional surveys

Village and household questionnaires with respect to SES request information on the composition of the household and of the village, of eating habits, the source of foods and the source of income for buying food. Finally, the medico-nutritional survey estimates the rate of severe malnutrition among infants and children from 6-60 months of age based on weight for height indicators.

Monthly visits

These routine visits are organized by the regional offices after discussion with the national technical office. The principal objectives of these visits are intended to activate or sensitize the CLDs and to gather data among other things. It should be noted that besides information from these three channels, the regional team receives information from regional technical offices (i.e., agriculture, livestock, fisheries, health, social affairs, public administration) and from NGOs working in the area.

Validation

The viability of the SAP system rests mainly on the validation process carried out by its technicians. The validation exercise consists of putting all data together for rectification and resolution of possible contradictions so as to obtain the most accurate appreciation of the reality being experienced or to be experienced by at-risk populations. This synthesis is carried out with:

- conjunctural data from the same source;
- conjunctural data from different sources; and
- data from the current month and preceding months.

Thus, for a given month, once the different questionnaires are received from the *arrondissements*, the regional SAP representative analyzes the data to see how they fit together with data from preceding months, and with the Representative's own knowledge of the locality. It is to be noted that all regional technical and NGO agencies are asked to participate in this first validation task. The SAP representatives synthesizes the information according to indicators on the monthly follow-up report. The monthly syntheses are then transferred to longitudinal follow-up tables recapitulating all data for the month. The monthly report warns the regional team of the presence of unusual phenomena. These reports guide the field work of the technicians who check out warning signs through socio-economic and medico-nutritional surveys.

The purpose of follow-up surveys is to verify the existence and scale of unusual phenomena that have been signalled. The regional team rationally selects a sample of villages for the locality where field surveys will occur. Talks with people in the villages and on-site observation are absolutely essential to assess crop damage, the extent of households migrating, abandoned villages, changed eating habits, and unusual events. The surveys also

permit precision in evaluating the magnitude of problems and translating that into the number of people actually threatened and helps improve population targeting.

Phase III

Phase III socio-economic and nutritional surveys are made principally in situations where risk is very likely. Their central function is to determine the food and nutritional status of the population. Second, they validate or refine other hypothetical or structural data through the 30 cluster groups sampled in an *arrondissement*. These continuous validations and ensuing discussions serve to delineate the priority data to be obtained in subsequent months and the need for additional surveys.

Synthesis and Forwarding of Information from Region to National Level

At the end of each month, the SAP representative with the support of the Regional Planning and Statistics Office prepares a draft report on the basis of the validated information which is distributed to the different regional services, international and non-governmental organizations and also discussed in Regional SAP meetings. During these regional meetings, administrative, technical and NGO staff involved in food security discuss the contents of the draft report which is again rectified or amended if necessary. Finally, after these modifications have been made, the SAP technician sends the definitive version which constitutes the Regional Committee Report (*Rapport de la Commission Regionale*) to the members of the regional SAP committee. This is why SAP states that the food situation assessment of a zone is based on the grouping and synthesizing of different types of information from different sources rather than on data in isolation.

SAP at the National Level

Data Collection

At the end of each month, the SAP committee reports and the Regional monthly follow-up reports together with all other information collected (i.e. questionnaires, field reports), are sent to the central SAP team. In addition to the regional reports, this team receives depending on the period, information including:

- ten day rainfall reports, monthly bulletins and syntheses from the *Groupe de Travail Pluridisciplinaire* (GTP),
- ten day hydrological reports,
- bulletins from the Plant Protection service,
- bi-weekly, monthly reports from SIM/OPAM,
- Commercial stock reports, SNS and OPAM free food distributions,
- syntheses of market prices for livestock through the OMBEVI,
- FEWS bulletins, and
- SADS (*Suivi Alimentaire Delta-Seno*) bulletins.

Validation

The central team therefore has a large variety of documents from many sources to validate, which is the second in the SAP chain. This "contra-validation," if it can be called that, of the regional validation involves a discussion or debate among the regional and national technical staff whenever there are differences.

The major differences in viewpoint come mainly from supplemental information available at the national level which is not known or is poorly known at the regional level, or come from a different interpretations of the same data. In these cases, after discussion and debate, either the technicians agree, or the validation is left pending the verification of data awaiting supplementary data collected in the subsequent month or months.

Each of these differences in viewpoint can entail a special follow-up, depending on the importance of the information to be verified. Finally, as in the Region, these validated data once more integrating the national environment are compiled on longitudinal follow-up tables extending from June of the current year through August of the coming year.

Synthesis and Dissemination

At the national level, the preparation of the Bulletin follows a similar procedure to that in the region. All of the technical staff produce a draft from the validated information and then distribute it to the different National SAP Work Groups (approximately 30 people).

During these meetings, representatives of central-level administrative and technical offices, international and non-governmental organizations discuss the draft which is then amended and adopted as the SAP National Bulletin.

The final version of the National Bulletin is printed in 600 copies and distributed to decision-makers, national authorities and donors, *arrondissement* CDS, NGO groups, and to administrative and technical services at the national and regional levels.

THE DECISION-MAKING PROCESS: THE RECOMMENDATIONS

The central purpose of the SAP is to detect and provide early warning to decision-makers of impending food crises occurring at relatively refined geographical levels (more finite than the *arrondissement*). To do this, SAP makes decisions at the time of discussion meetings in the presence of all regional representatives and the central Bamako team: the expertise meetings.

The first recommendations, are decided during the meeting which takes place at the beginning of November, based on the information available in October. The results of this meeting are written in the October Bulletin.

Finally, the last set of recommendations published in the end of February Bulletin are made available in the first weeks of March. They are based on validated data available in February. However, other recommendations can be made exceptionally depending on the development of food situations in certain areas.

During these debating sessions, SAP technical staff must clearly state which *arrondissements*, or parts of *arrondissements*, are experiencing or likely to experience a food or nutrition crisis before the next harvest and what measures are appropriate to avert these crises.

Some concepts with respect to food and nutrition crises are explained below:

Definition of Concepts

It is not easy to give a rigorous definition for a food crisis. However, it most similar to a progressive scale of food or nutritional difficulty experienced by a given population.

SAP's scale includes the following grades in increasing level of severity of difficulty:

RAS - Nothing to note

At worst a slight fall in incomes for all the population which is likely to result in a normal *soudure* for the zone.

DEL -Slight socio-economic difficulties

An average fall in incomes for all the population, resulting in a normal *soudure* with few difficulties of adaption.

DES -Severe socio-economic difficulties

A significant fall in incomes for all members of the population forcing unusual reactions (e.g., significant outmigration, village abandonment, sale of assets), resulting in abnormal food shortages during the *soudure*.

DA -Food Difficulties

All the population experiences a very significant fall in incomes. The result being an early start to the **soudure** and a reduction in food quantities consumed.

CA -Food Crisis

All the population experiences a very significant fall in incomes. Unusual adaptation occurs with significant outmigration, and sale of assets. Food consumption declines in both

qualitative and quantitative terms. Wasting rates in young children exceeds 10 percent. Long-term health will be compromised by these changes in consumption habits.

FA -Famine

All incomes of the population fall to virtually nothing, and are usually preceded by years of very low incomes. Without intervention deaths will result.

APPENDIX IX: THE REGIONAL DISTRIBUTION OF FOOD AID RECOMMENDATIONS 1988-1992

Table a.5: Disaggregation Distribution of SAP Recommendations for Food Aid Delivery 1988-1992

			Tonnage Recmd.	Total No. of Months Recm.	1988 No. of Months	1989 No. of Months	1990 No. of Months	1991 No. of Months	1992 No. of Months
Kayes	Kayes	Aftibidoli	1008	4	4	0	0	0	0
Kayes	Kayes	Diamou	540	6	4	2	0	0	0
Kayes	Kayes	Kousseni	516	4	4	0	0	0	0
Kayes	Kayes	Lantou	532	4	4	0	0	0	0
Kayes	Kayes	Sano	592	4	4	0	0	0	0
Kayes	Kayes	Segala	1040	4	4	0	0	0	0
Kayes	Diema	Diamara	576	4	4	0	0	0	0
Kayes	Nioro	Sandare	560	4	4	0	0	0	0
Kayes	Nioro	Sirabi	80	2	0	0	0	2	0
Kayes	Nioro	Touroungoumbe	112	2	0	2	0	0	0
	Total	10	4576	38	32	4	0	2	0
Koulikoro	Banamba	Banamba	280	4	4	0	0	0	0
Koulikoro	Banamba	Boron	806	7	4	0	0	3	0
Koulikoro	Banamba	Madina-Sako	576	7	4	0	0	3	0
Koulikoro	Banamba	Sebete	625	7	4	0	0	3	0
Koulikoro	Banamba	Toukorota	60	2	0	0	0	2	0
Koulikoro	Kolokani	Kolokani	560	4	4	0	0	0	0
Koulikoro	Kolokani	Didiani	1338	6	6	0	0	0	0
Koulikoro	Kolokani	Massantola	742	6	4	0	0	2	0
Koulikoro	Nara	Fallou	780	6	4	0	0	2	0
Koulikoro	Nara	Guire	448	7	4	0	3	0	0
Koulikoro	Nara	Mourdiah	528	7	4	0	0	3	0
	Total	11	6745	63	42	0	3	18	0
Segou	Segou	Deplacee	245	7	0	7	0	0	0
Segou	Macina	Monimpebougou	140	2	0	0	0	2	0
Segou	Niono	Niono	180	2	0	0	0	2	0
Segou	Niono	Nampala	558	8	6	0	0	2	0
Segou	Niono	Sokola	1880	8	6	0	0	2	0
Segou	Niono	Deplacee	448	4	4	0	0	0	0
	Total	6	3231	31	16	7	0	8	0
Mopti	Mopti	Mopti	1008	6	6	0	0	0	0
Mopti	Mopti	Diallobe	664	4	4	0	0	0	0
Mopti	Mopti	Fatoma	834	6	6	0	0	0	0
Mopti	Mopti	Konna	1494	6	6	0	0	0	0
Mopti	Mopti	Korientze	548	3	0	0	3	0	0
Mopti	Mopti	Ouro-Mody	244	4	4	0	0	0	0
Mopti	Mopti	Soufouroulaye	428	4	4	0	0	0	0
Mopti	Mopti	Saye	444	4	4	0	0	0	0
Mopti	Bandiagara	Dourou	180	3	0	0	0	3	0
Mopti	Bandiagara	Gounduka	472	4	4	0	0	0	0
Mopti	Bandiagara	Kanigogouna	500	6	6	0	0	0	0
Mopti	Bandiagara	Kendie	704	4	4	0	0	0	0
Mopti	Bandiagara	Ningari	1083	9	6	0	3	0	0
Mopti	Bandiagara	Sangha	556	6	6	0	0	0	0
Mopti	Djenne	Kouakourou	532	4	4	0	0	0	0
Mopti	Djenne	Mougna	664	4	4	0	0	0	0
Mopti	Djenne	Sofara	704	4	4	0	0	0	0
Mopti	Djenne	Taga	504	4	4	0	0	0	0
Mopti	Douentza	Douentza	2504	6	6	0	0	0	0
Mopti	Douentza	Boni	999	9	6	0	3	0	0
Mopti	Douentza	Bore	690	6	6	0	0	0	0
Mopti	Douentza	Hombori	738	6	6	0	0	0	0
Mopti	Douentza	Mondoro	1054	11	4	0	4	3	0
Mopti	Douentza	N'Gouma	2229	13	6	0	4	3	0
Mopti	Koro	Koro	434	6	0	0	4	2	0
Mopti	Koro	Diankabou	1281	7	4	0	3	0	0
Mopti	Koro	Dinangourou	1621	10	4	0	3	3	0
Mopti	Koro	Dioungani	768	8	4	0	4	0	0
Mopti	Koro	Koporiandie-Nah	448	6	0	0	4	2	0
Mopti	Koro	Madagou	824	4	0	0	4	0	0
Mopti	Tenenkou	Tenenkou	1124	4	4	0	0	0	0

			Tonnage Recond.	Total No. of Months Recon.	1988 No. of Months	1989 No. of Months	1990 No. of Months	1991 No. of Months	1992 No. of Months
Mopti	Tenenkou	Diafarabe	320	4	4	0	0	0	0
Mopti	Tenenkou	Dioura	684	8	6	0	0	2	0
Mopti	Youvarou	Youvarou	603	7	4	0	0	3	0
Mopti	Youvarou	Ambiri	765	12	6	0	0	3	3
Mopti	Youvarou	Dogo	212	4	4	0	0	0	0
Mopti	Youvarou	Gathi-Lamou	295	7	4	0	0	3	0
Mopti	Youvarou	Gludio-Saro	819	9	6	0	0	3	0
Mopti	Youvarou	Ish	1212	15	6	0	3	3	3
	Total	39	30187	247	156	0	42	53	6
Tombouktou	Tombouktou	Ber	152	4	4	0	0	0	0
Tombouktou	Tombouktou	Tin-Agualiaj	128	4	4	0	0	0	0
Tombouktou	Tombouktou	Deplaces	140	4	4	0	0	0	0
Tombouktou	Diré	Sareyamou	201	3	0	0	0	3	0
Tombouktou	Goundam	Bintagoungou	804	6	6	0	0	0	0
Tombouktou	Goundam	Farach (Fagaibine)	633	9	6	0	0	3	0
Tombouktou	Goundam	Gargando	570	12	6	3	0	3	0
Tombouktou	Goundam	Raz-El-ma	621	12	6	3	0	3	0
Tombouktou	Goundam	Tilemsi (El Haria)	99	3	0	0	0	3	0
Tombouktou	Rharous	Bambara-Maounde	565	7	4	0	0	3	0
Tombouktou	Rharous	Haribomo	274	7	4	0	0	3	0
Tombouktou	Niafunke	Niafunke	1962	9	6	0	0	3	0
Tombouktou	Niafunke	Bentiaco	1704	18	6	0	3	6	3
Tombouktou	Niafunke	Koumaira	540	6	0	0	0	6	0
Tombouktou	Niafunke	Lere	156	6	0	0	0	3	3
Tombouktou	Niafunke	N'Gorkou	621	9	0	0	3	3	3
Tombouktou	Niafunke	Saraféré	1818	12	6	0	3	3	0
Tombouktou	Niafunke	Soumpi	381	9	6	0	0	0	3
	Total	18	11149	140	68	6	9	45	12
Gao	Gao	Gao	2028	6	6	0	0	0	0
Gao	Gao	Djebock	788	7	6	0	0	1	0
Gao	Gao	Haoussa-Foulans	584	4	4	0	0	0	0
Gao	Gao	N'Tillit	463	7	4	3	0	0	0
Gao	Ansongo	Ansongo	1092	4	4	0	0	0	0
Gao	Ansongo	Talataye	826	8	4	3	0	1	0
Gao	Ansongo	Tessit	196	4	4	0	0	0	0
Gao	Bourem	Almoustarat	1093	11	4	6	0	1	0
Gao	Bourem	Bamba	1270	10	4	6	0	0	0
Gao	Bourem	Temera	650	10	4	6	0	0	0
Gao	Kidal	Kidal	301	5	4	0	0	1	0
Gao	Kidal	Aguelhoc	261	5	4	0	0	1	0
Gao	Kidal	Bouressa	129	5	4	0	0	1	0
Gao	Kidal	Tessalit	159	5	4	0	0	1	0
Gao	Kidal	Tin-Essako	165	5	4	0	0	1	0
Gao	Kidal	Timetrine (Tin-Kar)	27	5	4	0	0	1	0
Gao	Kidal	Tin-Zaouatene	53	5	4	0	0	1	0
Gao	Menaka	Menaka	197	1	0	0	0	1	0
Gao	Menaka	Anderamboukane	411	5	4	0	0	1	0
Gao	Menaka	Tidarmene	452	8	4	3	0	1	0
Gao	Menaka	Inekar	625	8	4	3	0	1	0
	Total	21	11970	128	64	30	0	14	0
National	Total	111	71107	678	424	54	34	128	18

APPENDIX X: THE PATTERN OF RECOMMENDATIONS, COSTS AND BENEFITS IN KAYES REGION 1988-92

Table a.6: Kayes: Summary of SAP Recommendations and Cereals Deliveries

Year	Region	Cercle	Arrondissement	Total Person Mths. Recm. for Distbn. (A)	Recm. Target Popn.Size (B)	Tonnes Recm. (C)	Tonnes Contracted for Deliv. (D)	No. Mths. of Distbn. (E)	Year of Distrb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm. (I)	Date of Final Govt. Signature (J)	Date of Trans. Contr. (K)	Date of Tranpt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	FCFA/Ton/Km (P/D/O) (S)
1988	Kayes	Kayes	Ambidedi	143952	35988	1008		4	1988	6	9	4										
1988	Kayes	Kayes	Diamou	51208	12802	360		4	1988	6	9	4										
1988	Kayes	Kayes	Kourana	44860	11215	316		4	1988	6	9	4										
1988	Kayes	Kayes	Lastou	50360	12590	352		4	1988	6	9	4										
1988	Kayes	Kayes	Sana	56144	14036	392		4	1988	6	9	4										
1988	Kayes	Kayes	Sagala	148316	57079	1040		4	1988	6	9	4										
1988	Kayes	Diema	Diouman	53612	13405	376		4	1988	6	9	4										
1988	Kayes	Nioro	Sandare	51180	12795	360		4	1988	6	9	4										
1989	Kayes	Kayes	Diamou	25177	12802	179		2	1989	6	7	3										
1989	Kayes	Nioro	Touroungoumba	15753	8000	112		2	1989	6	7	3										
1991	Kayes	Nioro	Simbi	9000	4500	80	80	2	1991	7	8	4	910710								MR	
1988	Totals or Averages			599632	149908	4204	0	4	8	6	9	4										
1989	Totals or Averages			40911	20802	291	0	2	2	6	7	3										
1990	Totals or Averages																					
1991	Totals or Averages			9000	4500	80	80	2	1	7	8	4										
1992	Totals or Averages																					

Table a.7: Kayes: Summary of Timeliness and Cost Benefit Ratios in SAP Deliveries 1988-92

Year	Region	Cercle	Arrondissement	Timing and Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (J-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*T*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*T*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contract. (see text) (AF)	Kg.Costs of Delivery Contract (see text) ((P/D)/1000) (AG)	Per Kg. Costs to Arrond. ((AF+AG)/(D/1000)) (AH)	Total Normative Cost/Ben Rxtio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
1988	Kayes	Kayes	Ambidedi		61							115		3220						
1988	Kayes	Kayes	Diamou		61							115		3220						
1988	Kayes	Kayes	Koussane		61							115		3220						
1988	Kayes	Kayes	Lanian		61							115		3220						
1988	Kayes	Kayes	Sano		61							115		3220						
1988	Kayes	Kayes	Segala		61							115		3220						
1988	Kayes	Diema	Diamara		61							75		2100						
1988	Kayes	Nioro	Sandare		61							115		3220						
1989	Kayes	Kayes	Diamou		92							80		1680						
1989	Kayes	Nioro	Tourongoumbe		92							70		1470						
1991	Kayes	Nioro	Sinbi		91		100					170		6120						
		1988 TOTALS AND AVERAGES			61															
		1989 TOTALS AND AVERAGES			92															
		1990 TOTALS AND AVERAGES																		
		1991 TOTALS AND AVERAGES			91															
		1992 TOTALS AND AVERAGES																		

APPENDIX XI: THE PATTERN OF RECOMMENDATIONS, COSTS AND BENEFITS IN KOULIKORO REGION 1988-92

Table a.8: Koulikoro: Summary of SAP Recommendations and Cereals Deliveries

Year	Region	Cercle	Arrondissement	Total Person Mths. Recm. for Distbn (A)	Recm. Target Popn.Size (B)	Tonnes Recm. (C)	Tonnes Contrcted for Deliv. (D)	No. Mths. of Distbn. (E)	Year of Distrb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm. (I)	Date of Final Govt. Signature (J)	Date of Trans. Contr. (K)	Date of Tranpt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	FCFA/Tn/Km (P/D/O) (S)
1988	Koulikoro	Banamba	Banamba	40000	10000	280		4	1988	6	9	4										
1988	Koulikoro	Banamba	Boron	93680	23420	656		4	1988	6	9	4										
1988	Koulikoro	Banamba	Madina-Sako	65284	16321	456		4	1988	6	9	4										
1988	Koulikoro	Banamba	Sebete	43244	10811	304		4	1988	6	9	4										
1988	Koulikoro	Kolokani	Kolokani	80000	20000	560		4	1988	6	9	4										
1988	Koulikoro	Kolokani	Didieni	199974	33329	1338	466	6	1988	4	9	2	880606			Bamako	Didieni	170	10188000	880722	Millet	129
1988	Koulikoro	Kolokani	Massantola	93100	23275	652		4	1988	6	9	4										
1988	Koulikoro	Nara	Fallou	80000	20000	560		4	1988	6	9	4										
1988	Koulikoro	Nara	Guire	36428	9107	256		4	1988	6	9	4										
1988	Koulikoro	Nara	Mourdiah	67028	16757	468		4	1988	6	9	4										
1990	Koulikoro	Nara	Guire	27321	9107	192	40	3	1990	4	6	12	900517	900606		Bamako	Guire	370	1258000	900610	Mil/Sorgho	85
1991	Koulikoro	Banamba	Boron	16665	5555	150	150	3	1991	6	8	2	910413	910426	910426	Bamako	Boron	223	2301000	910514	Mil	
1991	Koulikoro	Banamba	Madina-Sako	13320	4440	120	120	3	1991	6	8	2	910413	910426	910426	Bamako	Madina-Sako	214	1754400	910522	Mil	
1991	Koulikoro	Banamba	Sebete	35721	11907	320	320	3	1991	6	8	2	910413	910426	910426	Bamako	Sebete	268	6060800	910608	Mil	
1991	Koulikoro	Banamba	Toukoroba	6600	3300	90	60	2	1991	7	8	4	910710	910904	910906	Bamako	Toukoroba		840000	910908	Mil	
1991	Koulikoro	Kolokani	Didieni	22500	7500	200	200	3	1991	6	8	2	910413	910426		Bamako	Didieni	170	2560000	910517	Mil	
1991	Koulikoro	Kolokani	Massantola	10200	5100	90	90	2	1991	7	8	4	910710	910904	910906	Bamako	Massantola		1215000	910917	Mil	
1991	Koulikoro	Nara	Fallou	24220	12110	220	220	2	1991	7	8	4	910710	910904	910906	Bamako	Fallou		4950000	910917	Mil	
1991	Koulikoro	Nara	Mourdiah	6600	2200	60	60	3	1991	6	8	3	910413	910426		Bamako	Mourdiah	268	1136400	910528	Mil	71
1988	Totals or Averages			798738	183020	5530	466	4.2	10	5.8	9	3.8							10188000			129
1989	Totals or Averages																					
1990	Totals or Averages			27321	9107	192	40	3	1	4	6	12							1258000			85
1991	Totals or Averages			119161	46557	1100	1070	2.6	7	6.4	8.0	3.0							18516600			71
1992	Totals or Averages																					

Table a.9: Koulikoro: Summary of Timeliness and Cost Benefit Ratios in SAP Deliveries 1988-92

Year	Region	Cercle	Arrondissement	Timing AND Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (J-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*I*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*I*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contrct. (see text) (AF)	Kg.Costs of Delivery Contract (see text) ((P/D)/1000) (AG)	Per Kg. Costs to Arrond. ((AF+AG)/(D/1000)) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
1988	Koulikoro	Banamba	Banamba		61							125								
1988	Koulikoro	Banamba	Boron		61							125								
1988	Koulikoro	Banamba	Madina-Sako		61							125								
1988	Koulikoro	Banamba	Sebete		61							125								
1988	Koulikoro	Kolokani	Kolokani		61							115								
1988	Koulikoro	Kolokani	Didieni	172	60	112	126			73%		112	125	4704	5250	92	22	113	101%	91%
1988	Koulikoro	Kolokani	Massantola		61							115								
1988	Koulikoro	Nara	Fallou		61							150								
1988	Koulikoro	Nara	Guire		61							150								
1988	Koulikoro	Nara	Mourdiah		61							150								
1990	Koulikoro	Nara	Guire	191	121	70	167	20	4	87%	2%	80	80	1680	1680	87	31	118	148%	148%
1991	Koulikoro	Banamba	Boron	133	120	-18	71	13	18	53%	18%	130	130	2730	2730	93	15	108	83%	83%
1991	Koulikoro	Banamba	Madina-Sako	110	120	-10	71	13	26	65%	24%	130	130	2730	2730	93	15	107	82%	82%
1991	Koulikoro	Banamba	Sebete	127	120	7	71	13	43	56%	34%	130	130	2730	2730	93	19	112	86%	86%
1991	Koulikoro	Banamba	Toukoroba	160	91	69	100	56	4	63%	3%	130	140	1820	1960	93	14	107	82%	76%
1991	Koulikoro	Kolokani	Didieni	105	120	-15	71	13	21	68%	20%	132	115	2772	2415	93	13	105	80%	92%
1991	Koulikoro	Kolokani	Massantola	169	91	78	100	56	13	59%	8%	150	125	2100	1750	93	14	106	71%	85%
1991	Koulikoro	Nara	Fallou	169	91	78	100	56	13	59%	8%	160	130	2240	1820	93	23	115	72%	89%
1991	Koulikoro	Nara	Mourdiah	88	92	-4	43	13	32	49%	36%	150	140	3150	2940	93	19	112	74%	80%
	1988 TOTALS AND AVERAGES			172	61	112	126			73%		129	125	4704	5250	92	22	113	101%	91%
	1989 TOTALS AND AVERAGES																			
	1990 TOTALS AND AVERAGES			191	121	70	167	20	4	87%	2%	80	80	1680	1680	87	31	118	148%	148%
	1991 TOTALS AND AVERAGES			133	104	29	79	31	22	60%	19%	140	130	2506	2335	93	16	109	78%	84%
	1992 TOTALS AND AVERAGES																			

APPENDIX XII: THE PATTERN OF RECOMMENDATIONS, COSTS AND BENEFITS IN SEGOU REGION 1988-92

Table a.10: Segou: Summary of SAP Recommendations and Cereals Deliveries

Year	Region	Cercle	Arrondissement	Total Person Mths. Recm. for Distbn. (A)	Recm. Target Popn.Size (B)	Tonnes Recm. (C)	Tonnes Contrcted for Deliv. (D)	No. Mths. of Distbn. (E)	Year of Disarb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm. (I)	Date of Final Govt. Signature (J)	Date of Trans. Contr. (K)	Date of Tranpt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	FCFA/Ton /Km (P/D/O) (S)
1988	Segou	Niono	Nampala	41424	6904	288	192	6	1988	4	9	2	880606	880715		Segou	Nampala	295	2471252	880818		44
1988	Segou	Niono	Sokola	252768	42128	1770	885	6	1988	4	9	2	880606	880715		Segou	Sokola	200	7723434	881008		44
1988	Segou	Niono	Deplaces	64000	16000	448		4	1988	6	9	4										
1989	Segou	Segou	Deplaces	15000	5000	105		3	1989	6	8	1										
1991	Segou	Niono	Niono	20000	10000	180	180	2	1991	7	8	4	910710	910821	910909	Bamako	Niono	339	2440800	910913	Mil	40
1991	Segou	Niono	Nampala	8000	4000	70	70	2	1991	7	8	4	910710	910821	910909	Bamako	Nampala	439	1509200	910913	Mil	49
1991	Segou	Niono	Sokola	12400	6200	110	110	2	1991	7	8	4	910710	910821	910909	Bamako	Sokola	440	2300100	910913	Mil	48
1988	Totals or Averages			358192	65032	2806	1077	5.3	3	5	9	3							10194686			44
1989	Totals or Averages			15000	5000	105		3.0	1	6	8	1							0			
1990	Totals or Averages																					
1991	Totals or Averages			40400	20200	360	360	2.0	3	7	8	4							6250100			46
1992	Totals or Averages																					

Table a.11: Segou: Summary of Timeliness and Cost Benefit Ratios in SAP Deliveries 1988-92

Year	Region	Cercle	Arrondissement	Timing and Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (J-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*1*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*1*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contrct. (see text) (AF)	Kg.Costs of Delivery Contract (see text) ((P/D)/1000) (AG)	Per Kg Costs to Arrond. ((AF+AG)/(D/1000)) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
1988	Segou	Niono	Nampala	199	60	139	126	39	34	63%	17%	100	130	4200	5460	92	13	104	104%	80%
1988	Segou	Niono	Sokola	250	60	190	126	39	85	50%	34%	100	100	4200	4200	92	9	100	100%	100%
1988	Segou	Niono	Deplaces		61							110								
1989	Segou	Segou	Deplaces		151							35								
1991	Segou	Niono	Niono	165	91	74	100	42	23	61%	14%	120	130	1680	1820	93	14	106	88%	82%
1991	Segou	Niono	Nampala	165	91	74	100	42	23	61%	14%	120	130	1680	1820	93	22	114	95%	88%
1991	Segou	Niono	Sokola	165	91	74	100	42	23	61%	14%	120	130	1680	1820	93	21	114	95%	87%
		1988 TOTALS AND AVERAGES		225	60	165	126	39	60	57%	26%	103	115	4200	4830	92	11	102	102%	90%
		1989 TOTALS AND AVERAGES			151															
		1990 TOTALS AND AVERAGES																		
		1991 TOTALS AND AVERAGES		165	91	74	100	42	23	61%	14%	120	130	1680	1820	93	19	111	93%	86%
		1992 TOTALS AND AVERAGES																		

APPENDIX XIII: THE PATTERN OF RECOMMENDATIONS, COSTS AND BENEFITS IN MOPTI REGION 1988-92

Table a.12: Mopti: Summary of SAP Recommendations and Cereals Deliveries

Year	Region	Cercle	Arrondissement	Total Person Mths. Recm. for Distbn. (A)	Recm. Target Popn.Size (B)	Tonnes Recm. (C)	Tonnes Contrcted for Deliv. (D)	No. Mths. of Distbn. (E)	Year of Distrb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm. (I)	Date of Final Govt. Signature (J)	Date of Trans. Contr. (K)	Date of Tranpt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	FCFA/Tn. /Km (P/D/O) (S)
1988	Mopti	Mopti	Mopti	143976	23996	1008	24	6	1988	4	9	2	880603			Segou	Mopti	411	467880	881001		47
1988	Mopti	Mopti	Dialloube	95104	23776	664		4	1988	6	9	4										
1988	Mopti	Mopti	Fatoma	119484	19914	834		6	1988	4	9	2										
1988	Mopti	Mopti	Konna	213114	35519	1494		6	1988	4	9	2										
1988	Mopti	Mopti	Ouro-Mody	34848	8712	244		4	1988	6	9	4										
1988	Mopti	Mopti	Soufouroulaye	61212	15303	428		4	1988	6	9	4										
1988	Mopti	Mopti	Saye	63652	15913	444		4	1988	6	9	4										
1988	Mopti	Bandiagara	Goundaka	67524	16881	472		4	1988	6	9	4										
1988	Mopti	Bandiagara	Kanigogouna	99732	16622	300		6	1988	4	9	2										
1988	Mopti	Bandiagara	Kendie	100692	25173	704		4	1988	6	9	4										
1988	Mopti	Bandiagara	Ningari	179016	29836	456		6	1988	4	9	2										
1988	Mopti	Bandiagara	Sangha	120144	20024	336		6	1988	4	9	2										
1988	Mopti	Djenne	Kouakourou	76096	19024	532		4	1988	6	9	4										
1988	Mopti	Djenne	Mougna	95068	23767	664		4	1988	6	9	4										
1988	Mopti	Djenne	Sofara	100760	25190	704		4	1988	6	9	4										
1988	Mopti	Djenne	Taga	43224	10806	304		4	1988	6	9	4										
1988	Mopti	Douentza	Douentza	329556	54926	2304		6	1988	4	9	2										
1988	Mopti	Douentza	Boni	95202	15867	666		6	1988	4	9	2										
1988	Mopti	Douentza	Bore	98844	16474	690		6	1988	4	9	2										
1988	Mopti	Douentza	Hombori	105498	17583	738	328	6	1988	4	9	2	880606			Mopti	Hombori	324	1722000	880722		16
1988	Mopti	Douentza	Mondoro	64560	16140	452		4	1988	6	9	4										
1988	Mopti	Douentza	N'Gouma	177708	29618	1242		6	1988	4	9	2										
1988	Mopti	Koro	Diankabou	104336	26084	732	79	4	1988	6	9	4				Koro			753301			
1988	Mopti	Koro	Dinangourou	112232	28058	784	59	4	1988	6	9	4				Koro	146		562592			
1988	Mopti	Koro	Dioungani	54724	13681	384	39	4	1988	6	9	4				Koro	49		371883			
1988	Mopti	Tenenkou	Tenenkou	160684	40171	1124		4	1988	6	9	4										
1988	Mopti	Tenenkou	Diafarabe	45936	11484	320		4	1988	6	9	4										
1988	Mopti	Tenenkou	Dioura	80376	13396	564		6	1988	4	9	2										
1988	Mopti	Youvarou	Youvarou	72104	18026	504		4	1988	6	9	4										
1988	Mopti	Youvarou	Ambiri	83598	13933	588		6	1988	4	9	2										
1988	Mopti	Youvarou	Dogo	30348	7587	212		4	1988	6	9	4										
1988	Mopti	Youvarou	Gathi-Lemou	28168	7042	196		4	1988	6	9	4										
1988	Mopti	Youvarou	Gludio-Sare	96966	16161	678		6	1988	4	9	2										
1988	Mopti	Youvarou	Sah	80622	13437	564		6	1988	4	9	2										
1990	Mopti	Mopti	Korientze	49545	16515	348	174	3	1990	4	6	12	900517	900624		Mopti	Korientze	175	1979250		Mil/Sorgho	65
1990	Mopti	Bandiagara	Ningari	89508	29836	627	314	3	1990	4	6	12	900517	900523		Mopti	Ningari	140	3552304	900505	Mil/Sorgho	81
1990	Mopti	Douentza	Boni	47601	15867	333	167	3	1990	4	6	12	900517	900624		Mopti	Boni	291	1943880		Mil/Sorgho	40
1990	Mopti	Douentza	Mondoro	64560	16140	452	226	4	1990	4	7	12	900517			Mopti					Mil/Sorgho	

Year	Region	Cercle	Arrondissement	Total Person Mths. Recm. for Distbn. (A)	Recm. Target Popn.Size (B)	Tonnes Recm. (C)	Tonnes Contrcted for Deliv. (D)	No. Mths. of Distbn. (E)	Year of Distrb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm (I)	Date of Final Govt. Signature (J)	Date of Trans. Contr. (K)	Date of Tranpt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	FCFA/Ton/Km (P/D/O) (S)
1990	Mopti	Douentza	N'Gouma	118472	29618	828	415	4	1990	4	7	12	900517	900529	900604	Mopti	N'Gouma	246	8677650		Mil/Sorgho	85
1990	Mopti	Koro	Koro *	38000	9500	264	70	4	1990	4	7	2	900517	900523		Mopti	Koro	235	1079342		Mil/Sorgho	66
1990	Mopti	Koro	Diankabou	78252	26084	549	115	3	1990	4	6	12	900517	900523		Mopti	Diankabou	325	2831156	900805	Mil/Sorgho	76
1990	Mopti	Koro	Dinangourou	84174	28058	588	115	3	1990	4	6	12	900517	900529	900604	Mopti	Dinangourou	279	2727225		Mil/Sorgho	85
1990	Mopti	Koro	Dioungani	54724	13681	384	192	4	1990	4	7	12	900517	900529	900604	Mopti	Dioungani	222	3623040	900729	Mil/Sorgho	85
1990	Mopti	Koro	Koporkendie-Nah *	44000	11000	308	154	4	1990	4	7	2	900517	900523		Mopti	Koporkendie-Nah	180	1819818	900729	Mil/Sorgho	66
1990	Mopti	Koro	Madagou	117840	29460	824	413	4	1990	4	7	12 *	900517	900523		Mopti	Madagou	295	7383201	900729	Mil/Sorgho	61
1990	Mopti	Youvarou	Sah	40311	13437	282	141	3	1990	4	6	12	900517			Mopti					Mil/Sorgho	
1991	Mopti	Mopti	Korientze	26700	8900	240	240	3	1991	6	8	2	910422	910425	910425	Mopti	Korientze	199	3820800	910810	Mil	80
1991	Mopti	Bandiagara	Dourou	19500	6500	180	180	3	1991	6	8	2	910416	910427		Mopti	Dourou	100	1260000	910531	Mil	70
1991	Mopti	Douentza	Mondoro	16500	5500	150	150	3	1991	6	8	2	910416	910427		Mopti	Mondoro	360	3780000	910613	Mil	70
1991	Mopti	Douentza	N'Gouma	17700	5900	160	160	3	1991	6	8	2	910416	910429	910429	Mopti	N'Gouma	205	2624000	910519	Mil	80
1991	Mopti	Koro	Koro	19000	9500	170	170	2	1991	7	8	4					Koro				Mil	
1991	Mopti	Koro	Dinangourou	27900	9300	250	250	3	1991	6	8	2	910416	910427		Mopti	Dinangourou	293	5127500	910518	Mil	70
1991	Mopti	Koro	Koporkendie-Nah	16000	8000	140	140	2	1991	7	8	4					Koporkendie-Nah				Mil	
1991	Mopti	Tenenkou	Dioura	13000	6500	120	120	2	1991	7	8	4					Dioura				Mil	
1991	Mopti	Youvarou	Youvarou	11100	3700	100	100	3	1991	6	8	2	910413	910429	910429	Mopti	Youvarou	100	800000	910524	Mil	80
1991	Mopti	Youvarou	Ambiri	16665	5555	150	150	3	1991	6	8	2	910413	910429	910429	Mopti	Ambiri				Mil	
1991	Mopti	Youvarou	Gathi-Lemou	11100	3700	100	100	3	1991	6	8	2	910413	910429	910429	Mopti	Gathi-Lemou				Mil	
1991	Mopti	Youvarou	Giudio-Sare	15570	5190	140	140	3	1991	6	8	2					Giudio-Sare				Mil	
1991	Mopti	Youvarou	Sah	37800	12600	340	340	3	1991	6	8	2	910413	910429	910429	Mopti	Sah				Mil	
1992	Mopti	Youvarou	Ambiri *	29078	4154	110	110	7	1992	6	8	3	920620	920620		Mopti	Ambiri	195	1823250	920723	Sorgho USA	85
1992	Mopti	Youvarou	Sah *	41048	5864	160	160	7	1992	6	8	3	920620	920620		Mopti	Sah	209	2842400	920818	Sorgho USA	85
1988	Totals or Averages			3435108	690124	22330	529	4.9	34	5	9	3							3877655			32
1989	Totals or Averages																					
1990	Totals or Averages			826987	239196	5787	2496	3.5	12	4	7	10							35616866			71
1991	Totals or Averages			248535	90845	2240	2240	2.8	13	6	8	2							17412300			75
1992	Totals or Averages			70126	10018	270	270	7.0	2	6	8	3							4665650			85

* Indicates that a fraction of an *arrondissement* has been targeted.

Table a.13: Mopti: Summary of Timeliness and Cost Benefit Ratios in SAP Deliveries 1988-92

Year	Region	Cercle	Arrondissement	Timing and Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (J-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*1*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*1*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contrct. (see text) (AF)	Kg.Costs of Delivery Contract (see text) (P/D)/1000) (AG)	Per Kg. Costs to Arrond. ((AF+AG)/(D/1000)) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
1988	Mopti	Mopti	Mopti	243	60	183	123			51%		110	75	4620	3150	92	19	111	101%	148%
1988	Mopti	Mopti	Diallobe		61							135								
1988	Mopti	Mopti	Fatoma		60							110								
1988	Mopti	Mopti	Konna		60							110								
1988	Mopti	Mopti	Ouro-Mody		61							135								
1988	Mopti	Mopti	Soufouroulaye		61							135								
1988	Mopti	Mopti	Saye		61							135								
1988	Mopti	Bandiagara	Goundaka		61							135								
1988	Mopti	Bandiagara	Kanigogouna		60							105								
1988	Mopti	Bandiagara	Kendie		61							135								
1988	Mopti	Bandiagara	Ningari		60							105								
1988	Mopti	Bandiagara	Sangha		60							105								
1988	Mopti	Djenne	Kouakourou		61							110								
1988	Mopti	Djenne	Mougna		61							110								
1988	Mopti	Djenne	Sofara		61							110								
1988	Mopti	Djenne	Taga		61							110								
1988	Mopti	Douentza	Douentza		60							120								
1988	Mopti	Douentza	Boni		60							120								
1988	Mopti	Douentza	Bore		60							120								
1988	Mopti	Douentza	Hombori	172	60	112	126			73%		120	160	5040	6720	92	5	97	81%	61%
1988	Mopti	Douentza	Mondoro		61							142								
1988	Mopti	Douentza	N'Gouma		60							120								
1988	Mopti	Koro	Diankabou		61							105		2940		92	10	101	95%	
1988	Mopti	Koro	Dinangourou		61							105		2940		92	10	101	96%	
1988	Mopti	Koro	Dioungani		61							105		2940		92	10	101	96%	
1988	Mopti	Tenenkou	Tenenkou		61							150								
1988	Mopti	Tenenkou	Diafarabe		61							150								
1988	Mopti	Tenenkou	Dioura		60							110								
1988	Mopti	Youvarou	Youvarou		61							150								
1988	Mopti	Youvarou	Ambiri		60							140								
1988	Mopti	Youvarou	Dogo		61							150								
1988	Mopti	Youvarou	Gathi-Lemou		61							150								
1988	Mopti	Youvarou	Gludio-Sare		60							140								
1988	Mopti	Youvarou	Sah		60							140								
1990	Mopti	Mopti	Korientze		121		167	38				70				87	11	98	140%	
1990	Mopti	Bandiagara	Ningari	247	121	126	167	6	74	68%	30%	80	90	1680	1890	87	11	98	123%	109%
1990	Mopti	Douentza	Boni		121		167	38				75				87	12	98	131%	
1990	Mopti	Douentza	Mondoro		121		167					75				87				
1990	Mopti	Douentza	N'Gouma		121		167	12				75				87	21	108	144%	
1990	Mopti	Koro	Koro *		59		105	6				86				87	15	102	119%	
1990	Mopti	Koro	Diankabou	247	121	126	167	6	74	68%	30%	86	120	1806	2520	87	25	111	130%	93%

Year	Region	Cercle	Arrondissement	Timing and Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (I-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Deilvery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*1*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*1*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contract. (see text) (AF)	Kg.Costs of Delivery Contract (see text) (IP/DI/1000) (AG)	Per Kg. Costs to Arrond. ((AF+AG)/(D/1000)) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
1990	Mopti	Koro	Dinangourou		121		167	12				86				87	24	110	128%	
1990	Mopti	Koro	Diounganl	240	121	119	167	12	61	70%	25%	86	85	2408	2330	87	19	106	123%	124%
1990	Mopti	Koro	Koporkendie-Nah *	178	59	119	105	6	67	59%	38%	86	85	2408	2380	87	12	99	115%	116%
1990	Mopti	Koro	Madagou	240	121	119	167	6	67	70%	28%	86	85	2408	2380	87	18	105	122%	123%
1990	Mopti	Youvarou	Sah		121		167					90				87				
1991	Mopti	Mopti	Korientze	190	120	70	80	3	107	42%	56%	125	135	2625	2835	93	16	109	87%	80%
1991	Mopti	Bandiagara	Dourou	119	120	-1	74	11	34	62%	29%	120	120	2520	2520	93	7	100	83%	83%
1991	Mopti	Douentza	Mondoro	132	120	12	74	11	47	56%	36%	150	150	3150	3150	93	25	118	79%	79%
1991	Mopti	Douentza	N'Gouma	107	120	-13	74	13	20	69%	19%	150	128	3150	2688	93	16	109	73%	85%
1991	Mopti	Koro	Koro		91							140				93				
1991	Mopti	Koro	Dinangourou	106	120	-14	74	11	21	70%	20%	120	112	2520	2352	93	21	113	94%	101%
1991	Mopti	Koro	Koporkendie-Nah		91							140				93				
1991	Mopti	Tenenkou	Dioura		91							120				93				
1991	Mopti	Youvarou	Youvarou	112	120	-8	71	16	25	63%	22%	150	150	3150	3150	93	8	101	67%	67%
1991	Mopti	Youvarou	Ambiri		120		71	16				150				93				
1991	Mopti	Youvarou	Gathi-Lensou		120		71	16				150				93				
1991	Mopti	Youvarou	Gludio-Sare		120							150				93				
1991	Mopti	Youvarou	Sah		120		71	16				150				93				
1992	Mopti	Youvarou	Ambiri *	144	92	52	111	0	33	77%	23%	85	80	4165	3920	136	17	152	179%	190%
1992	Mopti	Youvarou	Sah *	170	92	78	111	0	59	65%	35%	85	80	4165	3920	136	18	153	180%	192%
		1988 TOTALS AND AVERAGES		208	61	148	125			62%										
		1989 TOTALS AND AVERAGES																		
		1990 TOTALS AND AVERAGES		230	111	122	157	14	69	67%	30%	82	93	2142	2310	87	17	104	127%	113%
		1991 TOTALS AND AVERAGES		128	113	8	73	13	42	60%	30%	140	133	2853	2783	93	16	108	80%	83%
		1992 TOTALS AND AVERAGES		157	92	65	111		46	71%	29%	85	80	4165	3920	136	17	153	180%	191%

APPENDIX XIV: THE PATTERN OF RECOMMENDATIONS, COSTS AND BENEFITS IN TIMBUKTU REGION 1988-92

Table a.14: Timbuktu: Summary of SAP Recommendations and Cereals Deliveries

Year	Region	Cercle	Arrondissement	Total Persons Mths. Recm. for Distbn. (A)	Recm. Target Popn.Size (B)	Tonnes Recm. (C)	Tonnes Contracted for Deliv. (D)	No. Mths. of Distbn. (E)	Year of Distrb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm. (I)	Date of Final Cont. Signature (J)	Date of Trans. Contr. (K)	Date of Transpt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	PCPA/Tn /Km (P/D/O) (S)
1988	Timbuktu	Timbuktu	Ber	19004	4751	132		4	1988	6	9	4										
1988	Timbuktu	Timbuktu	Tin-Agadhaj	18556	4639	128		4	1988	6	9	4										
1988	Timbuktu	Timbuktu	Daphoum	20000	5000	140		4	1988	6	9	4										
1988	Timbuktu	Goundam	Bintagoungou	114810	19135	804		6	1988	4	9	3										
1988	Timbuktu	Goundam	Farach (Fagaibine)	67592	11232	474		6	1988	4	9	3										
1988	Timbuktu	Goundam	Gargando	35052	5842	246		6	1988	4	9	3										
1988	Timbuktu	Goundam	Raz-El-ma	43408	7068	294		6	1988	4	9	3										
1988	Timbuktu	Rharous	Bambara-Maounde	42260	10565	296		4	1988	6	9	4										
1988	Timbuktu	Rharous	Haribomo	34640	8660	244		4	1988	6	9	4										
1988	Timbuktu	Niafunke	Niafunke	164922	27487	1152		6	1988	4	9	2										
1988	Timbuktu	Niafunke	Banikane	90554	15059	630		6	1988	4	9	2										
1988	Timbuktu	Niafunke	Saraferé	121950	20325	852		6	1988	4	9	2										
1988	Timbuktu	Niafunke	Soumpi	50484	8414	354		6	1988	4	9	2										
1989	Timbuktu	Goundam	Gargando	17526	5842	123		3	1989	6	8	3										
1989	Timbuktu	Goundam	Raz-El-ma	21204	7068	148		3	1989	6	8	3										
1990	Timbuktu	Niafunke	Banikane	45177	15059	315	103	3	1990	4	6	12	900517	900523		Mopti	Banikane	240	1977600	900625	MGI/Sorghe	80
1990	Timbuktu	Niafunke	N'Gorkou	42063	14021	294	147	3	1990	4	6	12	900517			Mopti				900627	MGI/Sorghe	
1990	Timbuktu	Niafunke	Saraferé	60975	20325	426	90	3	1990	4	6	12	900517	900523		Mopti	Saraferé	250	1800000	900622	MGI/Sorghe	80
1991	Timbuktu	Diré	Sarayamou	22500	7500	200	150	3	1991	6	8	2	910422	910425		Mopti	Sarayamou	422	5064000	910802	MGI	80
1991	Timbuktu	Goundam	Farach (Fagaibine)	19500	6500	195	180	3	1991	6	8	3	910422	910507		Mopti	Goundam	235	5630647	910810	MGI	
1991	Timbuktu	Goundam	Gargando	17685	5895	120	60	3	1991	6	8	3	910422	910507		Mopti	Goundam	235	1883382	910810	MGI	
1991	Timbuktu	Goundam	Gargando				100	3	1991	6	8	3	910210			Timbuktu	Gargando	117		910400	MGI	
1991	Timbuktu	Goundam	Raz-El-ma	21888	7296	200	100	3	1991	6	8	3	910422	910507		Mopti	Goundam	235	3138971	910810	MGI	
1991	Timbuktu	Goundam	Raz-El-ma				100	3	1991	6	8	3	910201			Timbuktu	Raz-el-Ma	187		910502	MGI	
1991	Timbuktu	Goundam	Tilemsi	11100	3700	100	30	3	1991	6	8	2	910422	910507	910425	Mopti	Tilemsi	450	1147500	910526	MGI	85
1991	Timbuktu	Rharous	Bambara-Maounde	7800	2600	70	20	3	1991	6	8	2	910523	910429		Timbuktu	Bambara-Maounde	330	528000	910807	MGI	80
1991	Timbuktu	Rharous	Haribomo	3300	1100	30	30	3	1991	6	8	2	910523	910429		Timbuktu	Haribomo	370	888000	910816	MGI	80
1991	Timbuktu	Niafunke	Niafunke	90000	30000	810	710	3	1991	6	8	2	910422	910425	910425	Mopti	Niafunke	210	11520000	910810	MGI	80
1991	Timbuktu	Niafunke	Niafunke				100	5	1991	2	6	2	910201			Timbuktu	Niafunke	220	1760000	910515	MGI	80
1991	Timbuktu	Niafunke	Banikane	81147	13600	740	540	6	1991	2	7	2	910201	910213	910213	Timbuktu	Banikane	240	11616000	910527	MGI	85
1991	Timbuktu	Niafunke	Koumaira	59667	10000	540	734	6	1991	2	7	2	910201	910213	910213	Timbuktu	Koumaira	245	15383550	910525	MGI	85
1991	Timbuktu	Niafunke	Lere	14400	4800	130	30	3	1991	6	8	2	910422	910425	910425	Segou	Lere	420	1008000	910504	MGI	80
1991	Timbuktu	Niafunke	Lere				100	5	1991	2	6	2	910201			Timbuktu	Lere	350	2800000	910506	MGI	80
1991	Timbuktu	Niafunke	N'Gorkou	33000	11000	300	300	3	1991	6	8	2	910422	910425	910425	Mopti	N'Gorkou	250	3520000	910810	MGI	80
1991	Timbuktu	Niafunke	Saraferé				100	5	1991	2	6	2	910201			Timbuktu	Saraferé	200	2500000	910527	MGI	88
1991	Timbuktu	Niafunke	Saraferé	60000	20000	540	440	3	1991	6	8	2	910422	910425	910425	Mopti	Saraferé	250	5632000	910810	MGI	81
1992	Timbuktu	Niafunke	Banikane *	5508	918	30	30	6	1992	6	8	3	920620	920620		Mopti	Banikane	240	612000	920827	Sorghe USA	85
1992	Timbuktu	Niafunke	Lere *	35148	5858	160	160	6	1992	6	8	3	920620	920620		Mopti	Lere	420	4020000		Sorghe USA	72

1992	Tinbulito	Niafunke	N'Gorkou *	25290	4215	110	110	6	1992	6	8	3	920620	920620		Mopti	N'Gorkou	250	2537500	920826	Sorghe USA	92
1992	Tinbulito	Niafunke	Soumpi *	41886	6981	190	190	6	1992	6	8	3	920620	920620		Mopti	Soumpi		4857500	920826	Sorghe USA	
1988	Totals or Averages		821832	148177	5746		5.2	13	5	9	3											
1989	Totals or Averages		38730	12910	271		3.0	2	6	8	3											
1990	Totals or Averages		148215	49405	1055	540	3.0	3	4	6	12							3777000			80	
1991	Totals or Averages		441986	123991	4000	3824	3.7	18	5	8	2							23549550			80	
1992	Totals or Averages		107832	17972	490	490	6.0	4	6	8	3							11513000			83	

* Indicates that a fraction of an *arrondissement* has been targeted.

Table a.15: Timbuktu: Summary of Timeliness and Cost Benefit Ratios in SAP Deliveries

Year	Region	Cercle	Arrondissement	Timing AND Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (I-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*1*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*1*Mth.Kg.) (AE)	Kg.Costs of Grain to Around. Excluding Transport Contract. (see text) (AF)	Kg.Costs of Delivery Contract (see text) (BND3/1000) (AG)	Per Kg. Costs to Around. (AF+AG)/(D/1000) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
1988	Timbuktu	Timbuktu	Ber		61							165								
1988	Timbuktu	Timbuktu	Tin-Aguelhaj		61							165								
1988	Timbuktu	Timbuktu	Deplaces		61							165								
1988	Timbuktu	Goundam	Bintagoungou		31							536								
1988	Timbuktu	Goundam	Farach (Faguibine)		31							316								
1988	Timbuktu	Goundam	Gargando		31							164								
1988	Timbuktu	Goundam	Raz-El-ma		31							196								
1988	Timbuktu	Rharous	Bambara-Maounde		61							145								
1988	Timbuktu	Rharous	Haribomo		61							145								
1988	Timbuktu	Niafunke	Niafunke		60							120								
1988	Timbuktu	Niafunke	Banikane		60							120								
1988	Timbuktu	Niafunke	Sarafere		60							120								
1988	Timbuktu	Niafunke	Soumpi		60							120								
1989	Timbuktu	Goundam	Gargando		92							90								
1989	Timbuktu	Goundam	Raz-El-ma		92							90								
1990	Timbuktu	Niafunke	Banikane	206	121	85	167	6	33	81%	16%	80	90	1680	1890	87	19	106	132%	118%
1990	Timbuktu	Niafunke	N'Gorkou	208	121	87	167			80%		80	90	1680	1890	87		87	108%	96%
1990	Timbuktu	Niafunke	Sarafere	203	121	82	167	6	30	82%	15%	80	90	1680	1890	87	20	107	133%	119%
1991	Timbuktu	Dire	Sareyamou	243	120	123	80	3	160	33%	66%	155	97	3255	2037	93	34	126	82%	130%
1991	Timbuktu	Goundam	Farach (Faguibine)	193	92	101	52	15	126	27%	65%	125	145	2625	3045	93	31	124	99%	86%
1991	Timbuktu	Goundam	Gargando	193	92	101	52	15	126	27%	65%	125	145	2625	3045	93	31	124	99%	86%
1991	Timbuktu	Goundam	Gargando	60	92	-32	-19			-32%	0%	125	125	2625	2625	93		93	74%	74%
1991	Timbuktu	Goundam	Raz-El-ma	193	92	101	52	15	126	27%	65%	125	145	2625	3045	93	31	124	99%	86%
1991	Timbuktu	Goundam	Raz-El-ma	62	92	-30	-28			-45%	0%	125	125	2625	2625	93		93	74%	74%
1991	Timbuktu	Goundam	Tilemsi	114	120	-6	80	15	19	70%	17%	125	125	2625	2625	93	38	131	105%	105%
1991	Timbuktu	Rharous	Bambara-Maounde	218	120	98	111	-24	131	51%	60%	160	145	3360	3045	93	26	119	74%	82%
1991	Timbuktu	Rharous	Haribomo	227	120	107	111	-24	140	49%	62%	160	145	3360	3045	93	30	122	76%	84%
1991	Timbuktu	Niafunke	Niafunke	221	120	101	80	3	138	36%	62%	152	120	3192	2520	93	17	109	72%	91%
1991	Timbuktu	Niafunke	Niafunke	42	0	42	0			0%	0%	120	140	4172	4867	93	18	110	92%	79%
1991	Timbuktu	Niafunke	Banikane	54	0	54	0	12	42	0%	78%	120	140	5012	5847	93	20	113	94%	81%
1991	Timbuktu	Niafunke	Koumaira	52	0	52	0	12	40	0%	77%	120	140	5012	5847	93	21	113	95%	81%
1991	Timbuktu	Niafunke	Lere	215	120	95	80	3	132	37%	61%	152	120	3192	2520	93	34	126	83%	105%
1991	Timbuktu	Niafunke	Lere	33	0	33	0			0%	0%	120	140	4172	4867	93	28	121	101%	86%
1991	Timbuktu	Niafunke	N'Gorkou	190	120	70	80	3	107	42%	56%	152	192	3192	4032	93	18	111	73%	58%
1991	Timbuktu	Niafunke	Sarafere	54	0	54	0			0%	0%	120	140	4172	4867	93	23	116	96%	83%
1991	Timbuktu	Niafunke	Sarafere	221	120	101	80	3	138	36%	62%	152	120	3192	2520	93	13	105	69%	83%
1992	Timbuktu	Niafunke	Banikane *	179	92	87	111	0	68	62%	38%	152	80	6384	3360	136	20	156	103%	195%
1992	Timbuktu	Niafunke	Lere *				111	0				152								
1992	Timbuktu	Niafunke	N'Gorkou *	178	92	86	111	0	67	62%	38%	152	80	6384	3360	136	21	157	103%	196%
1992	Timbuktu	Niafunke	Soumpi *	180	92	88	111	0	69	62%	38%	152	80	6384	3360	136	21	157	103%	196%

Year	Region	Cercle	Arrondissement	Timing ANL Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (I-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*1*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*1*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contract. (see text) (AF)	Kg.Costs of Delivery Contract (see text) (IP/D)/1000) (AG)	Per Kg. Costs to Arrond. ((AF+AG)/(D/1000)) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
	1988 TOTALS and AVERAGES				51															
	1989 TOTALS and AVERAGES				92															
	1990 TOTALS AND AVERAGES			206	121	85	167	6	32	81%	15%	80	90	1680	1890	87	20	100	125%	111%
	1991 TOTALS AND AVERAGES			144	79	65	45	4	110	20%	44%	135	136	3391	3501	93	26	116	87%	87%
	1992 TOTALS AND AVERAGES			179	92	87	111	0	68	62%	38%	152	80	6384	3360	136	21	157	103%	196%

Table a.16: Gao: Summary of SAP Recommendations and Cereals Deliveries

Year	Region	Cercle	Arrondissement	Total Person Mths. Recm. for Distbn. (A)	Recm. Target Popn.Size (B)	Tonnes Recm. (C)	Tonnes Contracted for Deliv. (D)	No. Mths. of Distbn. (E)	Year of Distrb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm. (I)	Date of Final Gov. Signature (J)	Date of Trans. Contr. (K)	Date of Transpt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	FCFA/Tns/Km (P/D/O) (S)
1988	Gao	Gao	Gao	289506	48251	2028		6	1988	4	9	2										
1988	Gao	Gao	Djebock	92802	15467	648		6	1988	4	9	2										
1988	Gao	Gao	Haoussa-Foulous	83312	20828	584		4	1988	6	9	4										
1988	Gao	Gao	N'Tillit	37864	9466	264		4	1988	6	9	4										
1988	Gao	Ansongo	Ansongo	156040	39010	1092		4	1988	6	9	4										
1988	Gao	Ansongo	Talataye	56744	14186	396		4	1988	6	9	4										
1988	Gao	Ansongo	Tessit	28280	7070	196		4	1988	6	9	4										
1988	Gao	Bourem	Almoustarat	60584	15146	424		4	1988	6	9	4										
1988	Gao	Bourem	Bamba	72416	18104	508		4	1988	6	9	4										
1988	Gao	Bourem	Temera	37288	9322	260		4	1988	6	9	4										
1988	Gao	Kidal	Kidal	52472	13118	368		4	1988	6	9	4										
1988	Gao	Kidal	Aguelhoc	32416	8104	228		4	1988	6	9	4										
1988	Gao	Kidal	Bouressa	16044	4011	112		4	1988	6	9	4										
1988	Gao	Kidal	Tessalit	11076	2769	76		4	1988	6	9	4										
1988	Gao	Kidal	Tin-Essako	18600	4650	132		4	1988	6	9	4										
1988	Gao	Kidal	Timetrine (Tin-Kar)	3672	918	24		4	1988	6	9	4										
1988	Gao	Kidal	Tin-Zaouatene	4972	1243	36		4	1988	6	9	4										
1988	Gao	Menaka	Anderamboukane	43564	10891	304		4	1988	6	9	4										
1988	Gao	Menaka	Tidermene	42860	10715	224		4	1988	6	9	4										
1988	Gao	Menaka	Inekar	31980	7995	300		4	1988	6	9	4										
1989	Gao	Gao	N'Tillit	28398	9466	199		3	1989	6	8	1										
1989	Gao	Ansongo	Talataye	42558	14186	298		3	1989	6	8	1										
1989	Gao	Bourem	Almoustarat	45438	15146	318		3	1989	6	8	1										
1989	Gao	Bourem	Bamba	54312	18104	380		3	1989	6	8	1										
1989	Gao	Bourem	Temera	27966	9322	196		3	1989	6	8	1										
1989	Gao	Menaka	Tidermene	23985	7995	168		3	1989	6	8	1										
1989	Gao	Menaka	Inekar	32145	10715	225		3	1989	6	8	1										
1991	Gao	Gao	Djebock				65	4	1991	3	6	2	910201	910213	910213	Gao	Djebock	45	219575	910216	Mil	75
1991	Gao	Gao	Djebock	62920	15600	420	355	4	1991	3	6	2	910422	910425	910425	Gao	Djebock	45	1278000	910500	Mil	80
1991	Gao	Ansongo	Talataye	59250	14700	400	400	4	1991	3	6	2	910422				Talataye			910614	Mil	
1991	Gao	Bourem	Almoustarat	14923	3700	100	100	4	1991	3	6	2	910422	910425	910425	Gao	Almoustarat	150	1200000	910601	Mil	80
1991	Gao	Kidal	Kidal				50	4	1991	3	6	2	910201	910213	910213	Gao	Kidal	400	1600000	910221	Mil	80
1991	Gao	Kidal	Kidal	59693	14800	400	350	4	1991	3	6	2	910422	910425	910425	Gao	Kidal	400	11200000	910627	Mil	80
1991	Gao	Kidal	Aguelhoc	14923	3700	100	60	4	1991	3	6	2	910422	910425	910425	Gao	Aguelhoc	553	2472000	910606	Mil	75
1991	Gao	Kidal	Aguelhoc				40	4	1991	3	6	2	910201	910213	910213	Gao	Aguelhoc	553	1769600	910220	Mil	80
1991	Gao	Kidal	Bouressa				20	4	1991	3	6	2	910201	910213	910213	Gao	Bouressa	645	1096500	910224	Mil	85
1991	Gao	Kidal	Bouressa	7663	1900	50	30	4	1991	3	6	2	910422	910425	910425	Gao	Bouressa	645	1576800	910606	Mil	81
1991	Gao	Kidal	Tessalit				30	4	1991	3	6	2	910201	910213	910213	Gao	Tessalit	643	2732750	910222	Mil	85
1991	Gao	Kidal	Tessalit	37107	9200	250	200	4	1991	3	6	2	910422	910425	910425	Gao	Tessalit	643	5144000	910721	Mil	40
1991	Gao	Kidal	Tin-Essako	14923	3700	100	80	4	1991	3	6	2	910422				Tin-Essako	545	3488000	910617	Mil	80
1991	Gao	Kidal	Tin-Essako				20	4	1991	3	6	2	910201	910213	910213	Gao	Tin-Essako	545	926500	910223	Mil	85

Year	Region	Cercle	Arrondissement	Total Person Mths. Recm. for Distrn. (A)	Recm. Target Popn.Size (B)	Tonnes Recm. (C)	Tonnes Contrcnd for Deliv. (D)	No. Mths. of Distrn. (E)	Year of Distrb. (F)	Start Month (G)	End Month (H)	Bulletin Month of Recm. (I)	Date of Final Govt. Signature (J)	Date of Trans Contr. (K)	Date of Transpt. Advance (L)	Contracted Cereals Source (M)	Contracted Destination (N)	Distance (O)	Contracted Transport Costs (P)	Delivery Date (Q)	Commodity (R)	FCFA/Ton/Km (P/D/O) (S)
1991	Gao	Kidal	Tinzirine (Tin-Kar)	1492	370	10	20	4	1991	3	6	2	910201	910213	910215	Gao	Tinzirine (Tin-Kar)	715	1215500	910225	Mil	85
1991	Gao	Kidal	Tin-Zaouatene	7260	1800	50	50	4	1991	3	6	2	910201	910213	910215	Gao	Tin-Zaouatene	765	3251250	910222	Mil	85
1991	Gao	Menaka	Menaka				50	4	1991	3	6	2	910201	910213	910215	Gao	Menaka	315	1260000	910222	Mil	80
1991	Gao	Menaka	Menaka	88530	21900	590	540	4	1991	3	6	2	910422			Gao	Menaka	315	13608000	910710	Mil	80
1991	Gao	Menaka	Anderamboukane	47595	11800	320	295	4	1991	3	6	2	910422			Gao	Anderamboukane	420		910600	Mil	
1991	Gao	Menaka	Anderamboukane				25	4	1991	3	6	2	910201	910213	910215	Gao	Anderamboukane	420	840000	910225	Mil	80
1991	Gao	Menaka	Tidermene	27023	6700	180	155	4	1991	3	6	2	910422			Gao	Tidermene	430		910600	Mil	
1991	Gao	Menaka	Tidermene				25	4	1991	3	6	2	910201	910213	910215	Gao	Tidermene	430	860000	910225	Mil	80
1991	Gao	Menaka	Inekar				25	4	1991	3	6	2	910201	910213	910215	Gao	Inekar	435	870000	910225	Mil	80
1991	Gao	Menaka	Inekar	44770	11100	300	275	4	1991	3	6	2	910422			Gao	Inekar	430	9460000	910604	Mil	80
1988	Totals or Averages			1172492	261264	8204		4.2	20	6	9	4							0			
1989	Totals or Averages			254802	84954	1784		5	7	6	8	1							0			
1990	Totals or Averages																					
1991	Totals or Averages			487912	120970	3270	3280	4	24	3	6	2							66068275			79
1992	Totals or Averages																					

Table a.17: Gao: Summary of Timeliness and Cost Benefit Ratios in SAP Deliveries

Year	Region	Cercle	Arrondissement	Timing and Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (I-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*I*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*I*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contrct. (see text) (AF)	Kg.Costs of Delivery Contract (see text) (IP/D)/1000) (AG)	Per Kg. Costs to Arrond. ((AF+AG)/(D)/1000)) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
1988	Gao	Gao	Gao		60							125								
1988	Gao	Gao	Djebock		60							125								
1988	Gao	Gao	Haoussa-Foulane		61							150								
1988	Gao	Gao	N'Tillit		61							150								
1988	Gao	Ansongo	Ansongo		61							125								
1988	Gao	Ansongo	Talataye		61							125								
1988	Gao	Ansongo	Tessit		61							125								
1988	Gao	Bourem	Almoustarat		61							135								
1988	Gao	Bourem	Bamba		61							135								
1988	Gao	Bourem	Temera		61							135								
1988	Gao	Kidal	Kidal		61							135								
1988	Gao	Kidal	Agulehoc		61							135								
1988	Gao	Kidal	Bouressa		61							135								
1988	Gao	Kidal	Tessalit		61							135								
1988	Gao	Kidal	Tin-Essako		61							135								
1988	Gao	Kidal	Timetrine (Tin-Kar)		61							135								
1988	Gao	Kidal	Tin-Zaouatene		61							135								

Year	Region	Cercle	Arrondissement	Timing and Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (J-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*1*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*1*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contrct. (see text) (AF)	Kg.Costs of Delivery Contract (see text) ((P/D)/1000) (AG)	Per Kg. Costs to Arrond. ((AF+AG)/(D/1000)) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
1988	Gao	Menaka	Anderamboukane		61							125								
1988	Gao	Menaka	Tidarmene		61							125								
1988	Gao	Menaka	Inekar		61							125								
1989	Gao	Gao	N'Tillit		151							75								
1989	Gao	Ansongo	Talataye		151							100								
1989	Gao	Bourem	Almoustarat		151							75								
1989	Gao	Bourem	Bamba		151							75								
1989	Gao	Bourem	Temera		151							75								
1989	Gao	Menaka	Tidarmene		151							75								
1989	Gao	Menaka	Inekar		151							75								
1991	Gao	Gao	Djebock	15	28	-13	0	12	3	0%	20%	125	125	4538	4538	93	3	96	77%	77%
1991	Gao	Gao	Djebock	118	28	90	80	3	35	68%	30%	125	125	4538	4538	93	4	96	77%	77%
1991	Gao	Ansongo	Talataye	133	28	105	80			60%	0%	110	110	3993	3993	93				
1991	Gao	Bourem	Almoustarat	120	28	92	80	3	37	67%	31%	140	140	5082	5082	93	12	105	75%	75%
1991	Gao	Kidal	Kidal	20	28	-8	0	12	8	0%	40%	125	125	4538	4538	93	32	125	100%	100%
1991	Gao	Kidal	Kidal	146	28	118	80	3	63	55%	43%	125	150	4538	5445	93	32	125	100%	83%
1991	Gao	Kidal	Agulehoc	125	28	97	80	3	42	64%	34%	125	150	4538	5445	93	41	134	107%	89%
1991	Gao	Kidal	Agulehoc	19	28	-9	0	12	7	0%	37%	125	125	4538	4538	93	44	137	109%	109%
1991	Gao	Kidal	Bouressa	23	28	-5	0	12	11	0%	48%	125	125	4538	4538	93	55	147	118%	118%
1991	Gao	Kidal	Bouressa	125	28	97	80	3	42	64%	34%	125	150	4538	5445	93	53	145	116%	97%
1991	Gao	Kidal	Tessalit	21	28	-7	0	12	9	0%	43%	125	125	4538	4538	93	55	147	118%	118%
1991	Gao	Kidal	Tessalit	170	28	142	80	3	87	47%	51%	125	150	4538	5445	93	26	118	95%	79%
1991	Gao	Kidal	Tin-Essako	136	28	108	80			59%	0%	125	150	4538	5445	93	44	136	109%	91%
1991	Gao	Kidal	Tin-Essako	22	28	-6	0	12	10	0%	45%	125	125	4538	4538	93	46	139	111%	111%
1991	Gao	Kidal	Timetrine (Tin-Kar)	22	28	-6	0	12	10	0%	45%	125	125	4538	4538	93	61	153	123%	123%
1991	Gao	Kidal	Tin-Zaouatene	21	28	-7	0	12	9	0%	43%	125	125	4538	4538	93	65	158	126%	126%
1991	Gao	Menaka	Menaka	21	28	-7	0	12	9	0%	43%	100	100	3630	3630	93	25	118	118%	118%
1991	Gao	Menaka	Menaka	159	28	131	80			50%	0%	100	100	3630	3630	93	25	118	118%	118%
1991	Gao	Menaka	Anderamboukane	149	28	121	80			54%	0%	100	100	3630	3630	93				
1991	Gao	Menaka	Anderamboukane	22	28	-6	0	12	10	0%	45%	100	100	3630	3630	93	34	126	126%	126%
1991	Gao	Menaka	Tidarmene	149	28	121	80			54%	0%	100	100	3630	3630	93				
1991	Gao	Menaka	Tidarmene	22	28	-6	0	12	10	0%	45%	100	100	3630	3630	93	34	127	127%	127%
1991	Gao	Menaka	Inekar	22	28	-6	0	12	10	0%	45%	100	100	3630	3630	93	35	127	127%	127%
1991	Gao	Menaka	Inekar	123	28	95	80			65%	0%	100	100	3630	3630	93	34	127	127%	127%

Year	Region	Cercle	Arrondissement	Timing and Delivery Performance								Costs and Benefits Performance								
				Total Days Between 1st Recm. and Actual Deliv. (Q-I) (T)	Total Days Between 1st Recm. and 1st Month Deliv. (G-I) (U)	No. of Days Late Of Actual Delivery (Q-G) (V)	Days 'tween 1st Recm. and Final Govt. Signature (I-I) (W)	Days 'tween last Govt. Sign. and Issue Trans.Contr. (K-J) (X)	Days 'tween Sign. Trans. Contract and Delivery (Q-K) (Y)	Sign. of Govt. as % of Total Deliv.Time (W/T)% (Z)	Transport. as % of Total Deliv.Time (Y/T)% (AA)	Price Millet per Kg. at SAP Start Mth. (AB)	Price Millet per Kg. at Actual Delivery Mth. (AC)	Normative Value of Delivery Per Individ. (AB*1*Mth.Kg.) (AD)	Value at Actual Deliv.Time Per Individ. (AC*1*Mth.Kg.) (AE)	Kg.Costs of Grain to Arrond. Excluding Transport Contrct. (see text) (AF)	Kg.Costs of Delivery Contract (see text) (PKD/1000) (AG)	Per Kg. Costs to Arrond. (AF+AG)-(D/1000) (AH)	Total Normative Cost/Ben Ratio (AH/AD) (AI)	Total Actual Cost/Ben Ratio (AH/AC) (AJ)
	1988 TOTALS AND AVERAGES				61															
	1989 TOTALS AND AVERAGES				151															
	1990 TOTALS AND AVERAGES																			
	1991 TOTALS AND AVERAGES			79	28	51	40	9	23	29%	30%	100	100	3630	3630	93	32	125	125%	125%
	1992 TOTALS AND AVERAGES																			

APPENDIX XVI: NON-SAP FOOD DISTRIBUTIONS MADE BY PVOS AND GOVERNMENT

Year	Month	Tons	Commodity	Region	Arrondissement	PVO/Govt.	Comments
1991	MAR	29		Koulikoro	Boron	PIP	
1991	MAR	35		Koulikoro	Toukoroba	PIP	
1991	MAY	217		Kayes		Foundation Stromme	
1991	JUN	47.5		Kayes	Gavinane	Foundation Stromme	
1991	JUN	270		Kayes	Yelimane	Foundation Stromme	
1991	JUL	n.a.		Koulikoro	Koulikoro	MAT	
1991	JUL	n.a.		Koulikoro		EE	
1991	JUL	n.a.		Koulikoro		SECAMA	
1991	JUL	18.5		Segou	Pogo	Eglise Protestante	
1991	JUL	n.a.		Mopti	n.a.	World Relief and MAT	
1991	AUG	n.a.		Kayes	n.a.	Fondation Stromme, MAT-CTSP	FFW and Free Food
1991	AUG	n.a.		Mopti	Bandiagara	World Relief.CARE	
1991	AUG	n.a.		Timbuktu	Region	CARE, CICR, CNAUR AND AEN	
1991	SEPT	n.a.		Koulik	Region	MAT, SECAMA	
1991	SEPT	n.a.		Segou	Macina	MAT	
1991	SEPT	n.a.		Segou	Niono	MAT	
1991	SEPT	n.a.		Mopti	Mopti,	CTSP, MAT	
1991	SEPT	n.a.		Mopti	Douentza	CTSP, MAT	
1991	SEPT	n.a.		Mopti	Tenenkou	CTSP, MAT	
1991	SEPT	n.a.		Timbuktu	Niafunke	MAT, CTSP and CARE	
1991	SEPT	n.a.		Timbuktu	Timbuktu	MAT, CTSP and CARE	
1991	SEPT	n.a.		Timbuktu	Dire	MAT, CTSP and CARE	
1991	SEPT	60		Gao	Gao	CTSP	
1991	OCT	20		Timbuktu	Bambara-Maounde		
1991	OCT	28		Timbuktu	Soumpi		
1991	NOV	5		Timbuktu	Gourma-Rharous	AEN	
1991	DEC	4		Kayes	Marena	Fondation Stromme	
1991	DEC	19.2		Gao	Ansongo	CTSP	

Year	Month	Tons	Commodity	Region	Arrondissement	PVO/Govt.	Comments
1991	DEC	32		Gao	Bourem	CTSP	
1991	DEC	n.a.		Gao	Kidal	CTSP	
1992	JAN	6	Sorghum	Kayes	Ambidedi	PNVA	
1992	JAN	10	Sorghum	Timbuktu	Cercle Dire	CICR	Displaced
1992	JAN		Sorghum	Timbuktu	Issafaye-Farana	CICR	
1992	JAN	40	Sorghum	Timbuktu	Bintagoundou	CICR	
1992	FEB	5	Rice	Timbuktu	Amadia	FIDA	
1992	FEB	2	Rice	Timbuktu	Dire Central	CICR	Displaced
1992	FEB		Cash	Timbuktu	Soumpi	Coop Suisse	
1992	MAR	30	Millet	Timbuktu	Farach	CICR	
1992	MAR		Millet	Timbuktu	Bankor	CICR	
1992	MAR	60		Gao	Gao	Coop. Francaise	
1992	MAR	50		Gao	Ansongo	Coop. Francaise	
1992	MAR	70		Gao	Bourem	Coop. Francaise	
1992	MAR	200		Gao	Kidal	Coop. Francaise	
1992	MAR	70		Gao	Menaka	Coop. Francaise	
1992	APR	72	Millet	Timbuktu	Bintagoungou	CICR	Displaced
1992	APR	36	Cowpeas	Timbuktu	Bintagoungou	CICR	Displaced
1992	APR	Lt. 5000	Oil	Timbuktu	Bintagoungou	CICR	Displaced
1992	APR	20	Millet	Gao	Tessalit	MAT	
1992	MAY	10		Mopti	Youvarou C.	Min Agric.	
1992	MAY	5.7	Millet	Timbuktu	Tin Aguelhaj	CICR	
1992	MAY	7.2	Millet	Timbuktu	Lac Tele	CICR	
1992	MAY	10		Timbuktu	Gourma-Rhar.Cnt.	MAT	
1992	JUN	29.5		Mopti	Cercle	Min Agric.	
1992	JUN	7.2		Mopti	Bandiagara	Min Agric.	
1992	JUN	35		Mopti	Youvarou	Min Agric.	
1992	JUN	152		Timbuktu	Soumpi	Coop Suisse	
1992	JUL	63.7	Millet	Timbuktu	Goundam	CICR	
1992	JUL	26.4	Beans	Timbuktu	Goundam	CICR	

Year	Month	Tons	Commodity	Region	Arrondissement	PVO/Govt.	Comments
1992	JUL	Lt 10695	Oil	Timbuktu	Goundam	CICR	
1992	JUL	90	Millet	Timbuktu	Lere		
1992	JUL	4	Beans	Timbuktu	Lere		
1992	JUL	Lt. 9000	Oil	Timbuktu	Lere		
1992	JUL	171	Sorghum	Timbuktu	Koumaira	OMAES	FFW
1992	JUL	18	Beans	Timbuktu	Koumaira	OMAES	FFW
1992	JUL	3	Milk	Timbuktu	Koumaira	OMAES	FFW
1992	JUL	30	Millet	Timbuktu	Banikane	MAT	
1992	JUL	47	Semolina	Gao	Inekar (Menaka)	VM	
1992	AUG	7	Millet	Koulikoro	Banamba	EE	May Flood
1992	AUG	2707		Mopti	Sah/Ambiri	MECATS	
1992	AUG	7		Mopti	Konna	PAM	FFW
1992	AUG	6.3		Mopti	Mopti	PAM	FFW
1992	AUG	8		Mopti	Ambiri	PAM	FFW
1992	AUG	26375	Millet	Timbuktu	Timbuktu Town	CARE	
1992	AUG	11940	Millet	Timbuktu	Timbuktu Arron.	CARE	
1992	AUG	11.4	Millet	Timbuktu	Goundam	CICR	
1992	AUG	Lt. 1179	Oil	Timbuktu	Goundam	CICR	

AEN-Assistance de l'Eglise Norvegienne
CARE-Cooperative for American Relief Everywhere
CICR-International Red Cross
EE-Eglise Evangelique
FIDA
MAT-Ministère de l'Administration Territoriale
MECATS
OMAES
PAM-World Food Program
PIP-Plan International de Parrainage
PNVA-Programme National de Vulgarisation Agricole
SECAMA-Catholic Relief
VM-World Vision, Vision Mondiale

APPENDIX XVII: DESCRIPTION OF ANTHROPOMETRIC INDICATORS

I. International Standards for Anthropometry

In 1978, the World Health Organization (WHO) recommended that the National Center for Health Statistics/Centers for Disease Control (NCHS/CDC) growth reference curves be adopted as the international standards. They include reference standards for weight for height, height for age, and weight for age, and head circumference from birth to 18 years. The curves are derived from national samples of U.S. children.

The three measurements used in the studies referred to in this document are weight for height, height for age and weight for age. There are differences in the significance of each of these indicators, broadly distinguished as follows:

- Weight for height (W/H), or wasting, meaning a reduction in the amount of body tissue for a given height, is an indicator of current nutritional status and is the measurement most often used to assess at-risk individuals. It reflects recent or current dietary intake and energy deficit, and it has the major advantage of being age independent. Finding out the correct age of children can be very time-consuming during survey work, and guesses have been found to be highly inaccurate in Mali. Birth certificates may or may not be available, unavailable to female household members and kept by male heads of household in a packet of papers that must be checked through (Sundberg, p.2 and ll, "Observations from OHV village trips").

A disadvantage of using weight for height is that once a child is stunted (see below), the ratio of weight for height may mask mild or moderate malnutrition. Children with mild or moderate weight for height (acute) malnutrition generally do not suffer long-term physical or mental damage. (Mild W/H malnutrition is 80-90% of reference median, or 1-2 standard deviations from the median; moderate W/H malnutrition is 70-80% of reference median or 2-3 standard deviations from the median.) Children with severe malnutrition, that is below 70% or 3 standard deviations below the reference median, are likely to have physical and mental effects which may or may not be reversible.

Early warning systems in Africa generally classify the degree of weight for height moderate and severe (less than 80 of the reference median) malnutrition of under five year olds between 65 cm. and 110 cm. in height, as follows:

Mean Percentiles	Status	Percent of Children <80% W/H of the reference median

>95%	Good	<5%
90-95%	Satisfactory	6-10%
85-89%	Poor	11-15%
80-84%	Very Poor	16-20%
<80%	Emergency	>20%

In Mali, an alarm is sounded in the SAP system when the percentage of children below 80% of weight for height reference median (or under 2 standard deviations) is 10% or more. Twenty percent or more is considered a famine situation.

- Height for age, (H/A) or stunting, is an indicator of long-term nutritional status, and is often used to measure changes and make comparisons across populations over time. Children who fall below 2 standard deviations, or are less than 90% of the height for age median, are moderately growth stunted, while those below 3 standard deviations are severely stunted. In Mali, more children are growth stunted than acutely malnourished. Although the latter figures are also high but compare with rates in neighboring countries of Africa.

- Weight for age (W/A) is a measure of underweight and an indicator of long-term nutritional status. Many weight for age malnourished children have stunted heights. Children below 2 standard deviations, or 75% of the reference median, are *moderately* malnourished, while those below 3 standard deviations and 60% or below weight for age are *severely* malnourished. It has been suggested (by NCP) that current Malian growth cards represent only severe malnutrition (-3SD) in the danger, or red, zone while -3SD to -2SD is in the yellow zone, potentially conveying the idea that yellow is not at risk. In fact, many moderately malnourished are at great health risk while the "severely" malnourished children are at risk of death.

II. Use of Z Scores of Standard Deviations and Percentages of Median.

-What do percentages of median imply and why are they no longer used, as well as the percent of children below the 3rd percentile? In the 1970s, the different anthropometric indicators, weight for age, height for age and weight for height were usually expressed in a specified percentage of the median of the reference population. Different classification systems specified different "cutoff" points to indicate moderate and severe degrees.

- Why change percentage of the median? Percent of the median does not have the same meaning across ages nor across indicators. The use of percentiles (i.e., the percentage of children below x percentile for weight for height or height for age) is restricted by limitations in the original data set. The general cutoff point for moderate PEM is the 3rd percentile. The original NCHS/CDC reference curves, however, extended from only the 5th to the 95th percentile for the three indicators. Therefore, while these calculations are valid for monitoring the longitudinal growth of individual children, they are not very useful for

assessing the status of a population whose growth patterns lie below the lowest percentiles of the reference, as is often the case in developing countries.

- Why z-scores? In order to overcome the limitations of the percent of median and percentage of median methods, the NCHS/CDS growth reference data have been transformed into curves which approximate normal distributions. Cutoff points can be calculated in terms of standard deviations (or z-scores) away from the median. Deriving normal curves allows for the definition of anthropometric cutoff points by extrapolation beyond the observed outer percentiles of the original data. One of the main advantages of the z-score method is that anthropometric indicators expressed in terms of standard deviations are comparable across both ages and indicators. A wasted child with a -2 z-score for both weight for height and height for age suffers from the same degree of acute and chronic PEM.

- Which method yields the "highest rates of malnutrition"?. The highest rates are obtained by calculating from below the 3rd percentile method, while the percent of median is least sensitive and yields the lowest rates. The standard deviation or z scores lies between the two, and is today almost exclusively used in presenting anthropometric results.

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