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MARKET INFORMATION SYSTEMS

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PREFACE

The Agricultural Analyses and Design (AAD) activity is an eight-month design activity undertaken by the Chemonics International RAISE Consortium through funding supplied by USAID/Rwanda. USAID/Rwanda is using this study and design effort to support its Strategic Objective Number Three (SO3) *to increase the ability of rural families in targeted communities to improve household food security*. Specifically, USAID seeks to obtain information and proposed intervention strategies, approaches and activities suitable for USAID/Rwanda's support in achieving the second Intermediate Results under SO3 (IR3.2) *of creating and enhancing internal production / marketing chains that promote broad-based economic growth*. The purpose of AAD, therefore, is to provide USAID/Rwanda directions and information for their use in future development and eventual funding of a project that seeks to revitalize agribusiness in Rwanda and recreate links between the rural sector and private sector traders and processors. This USAID project will achieve its objective by addressing identified constraints and opportunities within the commodity chain for increasing economic growth via agricultural production and agribusiness. The principal task of AAD is to identify these constraints and opportunities.

The Agricultural Analyses and Design activity is divided into three phases. The first phase (two months) is to identify and recommend for in-depth study to USAID/Rwanda those commodity chains and interventions that have the most potential for creating increased economic growth, internal and external trade, opportunities for employment and increased income. The second phase (four months) will consist of a number of in-depth studies. Some studies will look at crosscutting issues such as transportation, finance and human capital development. An additional study will look at the creation of Agribusiness Support Centers. The remaining studies will be in-depth analysis of interventions related to commodity chains identified in phase one and selected for study by USAID/Rwanda. The results of these studies will provide the basis for phase three of the activity, the synthesis of the studies done in phase two and development of a technical proposal and supportive design components for USAID/Rwanda's use in developing a request for proposal (RFP) for a project to support IR3.2.

Bruce L. Brower of Chemonics International Inc., Market Information Specialist, carried out a mission in Rwanda from March 13 to March 25, 2000. The purpose of the mission was to investigate the markets, market information systems, and options for improvement. This report presents the major issues, findings and recommendations for market information system for the project design.

LIST OF ACRONYMS

AAD	Agricultural Analysis and Design project for USAID under the RAISE IQC
AMISR	Agricultural Market Information System of Rwanda
BNR	National Bank of Rwanda
CIF	Cost, Insurance and Freight. This is a way of describing the price of a product that includes the cost of getting the product to the buyer. The buyer takes position of the product when it is delivered to his location.
CPD	Commodity Price Database. A computerized database management system designed to handle agricultural commodity prices.
CPI	Consumer Price Index
DRSA	Regional Agricultural Service, Direction Regional de Service Agricole
FOB	Free On Board. This is a way of describing the price of a product as its value at the seller's site and loaded onto the buyer's vehicle, but absorbs no additional value based on the transport costs and insurance. The buyer takes position at the physical location of the product for sale.
FEWS	Famine Early Warning System
FOODNET	An information service of the Marketing and Post-Harvest Research in Eastern and Central Africa project. http://www.cgiar.org/foodnet
GOR	Government of Rwanda
ITS	International Trade Centre of the United Nations
MINAGRI	Ministry of Agriculture
MINECOFIN	Ministry of Economic Planning and Finance of Rwanda
MINICOM	Ministry of Commerce of Rwanda
MNS	Market News Service
NA	Not Available
NGO	Non Governmental Organization
PASAR	Food Security Support Project of Rwanda, Projet d'Appui a la Securite Alimentaire au Rwanda
RAISE IQC	A USAID Indefinite Quantity Contract aimed at improving rural incomes from agricultural and environmentally related activities that are economically and environmentally sustainable.
RwF	Rwandan Francs
TBD	To Be Determined
UN	United Nations
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WB	World Bank

EXECUTIVE SUMMARY

Market information (if it is timely, accurate, consistent and widely available) has repeatedly been shown to have a powerful positive effect on increasing the efficiency, size and effectiveness of free markets. Of the various types of market information, price information is by far the most important.

To be most effective, agricultural market prices (particularly for more perishable commodities) need to be widely available on a daily basis. At present, publicly available, daily agricultural price information is unavailable in Rwanda. Several important Rwandan information efforts are either currently existent or being planned. Most important for the system proposed here, is the PASAR Project. It has a history of good data and data collection systems. Information is published bi-weekly. Another project, funded by the World Bank to work with the Ministry of Agriculture, is currently under design. Every effort should be made to collaborate with and leverage impact from these mutual efforts, to the greatest extent possible. At the very least, there should be free data exchange among these different efforts.

Good agricultural market information systems must surmount a number of serious difficulties. Because the high potential of the information is only achieved if it is equally available to all, it must be distributed free of charge. This means the public sector should be involved and should pay at least part of the cost. However, the public sector is typically not sufficiently agile to manage such a system to consistently generate credible daily price information. The public sector also, typically, has budgetary problems. It often cannot provide sufficient funds in an efficient way. Furthermore, it is not structured to allow a successful system to capture funds from the sale of information and services to cover its costs. The private sector is sufficiently agile and motivated to operate such a system, but it has an inherent conflict of interest. Since information can translate to economic gain, there will always be significant pressure to succumb to conflicts of interest. As a case in point, the wholesale traders of Rwanda, who currently run their own informal information system, can be expected to oppose a public system because of the threat to their interests by the loss of their information monopoly.

The agricultural markets of Rwanda are very small by world standards. They are physically small. They move relatively small volumes of product. They have infrastructure problems. Most suffer from the lack of a number of elements, including concrete or asphalt pads, roofs, storage, cold storage, good access, truck parking, waste management, and access to utilities. Efforts are currently underway to improve basic infrastructure in a number of markets.

The study recommended putting into place a new price collection and dissemination system called the Agricultural Market Information System of Rwanda (AMISR). It would track daily prices for the four major Rwandan markets -- Kigali, Ruhengeri, Gisenyi, and Butare. AMISR would collect wholesale prices and store the data in computerized databases. It would disseminate price information by nationwide radio broadcasts, twice daily. Access to price data through these radio broadcasts would be free. The study proposes, however, that AMISR should sell its other services and publications. It could sell subscriptions for email and fax access to the daily prices. AMISR could also maintain subscriptions and databases on international export prices and provide direct support to the Agribusiness Center. AMISR

could also produce analyses, publications, and responses to customized requests, all for a fee. It would also coordinate with other Rwanda-based projects and regional projects.

The study further proposed that the AMISR Board of Directors include representatives of the public sector, private sector, and donors. Financial management of AMISR could be administered by an NGO.

The study suggested formation of an endowment fund to ensure long-term financial support for AMISR. Operating funds could be initially drawn from the USAID project. The Ministry of Agriculture of the Government of Rwanda could also contribute and name the Chairperson of the Board of Directors. Other sources of funds could include donors, advertisers, sponsors, and sales of publications and services. The cost of this market information system is low in relation to its benefit for the economy. It is not expected, however, that the GOR will be capable of financially sustaining the system by itself. As AMISR proves itself to be an effective, low cost development engine, it could seek donor contributions to its endowment fund to ensure its long-term sustainability. If such contributions sufficiently increase the endowment during the life of the USAID project, AMISR may be able to achieve sustainability.

LE SOMMAIRE EXECUTIF

L'information du marché (si elle est faite à temps, si elle est juste et consistante et largement disponible) a souvent été montrée comme ayant un effet positif de grande importance dans l'amélioration du fonctionnement, l'étendue et l'efficacité des marchés libres. Parmi les différents types d'information du marché, celle des prix est de loin le seul type le plus important de l'information du marché, qui est nécessaire au secteur privé et marchés libres.

L'étude note plus loin que pour être plus efficace, les prix des marchés agricoles, surtout pour les denrées périssables, nécessitent d'être quotidiennement disponibles en grande quantité. Présentement l'information quotidienne disponible au public sur les prix des denrées agricoles est inexistante. Des efforts considérables dans le domaine de l'information sont en planification au Rwanda. Actuellement, le plus important, en rapport avec le système ici proposé, est le projet PASAR. Celui-ci a des données fiables et utilise des systèmes appropriés de collection de données. Ses publications paraissent deux fois la semaine. Un autre projet financé par la Banque mondiale et devant être opéré par le Ministère de l'agriculture est à l'étude. Dans la mesure du possible, tout effort devrait être effectué afin de collaborer et conjuguer les efforts. Il devrait y avoir au moins un échange de données entre les différentes parties concernées.

Des systèmes d'information du marché agricole doivent surmonter un nombre de difficultés sérieuses. Puisque l'objectif important de l'information est seulement atteint si l'information est équitablement disponible à tous, celle-ci devrait alors être distribuée gratuitement. Ce qui veut dire que le secteur public devrait être impliqué et devrait payer au moins pour une partie des frais. Toutefois, il est vrai que le public n'est pas suffisamment préparé pour gérer un tel système et en tirer constamment des informations crédibles sur les prix des denrées selon la situation du jour. Le secteur public a des problèmes typiques d'ordre budgétaires en matière de fourniture des fonds suffisants et de ne pas avoir de solution efficace d'avoir un bon système permettant d'obtenir des fonds de la vente de l'information et des services pour couvrir des dépenses élevées. Le secteur privé est suffisamment éveillé motivé pour faire fonctionner le système, mais il a un conflit inhérent des intérêts. Puisque l'information peut traduire les profits économiques, il y aura une pression significative d'être victime des conflits d'intérêt. Pour illustrer ce cas, les commerçants grossistes au Rwanda qui, actuellement disposent de leur propre système d'information informelle peuvent opposer un système d'information public car leurs intérêts sont menacés par la perte de leur monopole d'information.

Les marchés agricoles au Rwanda sont très petits si l'on se réfère aux standards internationaux. Ils sont physiquement petits. Ils disposent des volumes relativement petits de produits agricoles. Ils font face aux problèmes de l'infrastructure. La plupart souffre du manque de beaucoup d'éléments nécessaires comme les pavements en matière dur (béton, asphalte), toiture, entrepôts, chambres froides, facilités d'accès, parking pour camions, gestion des déchets et accès aux services publiques. Des efforts sont en cours pour l'amélioration des infrastructures de base dans plusieurs marchés.

L'étude propose de mettre en place un nouveau système de collecte et de diffusion d'information sur les prix, appelé AMISR (Agricultural Market information system of Rwanda) – Système d'information du marché agricole du Rwanda. Il est recommandé que

AMSIR rapporte les prix quotidiens au niveau national à la radio et dans les 4 marchés principaux du pays (Kigali, Ruhengeri, Gisenyi et Butare). AMSIR se chargerait de la collecte des prix offerts par les grossistes et les informatiserait. La diffusion des données sera effectuée deux fois la journée sur les ondes de la radio nationale. Bien que l'accès aux données par voie de la radio soit gratuit, il est proposé que AMSIR vende ses autres services et publications. Il pourrait vendre les droits d'abonnement à l'accès à l'information (sur les prix quotidiens) par E-mail et Fax. Il pourrait également maintenir l'abonnement et les bases de données sur les prix d'exportation au niveau international et fournir un soutien direct au centre agro-industriel. AMSIR pourrait également produire des analyses, publications et fournir des réponses aux demandes des clients moyennant un certain paiement. Il pourrait également coopérer avec d'autres projets rwandais et régionaux.

L'étude propose en plus que AMISR soit dirigé par un conseil d'administration composé des membres venus du secteur public, privé et du représentant des donateurs. Il est proposé, dans l'étude, que la gestion financière d'AMISR soit confiée à une ONG.

Pour pouvoir répondre au soutien financier à long terme de AMISR, l'étude recommande la constitution d'un fonds de dotation. Les fonds de fonctionnement pourraient être initialement tirés du projet financé par USAID. Le Ministère de l'Agriculture pourrait également donner sa contribution au financement de ce projet et nommer le président du conseil d'Administration. Les autres sources de financement comprendraient les donateurs, agents publicitaires, sponsors et la vente des publications et des services. Le coût du système d'information du marché est bas par rapport à ses avantages envers l'économie du pays. Il est à craindre pourtant, que le Gouvernement Rwandais ne puisse être capable de soutenir seul financièrement le système une fois qu'il sera établi. Comme AMISR représente lui-même un moteur de développement au coût réduit, le système pourrait s'efforcer d'atteindre son autosuffisance à travers ses fonds de dotation en permettant aux donateurs de reconnaître la valeur de rendre ce service durable et en demandant leur contribution au fonds. En développant le fonds au cours de l'existence du projet, AMISR peut être capable de compléter les fonds reçus du Gouvernement Rwandais et ainsi réussir son autosuffisance.

SECTION I. INTRODUCTION

A. Purpose of this Report

This assignment was undertaken as part of the AAD project. Its primary objectives were:

- Describe and evaluate the present market information systems in Rwanda.
- Describe a market information system that could be included in the implementation project that results from the AAD work. This would include:
 - system structure
 - implementation strategies for both domestic and export commodities
 - organizational linkages
- Role of the donor community, the government, and the private sector in terms of management and financing the service, in the long term.

B. What is “Market Information”

The term “market information” is quite broad and requires refinement in order to serve the purposes of the project preparation activities of AAD. The driving principal behind the operational definition of “market information” is: “for what purpose.” Governments use *market information* to guide policy and planning as well as report performance. Educational institutions use market information to test theories, analyze trends, make comparisons and so forth. The private sector uses market information to conduct business. The purpose of the market information activities of the USAID project that results from the AAD efforts will be to support the private sector in the conduct of business. The necessary conditions that must be met by a functional market information system to support the private sector are:

- Timeliness
- Accuracy
- Consistency
- Availability

Timeliness means time lag between the generation of the information and when it is disseminated must be short. Accuracy means the information must be a true reflection of the market processes. Consistency means the method of information generation gives results that could be replicated. In other words, another person, using the same collection system, would get the same information. Availability refers to the fact that the information can be easily accessed.

Key to the idea of “market information” is the concept of “market.” Markets are places where buyers and sellers come together to exchange money for goods. They are typically fixed locations, with fixed day and time schedules for sales, and may have other management regulations. They provide a central location, not only for doing business, but for information collection.

For the purposes of this report, “market information” will refer mainly to prices. The “markets” will include the largest, daily markets of Rwanda, as well as export markets. More explanation will be given later as to the details behind these selections.

SECTION II. BACKGROUND AND CURRENT CONDITIONS

A. The Value of Market Information

Markets are places where goods and money change hands. Markets do not work well unless there is both freedom of transaction and information. In 1995, the Nobel Prize for Economics was awarded for seminal work in quantifying the cost to market systems when information is either unavailable or not equitably distributed. The outcome of that work was that when information is inaccurate, differentially accessible, inconsistently available, or untimely that the cost, in terms of market efficiency and lost benefit to the economy, is very high. The ideal economic market is one in which all players have equal access to one another and equal access to perfect information. Perfect information, as noted in the introduction, means the information has four qualities: timely, accurate, consistent, available.

A global lesson, painfully learned over the last seventy years, is that command economies do not work as well as free market economies. The economic improvement of Rwanda requires that money flow to the country. There has to be a reason for that to happen. Rwanda must grow, manufacture, or mine something that the rest of the world wants to buy. In other words, Rwanda must participate in the global market place. Certainly growth can occur because of internal economic improvements, but they will likely occur much slower unless there is active participation in the global market place. The equitable economic improvement of Rwanda means that the availability of opportunity to participate in the economic improvement must be widely available. The fact that about 90 per cent of the population of Rwanda is involved in agriculture leads to the obvious conclusion that some important component of this, hoped for, economic improvement has to be built through agricultural development. If that is to happen, the lessons of free markets include that government policies on the functioning of markets must favor free market practices, and that good market information (timely, accurate, consistent) has to be made universally available.

B. "Price" Rules

There can be many elements of information that could fall under the term "market information" including the diversity of products in the market, volumes, prices, origin, and an infinity of others. The public sector has an insatiable appetite for all kinds of information. It may find some kinds of information more important than others, but when given the opportunity, will always want the greatest diversity, depth and detail of information possible. The private sector is far more selective. Of all things that could be considered under the term "market information" only one predominates. Price is king. If you provide the private sector with good price information, in a climate where regulatory restrictions are not burdensome and where transport of goods is reasonable, then the forces of the free market will seek to optimize conditions, getting product to the where there is demand, at the best price.

The second most important piece of information to the private sector is volume. However, when individuals are active participants in specific markets, they quickly gain a good concept of the volumes that move through the market. Since the inverse relationship between price

and volume is extremely strong, when the price is known, the volume is also sensed. As volumes rise, demand is satisfied and prices fall. When there is a scarcity, prices rise.

Between the two types of data, price and volume, price is relatively easy to collect. Volume is typically very difficult to collect. Most markets do not have controlled access or a system for registering the product entering the market. Whereas registering price can be done relatively quickly by walking through the market, getting the volume would require people tracking activity all day. There would have to be a way of registering unsold product, carryover from previous days, and a way of not double counting when product is sold multiple times. Because of the strong relationship between price and volume, and the fact that price is easy to collect but volume is difficult, it is typically not cost effective to get both. Price alone is usually sufficient.

In Rwanda, the government policies are tending toward open markets. The road network is quite viable. Though transport is somewhat problematic, it will improve in terms of availability and cost, as the volume of product and the market activity both increase. Under these conditions, it is proposed that the most powerful contribution that can be made to accelerate broad based economic improvement throughout Rwanda will be to provide timely, accurate, consistent, and easily accessible information on prices.

C. What Price? Where? When?

Most agricultural product is sold multiple times before it is consumed. A typical chain might have the farmer selling to a transporter, who takes the product to market and sells in bulk to a wholesaler, who then sells in smaller quantities either to other wholesalers, retailers, or directly to the consumer. Each sale typically will represent an increasingly higher price. The question is: which of those prices is the most representative and the one to be reported? Producers, at one end of the chain, are interested in the farm gate price, or the value of the harvested product, ready for transport to the market. But farm gate price is not consistent. It varies, to a large degree on how remote the farm. The farm gate price for a distant, hard to reach farm is much lower than for a farm that is located next to a market. Consumers, at the other end of the chain, are most interested in the retail price. Each participant in the chain is most interested in some intermediate price in between the producer and the consumer.

It gets more complicated. When product reaches the market, it is not typically all sold at the same time. As the day progresses, the market dynamics could well move the price either up or down. Furthermore, different sellers, may sell for different prices, at the same time in the market. As markets become more sophisticated, the issue of price also becomes more complicated, such as when contracts are used. The day of the week can make a difference. Packaging can make a difference. Location of the vendor in the market can make a difference. The marketing skills of the vendor can make a difference, and so on.

While there is a great deal of complexity in the dynamics of pricing, the large agricultural market price information systems of the world have taken an approach that tends to cut across these complexities and yield a highly useable data set. The approach is this, detect the price at the same place, at the same time, in the same way, every day. When this approach is used, consistently, everyone in the chain eventually develops a sense of how the reported price relates to the price of most interest to them.

Most market information systems in the developed nations report wholesale or FOB prices as they are found in physical location. The physical location may be just a relatively small area where many vendors of the same product have located their operations, or it may be a physical location that is either a publically or privately provided market place. Some are combinations of the two. Reporters contact major handlers of specific products in those markets at about the same time every day to collect prices.

In the case of Rwanda, wholesale prices should be collected, particularly for maize, sorghum, beans, potatoes, and the like. However, most of the reporting should be done for prices taken at the public markets. These will typically be retail prices. Apparently, in Rwanda, most product eventually passes through these public markets, so they should be the price collection points for the most widely distributed price information.

The market information system that will be outlined below includes daily price reporting. The questions can legitimately be asked as to whether or not Rwanda needs daily prices. Weekly or bi-weekly may be adequate. It well may be that the current state of economic development is adequately served by weekly or less frequent price reporting. That will rapidly not be the case as development occurs. It is probably already not the case for highly perishable crops. In the development of this report, several of those interviewed reported the peculiar circumstances surrounding this years bumper potato harvest in which prices in the producing areas were below cost, while they were rather high in non-producing areas. This condition suggests that daily price information is needed now. In the bi-weekly price information generated by PASAR, it is fairly common to see large differences in prices among markets. When markets have good price information on a daily basis, the market forces work to minimize these differences. The fact that these differences are as common as they are suggest the need for nationally disseminated daily price information exists now

D. Like Children, No Price is Average

As noted above, there are many prices that could be used to describe a particular product on a given day. This variability in possible prices is sometimes not desirable, such as for developing a simple presentation of the price tendencies over time. Many people will average prices. They may average multiple prices for the same day, or for all the days of a week, or for all the weeks of a month, or for several markets on a day, etc. It is a common practice, but it is a *mathematical exercise that does not really reflect the average price.*

An example will help illustrate the problem. If a price collector is told by one vendor that he is selling a product for 100 RwF per kilo, and another that he is selling the product for 50 RwF per kilo, what would the average be? The tendency is to do the calculation: $(100+50)/2=75$ and say the average was 75 RwF. That may not be right. The missing piece of information needed to calculate the average is the volume sold at that price. If vendor number 2 sold 200 kilos and vendor number 1 sold 10 kilos, then the correct calculation would be: $((100*10)+(50*200))/210=52.38$. The average was 52.38. However, recall that discovering volumes is devilishly difficult. Therefore, calculating the average is usually not possible, because the volumes sold per price, are unknown. Having said that the average is unknown, in fact, it is statistically demonstrable that the more numbers involved, the greater the likelihood that this false average will converge on the true average. For instance, if one does the arithmetic calculation of averaging all the prices reported over the course of a

month, the chances are the resulting figure would be very close to the true average, if one had all the volumes needed to do that calculation. The fewer the numbers involved, the greater the error. Calculating an arithmetic average for the prices of one day will typically involve significant error. Though, the practice is common, it is useful to understand the underlying folly.

The USDA, which is the largest market price reporting system in the world, has tackled this problem by following a fairly simple set of guidelines. AMISR will use these same guidelines. They include the following:

- Reporters will ask several vendors for the price. They will then report the high and the low price of the range of prices they gathered.
- This price range will be for product of good quality, in good condition.
- Exceptional prices will be reported separately. For instance fancy packaging, particularly high quality product, or product in less than good condition and of good quality will be reported separately if they represent important volumes in the market. A high and low price may also be reported for exceptional product. In general, this rule will not be operational in Rwanda until the markets become more sophisticated for grades and standards.
- If the reporter notes that the bulk of the volume of the market is selling in a narrower range than the full range he will report, he has the option of reporting a “mostly” price or a “mostly” price range. For example, if a reporter gives the high and low price for a product as 10-15, but notes that one vendor is moving most of the product and his price is 12, he can report “mostly 12” after giving the 10-15 low-high price range.

It is proposed that the price reporting system used in Rwanda be compatible with that of the USDA. That system is richer in the qualifiers used by any of the systems in place in Rwanda, but it adapts easily to simpler reporting - certain qualifiers are simply not reported. But, by using this system, as Rwanda grows in sophistication and market savvy, the price reporting system will remain capable of responding to the increased sophistication. Also, using the USDA system as a base has two added advantages. First, it helps attune the Rwandan community to the realities of the international market place. Second, it will provide a single system that is equally capable of handling international export prices as well as local Rwandan price reporting.

E. Divulging Prices, Truth or Consequences

Reporting agricultural prices depends on the good will of vendors in the market to truthfully tell the price at which they are selling at the time asked. What is to stop the vendor from misleading the data collector?

Put yourself in the position of the vendor, talking to a data collector. You might reason as follows: “If I tell him a higher price than I am actually selling, then he will report that higher price, and therefore, people coming to the market tomorrow will expect to pay more, and I will make more money.” There is a down side to that devious, happy thought. It is not just buyers who will receive the reported price. Sellers will also know it. That means that people who will be bringing product to sell to you will be unwilling to accept a low price, because they are aware of the reported false high price from the day before.

Experience with most reporting systems is that, over time, sellers become used to - even friends with - data collectors, and tell them the truth. Many also feel a sense of public participation in reporting prices.

When vendors persist in giving false information, and some do persist, it is usually not difficult for data collectors to detect that, because the deceiver tends to be the extreme price, the outlier, the exception. When this happens, the data collector can simply stop using that person as a data source.

In most markets, most vendors, easily slip into a pattern of truthful reporting. Some market information systems, particularly those dealing with wholesalers, have enhanced their rapport with vendors by occasionally giving out baseball caps, tee-shirts, pens, and the like, to their collaborators. Some hold annual holiday parties to which they invite collaborators.

When new reporting systems are established, there may be a few rocky days at the outset, but well run systems quickly gain the confidence and appreciation of market participants and truthful reporting becomes the norm.

F. The Paradoxes of Market Information Systems

1. Who Gets the Benefit? Who Bears the Cost?

The largest agricultural market information system in the world is the one operated in the United States by the USDA. It loses money every year. The second largest is the one operated by the United Nations out of Geneva, Switzerland, the International Trade Centre (ITC). It is subsidized by the UN. Countries of the developed world operate information systems to track internal prices. None of them generates sufficient income to cover their cost of operations. The only agricultural market information systems that are financially self sustaining are the futures markets. This is because they have an information monopoly and sell their information at a very, very high price. A live feed to a coffee futures market can cost several thousand dollars per month. Highly perishable agricultural commodities typically do not move through futures markets and therefore information systems that track those commodities are all money losers - or are they. It depends on how you tally the account.

Governments try to operate rationally. If they are providing a service that is not financially self sustaining, such as agricultural market information, they do so only for a rational reason. The reason was alluded to in the introduction. Information is the fuel that makes free markets function. Governments of developed countries have learned that the cost of providing market information is multiplied many, many times over in the economic activity and vitality that results in the market place. It is difficult to quantify the multiple, but it is large. In order to have the desired effect on the economy, the market information has to be equally available throughout the economy. That means it must be given away free. If a charge is made, that means differential access, which means unequal opportunity in the market place, which means the benefits to the economy are stifled.

Agricultural market information is a public good and should be provided by good governments in recognition of the value to the economy. The public sector bears the cost of the information systems. However, the direct benefit of the information accrues to the private sector. The benefits come back to the government indirectly through taxes on a larger, more active economy. While the quantitative link between the cost of the market information system and the return flow in increased taxes is difficult to measure, it is taken as a well established article of faith in the developed world that the benefits far outweigh the costs. The paradox is, that the cost of the system is born in the public sector, but it can not directly tap the economic benefit of the information, which returns to the private sector. It must be supported on the faith that the value to the economy is so large as to justify the expense.

The problem in developing economies is effectively implementing that article of faith. Even though a government may subscribe to the theory that good market information systems are well worth the cost, they face serious problems in execution. The benefit flow of market information systems is far removed from the cost. Political realities often dictate budget decisions that will not sustain the cost of market information systems. Even when the service is budgeted, the money may not materialize. It is common practice in developing economies for budgets to be drastically downsized during the course of annual operations. Market information systems typically do not survive belt tightening. So, even though governments of developing countries may recognize the long term benefit of the system, their desire to support the system is usually trumped by overwhelming short term demands.

Later in this paper, the design of a market information system will be proposed that offers solutions to this dilemma.

2. Who Should Control It, Public Sector or Private Sector?

Agricultural markets, particularly for perishable commodities, function at very high speed. The amount of time from harvest to consumption is so short that inefficient markets pay a high price in terms of wasted product, and therefore wasted economic return. Agility and speed are the watchwords with maximized economic return the objective.

The public sector works on a slower time schedule. They do not have a profit motive. As a result, it is difficult build incentives into public sector programs so that they can respond to the speed of business.

The private sector, as a whole, greatly benefits from a good market information system. However, if an individual businessman can get important market information that others can not, or if he can get it sooner, he can exploit that to a profit advantage. Therefore, while the economy as a whole is best served by equality, in terms of market information, individual businessmen will always strive for information advantages.

This presents a paradox for agricultural market information systems. If they are run by the public sector, they are plagued by problems of being too slow, inconsistent, questionable quality, and sporadic. If they are run by the private sector there will be constant pressure to co-opt the system for individual gain.

Later in this paper, the design of a market information system will be proposed that protects against abuses, but also satisfies the needs of the private sector for agility, quality, and access.

3. The Better it Works, the Faster it Fails.

Government operated market information systems have an inherent instability. If they are any good, the demand for access to their information rises. This implies an increased cost. More people asking for more copies of reports means more paper, more printing, more time with clients, more photocopies, etc. All this means increasing costs. The budget, however, does not automatically increase. In fact, as mentioned in the preceding paragraphs, they may actually decline over the course of the budget year. The question is how to support this rising cost that results from successful service. The obvious answer is to charge for services.

It has already been mentioned that the only way to get the large benefits in economic activity that can come from market information is to make the information available to everyone, at the same time. This means it has to be distributed without cost. However, it is still possible to charge for services. If someone wants more convenient access, such as through fax or email, or wants historical information, there should be a charge. Of course, the charge for these services can be priced in such a way as to more than cover the direct costs. However, most government operations are under very strict requirements, necessary to prevent malfeasance, to remit all income to the central treasury. In other words, even if the information-providing-service charges for the services that result from the demand that stems from good information, it can not, typically, retain the proceeds from those sales. Hence its costs go up, and at best, its budget remains unchanged. Thus, the more successful the service is, the faster its budget is exhausted, leaving it without resources to operate and therefore it fails.

The design that is presented later in this paper will suggest systems to avoid this pitfall.

G. The Agricultural Markets of Rwanda

The agricultural markets of Rwanda are tiny by world standards. They have infrastructure problems lacking: concrete or asphalt pads, roofs, storage, cold storage, access, parking, waste management, and access to utilities. The wholesale market system is particularly constrained by these problems and is relatively small as a result, for a country with the population of Rwanda. Nevertheless, the wholesale market system, while small, is well established, particularly for the less perishable commodities, including maize, beans, sorghum, peas and potatoes. There are wholesalers with fixed locations who buy and sell in bulk. For the more perishable commodities, the wholesale system consists mainly of transporters who gather product from along the roadside and take it to market and sell to retailers out of their trucks, without a fixed storefront. In addition, much of the sale of product in the markets, particularly outside the large markets, takes place between the producer and the consumer. At the moment, the retail market trade is more important to track than the wholesale trade.

While the wholesale market operations are relatively small, they do operate their own informal, but effective, information system. The traders are in contact with one another around the country by cellular telephone. They will almost certainly see a general, publicly disseminated, daily market information as a threat to the economic advantage they currently hold through their own information system. It is quite probable that these traders will openly and strongly object to the establishment of an information system such as the one described here because it threatens their information monopoly and therefore their economic advantage.

The regular markets are open air. Some have covered areas. Most are open on specific market days. The markets of Kigali, Ruhengeri, Gisenyi, and Butare are the largest and are daily markets. There is recognition among the donor community of the importance of improving the functioning of Rwandan agricultural markets. There are efforts underway to improve a significant number of markets in the country. This will include the installation of concrete slabs and some covered portions of the market which are intended for permanent vendors. Water, sanitation facilities and waste management are included in the plans. Electricity may not be available, at least not at every facility.

In terms of fresh agricultural product, the supermarkets of the country, which are concentrated in Kigali, are unimportant. They carry and sell very little product. By far the most important local product they move, in terms of volume, is meat.

H. Market Information Currently Available in Rwanda

There is keen interest in the donor community to upgrade the provision of market information. For an economy the size of Rwanda's, there is actually a laudable number of activities underway and in planning stages.

Some have characterized the diversity of data collection efforts, both existent and proposed, as duplicative and uncoordinated. There certainly is some truth to that. However, there are a number of purposes to be satisfied that give some reason to the diversity and independence. Perhaps the greatest duplication of effort is in the generation of consumer price indices. However, even there, to the extent that they serve different purposes and are well defined for those purposes, some duplication is justifiable. Clearly, there could be some benefit from agreement on purposes and definitions. There are evolving efforts which will likely have more duplicative elements. Probably of greatest importance will be to see a coordination between PASAR, the MINAGRI product funded by the World Bank - in process of design, and the USAID project that will result from the ADD efforts.

Easily the most important existent system, in terms of longevity is the PASAR project. It has data from before the war. It uses quality systems for generating data and appears to be well run. The data seem to be of high quality and are managed with good, quality controls. PASAR does a good job of blanketing the country's markets for its reporting. The drawbacks to the system are the frequency of the data collection and dissemination. The data are collected bi-weekly. The reports are available by request. They are used in the Ministry of Agriculture's bi-weekly radio broadcast, but as input and background to the fifteen minute program, not as a consistent price broadcast, per se. They are most useful for government purposes to track tendencies and to support policy decisions. They are also useful for the private sector, more so for those commodities that are less price volatile such as grains and beans. As agricultural credit becomes more available, they can also serve a useful role for the private sector for the development of business plans. The emphasis of PASAR tends more in the direction of comprehensive coverage of the country's markets. The effort proposed here tends in the direction of covering the major markets and reporting the data, nation wide, on a daily basis.

Importantly, none of the existent systems fills the need of the private sector for timely, accurate, consistent, widely available market information. The most wanting characteristics of the current systems are that they are not widely available on a daily basis.

Table 1¹ shows a summary of the market information systems currently in place, or under planning, for Rwanda.

Entity	# of Mkts	Data Collection Frequency	# of Items	Price to User	Dissemination	Comments
PASAR	33	Bi-weekly	37	Free	By request, fax, email, via radio prgm. Cronicle Agricole, bi-weekly, not consistent	Concentration on fresh products
MINECOFIN CPI	11	Monthly	316	5,000 Rwf/yr	By request	Includes processed and non-food items
BNR CPI	6	Bi-Monthly	443	NA	Internal reports + quarterly summary	Includes processed and non-food items
MINICOM	TBD	3 Months	125	TBD	Not yet operational, in design, project to start 4/00	
MINAGRI - WB	TBD	TBD	TBD	TBD	Project in design	
USAID	4	Daily	Mkt drvn	TBD	Radio, fax, email, published reports, on-demand reports	Project in design stage, parameters are tentative

¹ This section and table draw heavily upon the document prepared by Karin Christiansen that summarizes price data collection systems in Rwanda. Special thanks to Karin for her willingness to share her work.

SECTION III. MARKET INFORMATION SYSTEM DESIGN

Given the background information in the previous sections, it is suggested that a new market information system be established within the proposed USAID funded project. This market information system could be called the Agricultural Market Information System of Rwanda (AMISR). The following is a description of the possible elements, structure, management and operations including indicative budget for AMISR.

A. Overview: The Elements of a Market Information System

The Agricultural Market Information System of Rwanda (AMISR) could have a primary mission and several secondary missions.

1. Primary Mission of AMISR

- Collect price information on agricultural products in the markets of Kigali, Ruhengeri, Gisenyi, and Butare on a daily basis and disseminate it nationwide via radio within 24 hours of collection.

2. Secondary Missions of AMISR

- Collect price information on agricultural products for the surrounding countries of the region as well as the important export markets.
- Conduct analyses of price information.
- Seek creative ways of disseminating price information and of marketing data and reports so as to maximize the generation of income.
- Seek creative ways of establishing a permanent or sustainable funding base for continued operations

AMISR could function in close collaboration with the Business Center and its operation would have the following characteristics

3. For the Rwanda Markets:

- AMISR would gather price information from the four, major markets of Rwanda, which are all daily markets: Kigali, Ruhengeri, Gisenyi, and Butare. These are fundamentally, retail markets.
- It would also gather price information from the Kigali wholesale markets for maize, beans, sorghum, peas, potatoes, and other agricultural products that move through a formal wholesale market system.
- There would be no set list of products to track. Rather, AMISR could gather price information on all products, with significant volume, that appear in the markets.
- The data would be collected every week day the markets are in operation.
- The data would be disseminated every day, on the day it is collected, country wide, via radio broadcast, as a national free service.
- The data would be available in various formats for a fee:

- Current reports via fax or email, by subscription
 - Customized historical reports
 - Analytical reports
 - Annual and/or semi-annual consolidated summary reports
 - As databases or spreadsheets, for customized analysis
- Free distribution of reports would be made to collaborating institutions or projects.

4. For the Regional Markets:

- AMISR would seek opportunities to collaborate with and share data with organizations generating price and other market related information in surrounding countries.
- AMISR could integrate available regional market information into its reporting system

5. For the Export Markets:

- AMISR could subscribe to the USDA MNS International Report, the ITC reports for Europe for fruits, vegetables, flowers, and perhaps other products (spices, hides, etc.). These data could be stored in paper format and in database format and could be integrated into the normal AMISR fee based services and reports.
- AMISR could access, as needed, other aspects of the Business Center information on export market regulations, fees, taxes, packaging requirements, grades and standards, quality requirements, temporal restrictions, buyers, transport, and so forth.

6. In General:

- AMISR would maintain its data in databases, not spreadsheets.
- AMISR would actively market its services.
- It could generate analytical reports that integrate local, regional and export market information in creative and marketable formats.
- AMISR could actively seek sponsorships for its broadcast information dissemination and advertising for its published materials.

7. Technical Structure

As is common in developing countries, the sale units used in the markets are rustic and not well defined. Sale units such as "hand full," "basket," "bag," and "scoop" are common, without any common definition of what measure, in terms of weight or volume, they have. Without a consistent base of weight or volume, against which to relate prices, the price information is relatively useless. For that reason, each reporter should carry a scale to the market to weigh items. The scale should be capable of measuring up to about 5 kilograms. In most instances, for items sold in higher weights, the sale units become more consistent, such as "hundred weight" or "hundred kilogram bag," and so forth. The price data could then be stored in relation to the weight of the sale unit. For the purposes of the daily price reports, the AMISR staff would decide on a common reporting unit for each commodity, to be used consistently over time. One of the benefits of this approach is that the way the data are reported, in a consistent sale unit, will start to affect the markets in terms of the consistency

employed in the sale units used in the market place. It is a "back door" approach to helping address issues of grades and standards.

Market Information Systems, such as AMISR, have as their primary missions to gather and disseminate daily price information. Secondly, they maintain the data for collateral uses, such as for analyses and price histories. The most common methods for storing the data among these systems have been on sheets of paper, in word processing documents and in spreadsheet files. To maintain maximum flexibility, the data should be stored as databases for use with database management programs, with original paper copies retained in chronological files. The database files can easily be converted to spreadsheet files or word processing files as needed.

An example of a computerized database management program for agricultural prices is the Commodity Price Database, or CPD.

The CPD is a unique, computerized system of capturing and reporting market price information for agricultural commodities. It is highly flexible, allowing for adjustment of prices among sale units, reporting in any currency in the world, and specialized reporting based on a large number of descriptive variables. It produces price histories with a number of options, including output to printers, reports on the computer screen, reports to databases and to spreadsheets. In addition to price histories for single or combined products, it also produces reports of market activity for a given date or range of dates, as the user desires. The system has over two thousand agricultural products categorized. It contains prices for agricultural commodities from the major importing markets of the Americas and Europe. The system is about 100 megabytes in size. The system is available through Chemonics International Incorporated.

One of the important reasons for using a database system like the CPD is that it offers one system which could manage both the national data as well as the export market data. It allows rapid, efficient, flexible access to the data. It provides systems for data protection and security.

AMISR would use a database management system with characteristics similar to those of the CPD. This will allow it full flexibility to manage Rwandan data as well as the ability to manage regional and export market data in the same system.

B. Structure

The organizational structure of AMISR would revolve around its primary mission but be adequate for its secondary missions as well. In terms of operation, there will be many similarities between AMISR to that of a newspaper in terms of operating under very strict production deadlines and an organization wide recognition that no matter what one's position or responsibilities, the first task is to always meet the deadline with a quality product. The structure could include the following positions.

1. Director

The director would oversee the operations, provide the management, direction and supervision for all of the functions of AMISR. He will be responsible for interacting with

donors, the GOR, and in representing AMISR and its interests. He is responsible for fiscal responsibility of operations and for guiding the effort to achieve financial sustainability.

2. Dissemination Specialist - Marketer

The Dissemination Specialist - Marketer would be responsible for the dissemination of data, in particular the daily price reports. He is responsible for establishing and maintaining relationships with the media. He is responsible for marketing special services to the business community. He is responsible for seeking advertisers and sponsors. He is responsible for planning promotional activities. He oversees those involved in the daily price report generation

3. Quality Control and Dissemination Specialist Assistant

The Quality Control and Dissemination Specialist Assistant would assist the Dissemination Specialist - Marketer in his responsibilities. He is responsible for the daily report generation, including checking the data, insuring consistency of format, quality of information and timeliness of dissemination. He directly supervises the reporters. He is responsible for maintaining relationships with regional market information sources. He is responsible for doing data quality control checks in the markets.

4. Quality Control Assistant

The Quality Control Assistant would assist the Quality Control and Dissemination Specialist Assistant. This person will assist in all aspects of the Quality Control and Dissemination Specialist Assistant responsibilities. In particular, he will carry out those responsibilities during those periods (perhaps as much as 1/3 of the time) when the Quality Control and Dissemination Specialist Assistant is in the markets doing quality control checks or is assisting the Dissemination Specialist - Marketer.

5. Market Reporter

The Market Reporter is responsible for going to the Kigali central market and the major wholesale centers, every day, gathering the prices for the products in the market, inputting the data, and generating the first draft of the daily report. A motorcycle should be provided to facilitate movement of the reporter between the market, the wholesale houses, and the office. As called upon, the reporter could assist the Quality Control and Dissemination Specialist Assistant. He could also assist in the on-going training and supervision of the contract reporters.

6. Data Manager - Data Entry

The Data Manager - Entry is responsible for inputting the data from the outlying markets and generating the initial daily report for those markets. He is responsible for establishing and maintaining subscriptions to international prices and inputting the same. He is responsible for generating customized reports.

7. Analyst

The Analyst is responsible for generating analytical reports for the Ministry of Agriculture and the Ministry of Commerce that show trends, relationships to prior years, and analyses underlying causes for market conditions. The analyst is responsible for producing a weekly analysis of a few paragraphs that is suitable for submission to newspapers. The analyst is responsible for producing a semi-annual report that shows the price histories for all the commodities in each market, as tables, graphs, and short textual explanations of the historical factors affecting prices. The analyst is responsible for interfacing with customers seeking information, customized reports, and so forth.

8. Computer Support Specialist

AMISR should be a data intensive and therefore, computer intensive operation. The Computer Support Specialist would be responsible for maintaining the AMISR computer network. He would be responsible for basic training of staff. He would maintain security and virus control integrity of the system. He would have the primary responsibility for system stability, including backups and redundancy. He would be responsible for hardware preventative maintenance, power protection, and so forth. He would be responsible for all Internet related activities, maintaining email accounts, website preparation and maintenance and so forth. He would perform programming tasks as needed and will participate in all aspects of computer related operations.

9. Administrative Assistant - Book Keeper

The Administrative Assistant - Book Keeper answers to the Director and assists him in his responsibilities. He is responsible for managing petty cash and normal book keeping operations. In addition, he is responsible for assisting in the daily report dissemination by managing the dissemination of the reports via email and fax to subscribers. He is responsible for managing the subscription base, doing billings, collecting fees for subscriptions, other sale of products, issuing receipts, etc.

10. Contract Reporter

Contract Reporters are individuals who are not direct employees of AMISR, but are contracted to generate reports in the outlying markets. They are paid for acceptable reports - acceptable meaning of good quality, complete and on time. They would be trained and supervised by AMISR. They would be people living in the city of the market. This model is suggested rather than hiring reporters as staff because, if they are staff, AMISR would be paying for a great deal of travel time as they would move between the office and the markets. If the reporters were staff, they would likely have to operate out of the central office. That would imply large blocks of daily travel time to travel to the outlying markets. If they were AMISR employees, located in the markets, there would be large blocks of their time unused because they would not be in the central office and their time could not be effectively used after the generation of the daily report.

Contract reporters would be paid an amount that represents the value of their time for the period needed to generate a report. They would phone, fax or email their report to the AMISR office. They could be individuals who already work in the market, have their own

business, or otherwise have the time flexibility to do this work. They should be individuals who are familiar with the market functions, agriculture, etc.

11. Accountant

The Accountant is responsible for all of the accounting and accounting reporting related to the AMISR activities. This position could be done by contract rather than hired. It is estimated that 25 percent of an accountant's time would be adequate to service the project.

12. Driver - Facilitator

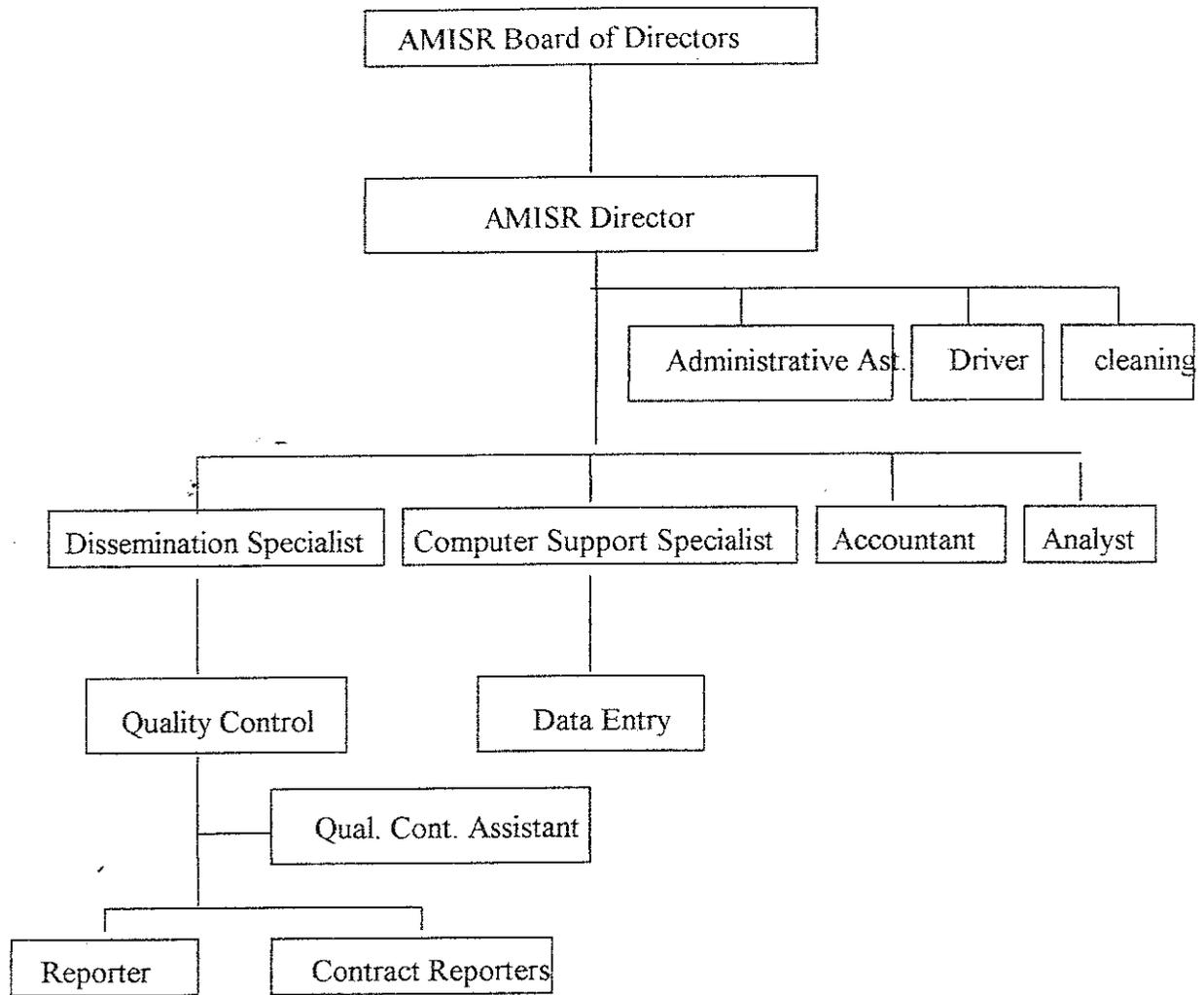
The Driver - Facilitator answers to the Director and is responsible for driving and errands.

13. Cleaning Services

This person does the normal cleaning of the office. He can also be charged with activities such as making photocopies and minor office tasks.

Figure 1 shows an organizational chart of the AMISR structure and reporting lines. To the extent that AMISR is integrated into the project, the business center, or collaborating projects, this chart would be modified accordingly. In particular, the position of Director could be filled by the Chief of Party, or the head of the Business Center. The Data Entry person might be a shared resource with another project. Accounting support could be shared with the project, and so on.

Figure 1 AMISR Proposed Organizational Chart



C. Management

Perhaps the key to the overall, long term success of AMISR would be the management structure. It has been noted that the management of market information services under the control of the government often suffer from the problems of lack of funds, compromised data, lack of responsiveness, continuity problems and so forth. Management under the private sector is also problematic in that financial advantage can be gained by differential access to market information. This presents an inherent conflict for management by the private sector.

A successful management configuration should have the following characteristics:

- The GOR should have a sense of ownership, participation, responsibility and financial contribution.
- The service should have the agility of the private sector, and be profit driven.
- The service should have impeccable fiscal management credentials, to give donors confidence and to maintain the integrity of the service.

AMISR should be managed by an NGO. It should be governed by a board of directors. The Ministry of Agriculture should appoint the President of the Board of Directors. The Deputy to the President should be from the NGO. At any time when the GOR is more than six months in arrears on its financial contributions, the Deputy would assume the responsibilities and authority of the President of the Board of Directors, the private sector representative would assume the responsibilities of the Deputy, and the representative of the Ministry of Agriculture would become a member of the Board. The Board should be comprised of a minimum of five voting members. One person should be appointed by USAID and one from the private sector. Any donor who contributes more than a specified minimum to the operations or endowment fund (for example \$500,000) would have the right to appoint a member to The Board of Directors, if they so choose. The number of members must always be odd. If the appointment of a donor representative makes the number of members even, the alternate private sector member would become a voting member.

The Board of Directors would include the AMISR Director, as a non-voting member, and who would also serve as the Executive Secretary to the Board. The Board should take decisions by majority vote and not be allowed to conduct official business unless a quorum, consisting of a majority of voting members, are present. The Board of Directors should be responsible for all material issues related to AMISR including setting policy, hiring and firing of personnel, and approving annual work plans. It should approve the budget. It should annually commission a financial audit. It should not have any responsibility nor authority over the NGO in terms of management of the endowment fund other than to be responsible to actively seek contributions to the fund.

On an annual basis, AMISR would convene a meeting of the private sector, at which the private sector representative of The Board of Directors would be elected, as well as an alternate.

The NGO selected to manage AMISR should have the following characteristics:

- Have an agricultural component to its programs.
- Be experienced in operating endowment funds.
- Well known to the donors.
- International.

- Employ generally accepted accounting practices and have donor accepted accounting and management systems.
- Permanent commitment to presence in Rwanda.
- Willing to undertake financial oversight of AMISR for a reasonable fee.

At its outset, AMISR could be established and placed in operation as an arm of the USAID project. Part of the project responsibilities could be to identify the appropriate NGO, collaborate with the GOR in establishing the permanent operation of AMISR. The project would also be responsible for instituting the interaction with the private sector to organize participation, or work through existing private sector associations to build a participant base.

Flexibility

In this presentation, AMISR has been presented and described as a stand alone unit. However, the implementing project will necessarily need to make adjustments to seek and incorporate collaboration with other projects and donors.

At the outset, the Director of AMISR could be the COP of the USAID project. The Computer Support Specialist could be the person who provides the same support to the project as a whole.

The Driver, Cleaning Services, Administrative Assistant, and Accountant could all be filled by individuals filling those functions on the USAID project.

There could be many variations in the structure and management configuration that evolve as the project implements AMISR. As those adjustments and modifications are considered, the following principles should not be violated:

- Financial management should not be under GOR direction.
- Planning for funding should not be built around dependence on GOR contributions.
- Private sector participation in management should be retained.
- Most importantly, nothing should compromise the primary mission, in any way.

D. Dissemination

1. Daily

The only viable option for national coverage to disseminate market information is via radio. There is only one radio station which has near national coverage, Radio Rwanda. It is expected that within three months, the entire country will be covered by the signal foot print. At the moment, only one commune is not reached. Construction is currently underway on a repeater tower. Radio Rwanda will only allow the broadcasting of the information inside short intervals of a few minutes each. This is one slot in the morning, one at midday and one in the early evening. The price structure for the different time slots is as follows:

Description	Amount
Initial charge - inscription fee	150,000 RwF
Morning slot: 6:30 am to 6:45 am	300 RwF per second
Mid day slot: 12:30 pm to 12:45 pm	150 RwF per second
Evening Slot 6:00 pm to 6:30 pm	200 RwF per second

AMISR could generate a report of the day's prices, which would be readied and transmitted to Radio Rwanda by mid-day. The prices will be reported during the evening interval and again the following morning, during the morning interval. It is expected that the reporting will take forty five seconds. Not all products for which data are collected will be reported. Rather, the products with major volumes in the market will be reported.

In many countries, market prices are reported as a public service. When asked if that was an option in Rwanda, some confusion resulted. The concept of "public service announcements" was foreign. When asked if official government statistics would be broadcast gratis, the answer was "no" and that the government offices all pay for their radio time. Radio Rwanda has a monopoly and there are no options other than to pay for the broadcasts.

That said, there is an advantage to paying for the dissemination. When information dissemination occurs via public service announcements, the timing, quality and completeness of the information can be compromised. In the worst case, the announcement is not made because of inconveniences. When the announcements are made under contract, these factors are better controlled.

AMISR would be responsible to develop sponsorships and advertisers to bring down and eventually eliminate the cost of the data transmissions, over time.

2. Publications, Subscriptions, Services

All other forms of dissemination, apart from the daily radio broadcasts, would be made for a fee. Those businesses that wish to receive the information via fax or email, would pay a subscription price. Subscriptions should be annual, or AMISR will spend too much time doing bookkeeping on the accounts. If shorter subscriptions are offered, they should be for dramatically higher amounts than for annual accounts.

AMISR should be prepared to do customized price histories. These could be for businesses, donors, consultants, banks, and so forth. They should be able to select date ranges, specific products, markets, or combinations, or be able to customize the request on any of the fields in the database.

AMISR may wish to work out an information bartering arrangement with other organizations in other countries of the region, giving Rwandan price information in return for price information in other countries.

There should be weekly summary analyses that chart the history of the price developments. They should mention weather, political factors, pest pressure, disease, or other conditions that are affecting the markets.

There should be semi-annual reports that summarize the prices, arranged several ways. There should be commodity reports that show the price histories for a give commodity across markets. There should be market reports that show the products by market. There should be graphs showing the price tendencies against other years, and comparing markets. The weekly summaries should be used to produce a synthesis of the larger trends and factors affecting the market.

In a similar fashion, AMISR should prepare reports that show the price tendencies in the export markets for those products of interest to Rwanda. The type, frequency and distribution of these should be closely coordinated with the technical experts operating under the direction of the Business Center. The design of AMISR, to be able to gather, store, process and disseminate prices for the markets of Rwanda, is fully compatible with being able to manage international prices for export markets. The only additional capability needed will be analytical capability for the international markets. It is anticipated that this will be provided by the Business Center.

E. Financing - Sustainability

It has already been noted that the maximum benefit to the economy of market information derives when the information is equally available to all participants, which translates to free distribution. It has also been noted that market information systems in developed countries are subsidized. And finally, it has been noted that in the accounting scheme of the whole economy, good market information systems leverage a return of many times more than their cost, but that the direct benefit accrues to the private sector and not the entity providing the information. This all to say that in the large scheme of an economy, market information systems are eminently financially sustainable, but in the details of the money flow, the large economic benefits can not directly be tapped to offset the cost of the service. Developing economies, in particular, are incapable of consistently providing the necessary resources to maintain credible market information systems.

From the standpoint of a development tool, good market information systems are a relatively inexpensive device to generate a wide spread impact on an economy, and can be justified for the medium term purposes of a development project, whether the service can be sustained over the long term or not. Of course, it is preferable that a functioning system be sustained.

The mechanisms for sustaining a system are somewhat limited.

- *Selling of services.* As the main service and primary mission involves free distribution of information, the sale of specialized services will not likely generate more than a minor percentage of the annual operating expenses of the service. It is reasonable to expect that over time, about ten percent of the annual operating costs can be covered from profits on the sale of services.
- *Government funds.* The primary mission of AMISR is to provide a public good. As such, the public, through its government, should provide a significant portion of the cost of operations. A goal of thirty percent of the operating costs is reasonable. However, in most developing countries, even when agreements are in place and there is honest intent, this public contribution is typically not sufficiently stable as to be reliable.
- *Donor funds.* In many countries, market information systems are funded, at least during their initial phase, by donor funds. However, development is supposed to have the ultimate objective of achieving self sufficiency. Therefore, it is difficult for donors to justify perpetual support for market information systems.

- Ancillary services. Some systems in some countries have sought economic sufficiency by allowing the service to engage in activities that are not related to the primary mission. Examples include operating Western Union offices for money transfers, operating the national lottery, and making capital investments in business activities. None of these is satisfactory. In every case, the concentration of management resources and interest is necessarily diluted, and in many instances, dominated, by the ancillary activity. In the worst cases, direct conflict of interests result.

The model that is suggested here for achieving financial sustainability of AMISR is the following:

- Use donor funds to establish the service and cover the initial operating costs.
- Establish an endowment fund.
- Seek donor collaboration and cooperation in generating funds to be deposited in the endowment fund.
- Establish an agreement with the GOR for an annual contribution from the national budget, for the provision of the public good of nationally broadcast daily price information. This amount should be payable and due at the beginning of each budget cycle. This contribution should be deposited into the endowment fund and not planned as part of the annual operating expenses.
- Sell services such as specialized access to the daily reports via fax or email, historical reports and customized services. To the extent possible, the profit from these sales should also be deposited into the endowment fund.
- Seek sponsorships for services from commercial businesses. Typically, these would be used to offset expenses for broadcasting data and printing publications.

With direct donor support for operating expenses for the first three to five years, consistent participation by the GOR, and aggressive management to grow the endowment, a viable, long term sustainable market information system can be achieved.

SECTION IV. IMPLEMENTATION PARTNERSHIIPS

The proposed market information system must be developed within an atmosphere of cooperation and collaboration. Stake holders that should be included in the process are:

- Public sector, particularly the Ministry of Agriculture and the Ministry of Commerce.
- Radio Rwanda
- The private sector
 - The vendors in the market
 - Agribusinesses
 - Producers
 - Regional information users
- The donor community

There is a good deal of commerce that takes place between Rwanda and its regional neighbors. This should be reflected in terms of cooperation with the information system efforts that are taking place in the region, such as FOODNET and FEWS.

Inside Rwanda, particular care should be taken to coordinate with PASAR and the developing project under the direction of the Ministry of Agriculture with World Bank funding. There may be opportunities to share offices, share staff, and certainly share information. With regard to PASAR, it may be possible to work out an arrangement whereby the PASAR reporting system is used for the three markets outside of Kigali. That has not been built into the budget assumptions because there would have to be a number of details worked out including the products covered, the type of data collected, the timeliness of the arrival of the data at the AMISR offices, and so forth. No assumptions are made about coordination with the WB funded project because its dimensions are yet to be defined.

Every effort should be made to make the GOR have a sense of ownership of AMISR in the sense of its technical output being a GOR contribution to the public good – while at the same time protecting AMISR from GOR financial oversight.

Special effort must be made to involve the private sector. It will not spontaneously self generate. For the first years of the project, AMISR will have to select capable individuals and approach them, and encourage them to allow themselves to be put forth as candidates for the Board of Directors. They should fully understand what being a Board member entails, and what it does not entail (no salary, no special perks, etc.) An annual meeting for the private sector should be planned. This should include substantial refreshments or a meal. There should be door prizes, such as mugs, tee shirts, baseball caps, pens, and the like. There should be brief presentations on AMISR's plans and a presentation of candidates for the Board. By ballot, a representative and an alternate should be selected.

Over the course of the year, AMISR should make every effort to insure the public is aware of AMISR, its board members, and the activities. A concerted public awareness effort should be conducted to both heighten public awareness as well as make Board participation be viewed as a prestigious honor. It should distribute gifts, such as baseball caps, pens, and tee shirts to business people in the markets, both as a gesture of good will as well as advertising the existence and services of AMISR.

Established businesses should be actively recruited as sponsors and advertisers. Similarly, established businesses should be marketed for the sale of subscriptions.

It is expected that AMISR would function in very close collaboration with the Business Center, perhaps even sharing the same offices. Nevertheless, it is important that the AMISR management system not be tied to the Business Center. At project closeout, if the Business Center does not continue, AMISR's operations should not be jeopardized, if it has been able to establish a stable financial base. The Business Center should be highly focused on the private sector. There is no *a priori* reason why the Business Center should have an operational linkage to the Ministry of Agriculture. AMISR, on the other hand, does provide a public good. It should involve GOR participation to a significant degree. This need of AMISR to have one foot firmly planted in the private sector, and the other in the public sector, distinguishes it sufficiently so that even though it is project sponsored, as is the Business Center, and even though they closely collaborate, they should be structurally distinct.

SECTION V. BUDGET AND TIME FRAME

The following budget was prepared under the assumption of no cooperation and collaboration with other entities or projects, but rather with AMISR as a stand alone operation. It also includes the following assumptions:

- The first year of operations, corresponding to the first year of the USAID project would actually be for six months, allowing time for the project to plan and prepare for AMISR establishment.
- Subsequent years include an increase due to inflation of 5 per cent.
- No allowance is included for indirect costs or fringe benefits of an implementing entity. Those charges would be added these base costs by any organization bidding to perform the implementation.
- All amounts are estimated in US dollars.
- Where possible, budget amounts reflect the actual expenditures of AAD, rounded up to account for inflation.
- No technical assistance is included in this budget, though such assistance will be necessary, as it is assumed this will be included in the larger project budget. The assistance needed will include training in the concepts of market information system, the development of forms and information management systems, operations manual, computerized data management system, market reporting practices, understanding the international markets and reporting systems, dissemination systems, data analysis, marketing, and publications.
- To the extent possible, estimates are for local purchase.
- The salary totals reflect both the salary plus the five per cent social security charges and the ten per cent professional tax.
- Budget 2 assumes many of the costs are shared with the project and the Business Center. It also assumes income from sale of services. It assumes the director, computer support, driver, cleaning and accounting are all services received from the project or Business Center personnel. Many of the operating costs, such as office space, are also assumed to be provided by the Business Center, or the entity where AMISR is housed.

ANNEX A: PERSONS CONTACTED

Edson Mpyisi, In-country Coordinator MSU Group, Food Security Research Project (FSRP)
MINAGRI

Francios Kanimba, Senior Economist, World Bank Resident Mission

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Alain Houyoux, Project Coordinator, PASAR, Proyet d'Appui a la Securite Alimentaire

Joseph Nirimana, Project Coordinator, Projet de Developpement des Marches Agricoles et
Ruraux, World Bank

Moussie Menwuyellet, SO3 Team Leader, USAID

Didace Ukulikiyinkindi, Chef de Service Commercial et Marketing, Republique Rwandaise
Office Rwandais d'Information (ORINFOR), Radio Rwanda

Shaun Ferris, Regional Coordinator, Marketing and Post-Harvest Research in Eastern and
Central Africa: FOODNET.

Various retail and wholesale vendors of grains, beans, sorgum, maize, fruits and vegetables.

ANNEX B: DOCUMENTS CONSULTED

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