

Rwanda Ag + Rural
Development Assessment

June, 1998

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EXECUTIVE SUMMARY

In the past ten years, Rwanda's economy, and particularly the rural sector, has suffered from an economic downturn, a war and the genocide of 1994. Real GDP at the end of 1997 was only 80% of the 1990 level, and there is severe poverty and malnutrition, particularly in rural areas. After considerable success in responding to the emergency needs following the events of 1994, and in response to recent signs of some degree of economic and social recovery, USAID and the Rwandan Government are ready to accelerate the transition to development-oriented programs.

In this regard, a team from USAID\Washington and REDSO\ESA spend the first two weeks of June, 1998 in Rwanda, to provide a broad assessment of opportunities and prospects for USAID investments to promote agriculture and other rural enterprise.

After traveling to three prefectures, meeting with a large number of groups and individuals and consulting innumerable documents, the team has proposed an integrated package of activities aimed at increasing rural household food security and income. The activities include assistance in the areas of policy; marketing and processing; and the adaption and transfer of agricultural technology. The proposed program emphasizes Rwandan capacity-building, and combines different funding sources. It also combines short-term, quick-start activities with medium-term investments designed to set the stage for long-term development.

I. OVERVIEW AND PROBLEMS TO BE ADDRESSED

Rwanda's economy is heavily dependant on agriculture and related rural economic activity. Following rapid economic growth in the 1960s and 1970s, the 80s and early 90s brought a sharp economic downturn precipitated by deteriorating terms of trade, high population growth on a very limited land base, and relatively low agricultural productivity. As a result of the war and genocide of 1994, real GDP fell by a further 50 percent. There has been significant recovery in the last three years, but real GDP at the end of 1997 was still only 80 percent of the pre-war level.

90 percent of the population in Rwanda lives in rural areas, where severe poverty and malnutrition are widespread (70 percent of households were below the poverty line in 1996, compared to 40 percent in 1985. As well as higher levels of overall poverty, there is visible and anecdotal evidence of rapidly growing income inequality. The FAO and WFP have estimated that as many as 20-25% of households lack sufficient food. With high population growth continuing, it is difficult to see how Rwanda and Rwandans can grow out of poverty and food insecurity without substantial increases in both agricultural productivity and off-farm rural income.

Household food security in Rwanda is currently dependant on three main factors; domestic agricultural production, household income and external food assistance. USAID assistance under S.O. 3 is designed to use an integrated package of Development Assistance (DA), PL 480 Food Aid and OFDA/OTI resources to address short and medium-term food security needs, while also helping set the stage for longer-term productivity and income gains in the rural sector.

Low levels of agricultural productivity can be raised substantially by the right set of policies that provide production incentives, and by the testing and transfer of agricultural technology that increases yields. Real incomes are increased by agricultural processing that adds value to commodities, and by marketing efficiencies that raise farmgate prices for the farmer while lowering the cost to the consumer.

II. USAID'S CURRENT ACTIVITIES

Following the events of 1994, USAID moved quickly to meet the

immediate needs caused by the war, genocide and massive displacements of the population. The issues were compounded by the return of more than 1.3 million refugees in late-1996 and early 1997. USAID used a combination of OFDA and OTI funding and Food Aid to address the food and non-food needs of the rural population. Along with direct food distribution, food for work, and institutional feeding, a number of agriculture-related programs were quickly put into place aimed at restoring local production. These include distribution of tools and seeds from external sources, rapid local multiplication of seeds and cuttings (especially sweet potato), and micro-level activities including livestock restocking, micro-credit and input supply.

The success of these programs, increased overall stability (except for areas of the Northwest), and the resumption of some rural economic activity all suggest that the time has come to move further along the relief to development chain. The transition is certainly not over, and it is in various stages for different sectors and areas of the country. Nonetheless, there appears to be the economic and political basis, as well as a real window of opportunity, to set the stage for a more development-oriented program to increase agricultural development and rural income. There is good reason to begin such a program now, well before the departure of the emergency response programs, in order to ensure smooth continuity.

Spurring economic growth through rural income enhancement will provide strong support the overriding USG national interest in Rwanda, which is "to help create the political, economic and social conditions so that genocide will not reoccur".

In this regard, it is particularly important that USAID's investments in the rural sector promote broad-based economic development to the benefit of all sectors of Rwanda's population.

III. ASSESSMENT TEAM'S MISSION

In this context, the team was requested to make a rapid assessment of the opportunities and prospects for investments that would enhance household food security while moving the USAID\Rwanda S.O. 3 portfolio further along the relief to development spectrum. The core team from USAID/Washington consisted of Curt Reintsma, Charlie Sloger and Menwuyellet Moussie, and was in Rwanda May 30 - June 13. The team was joined by John Mullenax from USAID's regional office in Nairobi for the first week, and benefited from a short overlap with Mike Weber from Michigan State University for the first few days. Timothy Muzira of USAID/Rwanda provided excellent backstopping for the team, attended many of the meetings, researched and wrote the section of the report on rural roads and helped with other sections.

The essence of the rest of this report is a set of recommendations to USAID/Rwanda aimed at improving food security for the rural population. The recommendations represent a package of investments that integrate needs in the areas of agricultural policy, marketing and processing, and improved production technology. They also integrate funding sources, and would provide substantial support to GOR strategies for agriculture and rural income that are currently being formulated.

IV. SUPPORT TO POLICY AND STRATEGY FORMULATION

4.1 PROBLEMS TO BE ADDRESSED

As Rwanda moves through the transition from relief to development, policy and strategy formulation is critical. The guiding principles and legal frameworks adopted, and the definition of the roles of various economic actors to be contained in new policies, will set the stage for the future economic and social development of the country.

New policies, legal frameworks and strategies for agriculture and rural development are currently being discussed and formulated. While many of the specifics are still being worked out and vetted at various levels, the broad vision is clear. The GOR envisions a dynamic rural sector, where farming is seen as a viable economic activity that produces both food and income, where production is linked to markets, and where the agriculture and rural sectors are effectively using the country's productive assets as a force for overall economic growth. This is distinctly different from a policy of food self-sufficiency, that views agriculture simply from a perspective of meeting household food needs. The vision also recognizes that as population growth continues, many people in rural areas will need to make their living from off-farm economic activity or a combination of on-farm and off-farm activities. The GOR has placed emphasis on policies that are market-oriented, and is giving considerable attention to finding the appropriate role for government, private entrepreneurs and farmer associations in the context of Rwandan realities today.

The issues at stake are both fundamental and complex. Will revised land tenure laws succeed in encouraging farmers to invest in soil conservation and enhanced production methods? Will policies for decentralization and agricultural marketing end up encouraging or discouraging the movement of produce around the country, in order to even out price and supply fluctuations and

give farmers the incentive needed to produce for the market? Will investment and taxation policies support private initiative? Will trade policies enhance or deter the cross-border trade flows that are so critical to Rwanda? Will privatization of parastatals lead to better or worse input and output markets for producers? Will the new Cooperative law provide the right incentives to encourage the rural population to group together to promote economic activities and increase their income?

In short, will the legal, policy and strategic framework that will soon be adopted validate and reinforce the investments of the Government, donors and the private sector, or will it serve as a drag on those investments? Given the complexity of many of these topics, even the best intended policies often end up having unintended consequences, sometimes in the opposite direction from the original intention. In other cases, policies initiated by governments at the national level are often not fully implemented at the local level. Good policy formulation needs to be based on solid data and analysis, on participatory input from various levels of society, and on the experiences and lessons from other countries that have tried similar policies. Good policy also needs to be implemented. USAID can help with the data, analysis, and expertise that draws on the experiences from other countries.

4.2. ACTIVITIES TO BE FINANCED.

The team proposes to support the Government of Rwanda's efforts with regard to agricultural and food security policy with investments in three areas.

First, assistance to policy and strategy formulation should be provided to MINAGRI at the upper echelons of the Ministry. If requested, USAID will fund a senior policy advisor to the Minister, the Minister of State, and other senior Ministry officials.

In addition, Ministry officials (in consultation with the senior policy advisor and USAID) would have access to a pool of resources dedicated to providing policy assistance to Government on an as-needed basis when requested. This pool of resources would be available for short-term technical assistance in key policy areas, for policy seminars, and for related activities aimed at the formulation and implementation of policies and strategies. It would also be used to foster linkages across Ministries, since more than one Ministry has responsibility for policies and strategies in the rural sector. Following is an illustrative list of policy-related topics that might be examined, should the government request assistance:

- Land Tenure

- Fertilizer Policy
- Regional Trade
- Approaches to Implementing Privatization
- Marketing Policy
- Specific Elements of Decentralization
- Soil Conservation and Other Environmental Policy
- Others

It is envisioned that USAID/Rwanda would quickly operationalize the first tranche of this fund to make timely assistance available to the government, by using buy-ins to G\EGAD projects and/or the AFR\SD RSSA. The fund would later be folded into the same contract or co-operative agreement mechanism used to fund the senior policy advisor.

Second, USAID should support MINAGRI's Food Security Technical Unit. This support should include quickly making available and disseminating past research that is relevant to policy making today, assisting with the collection, analysis and dissemination of data about Rwanda's rural sector, work on the development of a market information system, and carrying out special studies and other research activities to deepen the analytical basis for policy making.

Third, limited funding would be made available for training of MINAGRI and Ministry of Commerce staff. This would be at both the national level and at the prefecture and commune level (particularly for those geographic areas where USAID's rural investments are concentrated). Training funds would be for both policy formulation and policy implementation, aimed at other public entities as well as the private and not-for-profit sectors.

Most of the training resources would be concentrated on in-country training designed to benefit a range of public, private and local not-for-profit institutions. A very limited amount of long-term training (one year or more) is anticipated. Better definition of the exact training needs will be developed as activities proceed and USAID-financed staff begin to work with Ministry officials. At this time, an illustrative list of training activities includes long-term training in the U.S. for 2 staff (one each from MINAGRI and Ministry of Commerce), four short courses held in Rwanda related to data collection and analysis for up to 20 Rwandan staff, study tours in the region for up to 10 Rwandan officials, and four short courses regarding policy implementation for up to 22 Rwandans (two from each prefecture).

4.3. ROLES AND IMPLEMENTING MECHANISMS

The senior policy advisor would be procured through either a Personal Services Contract or an institutional contractor. The former mechanism may be preferred due to cost, but regardless of mechanism, this must be a senior person (Rwandan, American, or Third Country national) with considerable experience in agricultural policy formulation and implementation in a range of African countries. The individual would work closely with top officials in both the MINAGRI and the Ministry of Commerce at all stages of the policy process.

The pool of resources for policy advice and implementation would be made available to both Ministries. The two primary implementing mechanisms would be buy-ins to AID/Washington projects, mainly but not necessarily exclusively in the Global Bureau's Center for Economic Growth and Agricultural Development (EGAD), and "buy-ins" to the AFR\SD\PSGE RSSA mechanism. A copy of the EGAD directory of projects and an E-mail from the AFR/SD\PSGE Division Chief has been left with USAID\Rwanda.

Assistance to the Food Security Technical Unit, in the areas of data collection, analysis, and special studies would be implemented through two mechanisms. The first would be a Co-operative Agreement with a U.S. University that has long-standing experience in this work in Rwanda. This could be done either through a buy-in to a G/EGAD project, or through a stand alone agreement. The second part of this activity would be implemented through a grant to an international NGO with experience in data collection and analysis in Rwanda.

USAID\Rwanda will need to further explore implementing mechanisms for training. Possibilities include building training into the Co-operative Agreement mentioned above, buying into an AID\Washington central mechanism, a direct contract with a U.S.-based organization that specializes in in-country training, and small grants or purchase orders to local institutions that have training and lodging facilities.

4.4. RESULTS AND INDICATORS.

Overall, the results to be achieved in the policy arena would include better-informed policies (formulated and implemented), better information and analysis on which to base policy decisions, as well as increased GOR capacity in this arena. Working more or less from the top of the Results Framework to the bottom, more specific results and performance indicators would include the following:

- New policies and strategies implemented.
- New policies and strategies adopted, new laws passed.
- Policies and strategies better informed by empirical knowledge.
- Staff trained in policy formulation and implementation
- Policy implications of pre-1994 studies and data analysis

disseminated to current policy makers.

- Data collection and analysis systems functioning.
- Staff trained in data collection and analysis.
- Policy-related studies completed.
- Policy formulation and implementation seminars held.
- Production and market information disseminated on a regular basis.

4.5. ILLUSTRATIVE BUDGET.

The following illustrative budget is for a 2-3 year timeframe, based on the assumption that some activities will get off the ground quickly, while others will take 6 months or a year to get started and thus won't need funding in the near future.

Senior Policy Advisor- \$400,000 yr times 2 years = \$800,000
(assumes "burdened" salary at 100% and full package of benefits and allowances)

Pool for Policy Advice\Implementation- 3 yr. period = \$280,000
(assumes 6 months of short-term T.A. @ \$30,000 month and \$100,000 for policy seminars).

Univ. Co-op Agreement- \$600,000 yr times 3 yrs = \$1,800,000
(assumes one experienced Rwandan now outside Rwanda and one local-hire Rwandan, computers and one vehicle, and substantial backstopping and short-term travel to Rwanda by MSU campus-based staff).

Internat'l NGO Grant- \$200,000 yr times 3 yrs = \$600,000

Training- Program for 2 years = \$500,000
(assumes 4 person\yrs 1-t training, 10 people on study tours, 8 short-courses on data and policy implementation in Rwanda)

TOTAL FOR 2-3 YEAR PERIOD \$3,980,000

V. MARKETING AND PROCESSING DEVELOPMENT

5.1 PROBLEM BEING ADDRESSED

Linking Two Economies

The Rwandan economy is evolving on potentially two different tracks. One track is urban based, sophisticated, and outward oriented. The other is rural based, subsistence oriented and cash starved.

The rural economy with or without assistance will not be satisfied with simply staying alive. People will quickly begin seeking ways to enhance subsistence by linking to markets to increase incomes.

The challenge in moving forward from a transition/relief situation to an orientation that offers greater perspective for economic growth and the creation of employment is to link the formal private sector economy to the rural economy.

The formal private sector may function in isolation from the rural economy by orienting their efforts toward regional trade and seizing whatever opportunities are offered to satisfy the needs for goods and services of the donor community. There is a strong motivation for "returnee businessmen" to be here, because it is their home country, but if opportunities are not available internally they could simply use Kigali as a transaction center for outward oriented trade. The private sector will inevitably take advantage of the opportunities offered by coffee and tea but this won't develop a broad based and resilient internal economy.

The function of linking the formal economy to the rural sector was previously facilitated by state interventions in input and output marketing. Under the liberal scenario proposed by the government this will no longer be the case. However, if recreating this linkage based on a more liberal approach is not attended to (i.e. fostered) the GOR may be tempted to return to less efficient statist solutions.

For this linkage to be successful, the rural sector has to carry out production and assembly functions successfully enough to attract traders and processors. On the other hand the private sector has to be oriented toward nourishing this evolution by a willingness to engage with rural producers to find the areas in which they can develop mutually beneficial arrangements. Unfortunately this is not a neatly phased process where production is raised in a first phase and the formal sector steps in a second phase. It has to take place simultaneously to some extent and this is what makes it difficult and justifies the need for finding interventions which facilitate this interaction.

The scenario that is developed in this section proposes an approach that works on both ends of the marketing chain. At the lower end, farmer associations are seen as the vehicle for strengthening production, and lower level assembly and processing functions. At the higher end of the spectrum formal trade/professional associations (and their members) would be the initial vehicle for fostering linkages with the rural sector and capitalizing on the managerial talents offered by the formal private sector to foster rural development.

The intended outcome of this work is the creation and enhancement

of a fairly wide range of internal production/marketing chains that create broad based economic growth.

5.2 ACTIVITIES TO BE FINANCED.

Association Development

There is already an experience with, and working models for interventions with associations.

It is envisioned that the goal of working with farmers associations is to enable them to carry out:

- production;
- technology transfer;
- input acquisition and distribution;
- assembly and storage of product for marketing;
- market transactions;
- accessing and managing credit (and other production factors);
- lower level processing enterprises;
- and, possibly commerce in consumer goods.

The associations can also serve as a basis for assisting sub-groups within the association to access training and credit to initiate small enterprises.

Assistance to the training and development of associations can be conceived at two levels. The first is a more intensive mode an example of which is the work being done by World Vision in Gikongoro. The other is an institutional support mode that creates sound models for association development and training and propagates them via training of trainers. This latter mode can best be exemplified by the approaches that IWACU and CLUSA carried out prior to the genocide. This latter mode can have a broader geographic impact by providing training models and trainers to other (i.e. non USAID funded) implementing agents. The Mission can have impact via both modes.

Micro-enterprise development can grow spontaneously out of the association based intervention because the associations ideally provide a structure for assisting groups or individuals to analyze opportunities and access skills and credit for undertaking small enterprises. This approach to developing training and micro-enterprise development has the advantage of evolving within a structure that helps clearly identify and target the demand for skills and enterprises and can provide follow on support services.

Linkages to and support for the Banque Populaire can also be created and strengthened via work with the associations as well as the private sector.

Associations should be brought to the point where they constitute a structured and articulate client group for ISAR and policy makers.

Formal Private Sector Development

The models for interventions to assist Formal Private Sector are equally important but more difficult to articulate and render tangible to a wider audience. The needs are less generalized, there is less USAID institutional base, the formal private sector is more dynamic so needs change as opportunities shift. This requires assistance modes that are more dynamic, and have a built in analytical capability combined with the ability to address a wide range of specific areas, such as funding mechanisms, processing technology, contracting, management skills, marketing and so on.

USAID has successfully created these types of assistance instruments in many countries. Generally they have been focussed on enhancing exports. Overall, the skills and approaches are similar because most agribusiness projects entail resolving constraints in a marketing chain. The difference for Rwanda would be that emphasis (at least initially), would be more internally focussed and would focus on the areas of business opportunity which would have the highest impact on stimulating the rural economy.

In many countries assisting the formal sector has more to do with improving technology and forward linkages. The opportunity for access to improved business and technical knowhow and increased marketing contacts is sufficient to improving private operator performance and thereby gaining benefit to some portion of the national economy.

Given that in Rwanda there is an additional facet of encouraging the formal private sector to focus explicitly on the internal rural sector, the intervention may require well conceived measures to lower risk for formal private sector entities which are willing to work in the development of internal markets. (For example, this can take the form of guaranteeing contracts with suppliers, in this case farmers associations, or facilitating credit arrangements by reducing risks for banks)

This intervention could take the form of a business center that is linked to the Ministry of Commerce (but with a good degree of autonomy). IDEA project could serve to some extent as an example in this regard. The Morocco Ag Export project also provides experience with this type of model.

Illustrative activities are:

- familiarization with business community;
- analysis of marketing chains and identification of commodities that present the best opportunities for equitable economic growth;
- work with business associations to identify constraints

to their intervention in local markets
-define measures to reduce risk and/or other measures for
inducing increased private sector involvement.
-training in management, market analysis, processing...

Linkages to Policy

Associations (as mentioned above) and the experience gained via direct work with the formal private sector should provide an important source for defining relevant and urgent policy issues.

The above interventions should provide a response to the issue of training and capacity building.

The short response is that the TA entities involved would devise the training programs and delivery mechanisms that are the most efficient and pertinent to the specific needs of the program that they are trying to achieve.

There is a secondary reason for engaging in a formal private sector development activity, and that is that it will give the Mission increased capacity to transition to longer term economic growth strategies.

5.3. ROLES AND IMPLEMENTING MECHANISMS

ASSOCIATION DEVELOPMENT

USAID\Rwanda should continue grants with international and other NGOs that have established a track record for successful, intensive ground level development work with local associations.

USAID\Rwanda should consider a grant to a local NGO (like IWACU) that has demonstrated the capacity for broader work in training and supporting local co-operatives and associations. This grant could include a line item for a modest amount of specific short-term technical assistance from an international co-operative development organization.

FORMAL PRIVATE SECTOR

The contracting mode for this arrangement would be a privately competed contract. What is envisioned is a small long-term team of two persons with substantial resources within the contract for Short Term TA and training.

Performance measures for the contract would be defined in terms of success in increasing the performance (value added) in a given number of broad based commodity chains

Given that USAID has relatively less knowledge of the Rwandan private sector this intervention would require another consultation, possibly by REDSO Private sector advisors to

further assess feasibility and if possible move forward with developing a SOW for a contract.

5.4 RESULTS AND INDICATORS

Examples of the types of intermediate results that could be expected are:

- decreased imports of basic foodstuffs from Uganda in areas where Rwanda can reestablish comparative advantage;
- rehabilitation of the feed and commercial production of poultry and dairy products by working with selected associations to provide sufficient quantities of grains for milling;
- improved ability of equipment and input suppliers to meet needs for farmers associations and small enterprises (mills, presses etc..)
- increased enterprises that carry out value added activities/processes of Rwandan products

5.5. ILLUSTRATIVE BUDGET:

Activity	Assumptions	Cost for 2 Yrs	
Int'l PVO GRANT (Gikongoro)	Maintain Current level of activity in Gikongoro	\$700,000	
Int'l PVO GRANT (2nd Prefecture)	Activity similar in cost and scope	\$700,000	
LOCAL PVO GRANT	training, Assn. support, s-t T.A.	\$600,000	
Formal Private Sector Development	2 LT TA (400k/ea) 6 mos ST TA (180K/yr) Training/Study tours \$80K/yr Risk Attenuation Mechanisms (\$50K)	\$2,220,000	
Total		\$4,220,000	

VI. PRODUCTION AND PROCESSING TECHNOLOGY

6.1. PROBLEM BEING ADDRESSED

Agricultural productivity, particularly, the production of food crops, has been declining for some time. This has resulted in lower per capita food consumption and high consumer food prices. For example, the daily food consumption per capita declined from more than 2000 K cals in 1984 to about 1500 K cals in 1991 (Clay etal, 1996). The major constraint for the low productivity is the continuing degradation of the soil caused by a) the over exploitation of the land, b) erosion, and c) small farm sizes. After the war, the capacity of institutions and agents that provide and use technologies was severely reduced. Faced with the old and new problems, Rwanda is facing the challenge to make available new and improved agricultural technologies to farmers to produce more food and generate more cash income.

Some of the specific major constraints that need immediate and long term interventions are listed below:

6.1.1. Lack of Improved Seed and germplasm: One of the major causes for low food production has been lack of quality seeds. Root crops such as cassava, sweet potato and potatoes were particularly hard hit because their multiplication process and distribution is slow, system bulky and costly. Most of the improved plant materials for all crops were destroyed both at the farm/household level and institutional level (ISAR, MINAGRI, Projects, etc.). The need for high yielding, and pest and disease resistant varieties is greater than ever.

6.1.2. Pests and Diseases: Pests and diseases of plants are major constraints affecting food production. Some examples include: root rots for beans, weevils and nematodes for bananas, bacterial wilt for potatoes, etc. The rate of incidence and damage shifts from season to season depending on weather, management of the farm/soils, and the amount of fertilizer put.

6.1.3. Inadequate Dissemination and Transfer of Technologies: Rwanda is faced with human and institutional problems to provide production support services. MINAGRI extension service which is supposed to diffuse and extend technologies does not have the manpower, material and logistics. It will take years for MINAGRI to do effective training and extension. NGOs and associations also do not have the capacity and the expertise to take full responsibility of providing and using available technologies.

6.1.4. Lack of Post Harvest technologies: Food security in Rwanda is hampered by the lack of appropriate post harvest technologies that can transform, increase the shelf life, and reduce transport costs of the bulky and perishable root crops.

Such technologies not only will improve food security but also will generate more income to farmers.

6.1.5. Weak Market Links: One of the major constraints to food production is the lack of incentives that will stimulate farmers to produce more. Availability of markets and traders is one major incentive for increased production. Fair farm prices is another incentive. Here, research institutions such as ISAR can play a major role in linking technology with markets by working in technologies/crops that are demand driven and market oriented.

At present, ISAR has technical and resource constraints to generate technologies that lead to increased markets and higher farmgate prices. ISAR needs to have a strategic planning process to make research demand driven, sustainable and accountable. This process will follow by priority setting and programming of research and resources.

6.1.6. Lack of trained/skilled researchers, technicians, and farmers:

One of the current major constraints of ISAR is the lack of a critical mass (of researchers and technicians) that can carry out research in all the 22-24 research programs. On the average, there is only 1 to 2 researcher for every program and less than one technician for each program.

6.2. ACTIVITIES TO BE FINANCED

The team proposes two components for assistance in the technology development and transfer sector:

a) **Adaptive Research:** Assistance is proposed to develop/adapt demand driven technologies using ISAR-Networks-IARCs partnership. This partnership will insure that priorities are set and research activities respond to the needs of farmers, including women headed households that are currently the norm in Rwanda. We encourage ISAR to work in close collaboration with ASARECA's regional commodity networks (ECABRAN, BARNESA, EARRNET, PRAPACE, and FOODNET). Limited training will be provided to ISAR researchers and technicians through the proposed mechanism.

Given limited resources, it is essential that research work is prioritized, demand-driven, and strategically coordinated. The grant should include assistance for short term technical assistance to guide and help ISAR to develop an effective process for strategic planning and priority setting.

b) **Technology Dissemination and Adoption:** Assistant is proposed to disseminate and diffuse technologies using ISAR-NGO-Associations-Farmer partnership. Quality Seed multiplication and distribution will be one major activity in this component. Technical support and local training will be provided to NGOs and

associations to strengthen their technical and managerial capacity to disseminate and transfer technologies.

The focus crops for the initial two years will be: **Beans, Bananas, Cassava, Sweet Potato and Potato.** The team also proposes that some support be provided to specific cash crops such as soy beans, rice, maize and wheat depending on the need and demand of the above partnerships.

The groups/partnerships mentioned above will be closely working to insure the planning and implementation of the components mentioned above. Indicative specific activities will include:

1. Infrastructure support: Laboratory Facilities, Computers, Vehicles
2. In-country and short to mid term intensive and practical training

Beneficiaries: ISAR researchers and technicians, NGOs, Associations

3. Community and farmer based seed multiplication and distribution
4. Introduce (in tissue culture form) and/or adapt high yielding materials resistant to major pests and diseases
5. Introduce high nutrient value varieties
6. Introduce and strengthen farmer participatory and association development
7. Introduce cropping and IPM approaches and techniques to incorporate sustainable methods for soil nutrient status, control of diseases and pests such as root rots and soil born diseases
8. Develop and transfer post harvest technologies that lead to increased shelf life, reduced transport costs, and income generating new products.
9. Develop and carry out research programs that are demand driven and market oriented that lead to increased domestic and regional markets.
10. Develop a process for carrying out strategy plans, priority setting, and programming at ISAR.
11. Carry out Monitoring and Evaluation, and Impact Assessment

6.3. ROLES AND IMPLEMENTATION MECHANISMS

ISAR will play the overall coordinating institution of the food and technology component of SO3. Key collaborating institutions assisting in the planning, and implementation will be the NGOs (World vision, Care) and the respective commodity regional networks who work under the auspices of ASARECA. Technical Backstopping, short term/mid term training, and Impact Monitoring will be provided by a coordinated partnership of the concerned IARCs. The IARCs will also assist in facilitating long term training (not more than two years) for a selected few ISAR researchers. One lead IARC will handle the financial management and reporting. An in-country coordinator will be hired to manage and coordinate the day to day operations and work as a technical liaison scientist between ISAR and the IARCs, networks and the NGOs. He/she will be assisted by a scientist from the lead IARC as coordinator of the IARC partnership. ISAR and the in-country coordinator will be assisted by a Steering Committee composed of members from the associations, NGOs, Rwanda NARS, Networks, IARCs, and a donor representative. This Committee will provide strategic guidance and will oversee the overall implementation and progress of the activities.

Contracting mechanism would be a Buy-In with G/EGAD who would do a grant to one of the IARCs through the CGIAR.

6.4. RESULTS AND INDICATORS

6.4.1. Expected Results:

- 1) Improved research facilities facilitating research work
- 2) Trained ISAR researchers and technicians
- 3) Increased skills and know how of NGOs and associations in seed production and multiplication, agronomic/cropping and processing techniques
- 4) Improved seed of major food crops multiplied by and distributed to associations/farmers
- 5) High yielding and disease resistant varieties adapted and diffused in targeted areas
- 6) Developed and strengthened partnerships and associations
- 7) Developed and diffused IPM techniques in targeted areas and associations
- 8) Developed and diffused processing and storage techniques in targeted areas and farmers
- 9) Developed market oriented and demand driven research programs
- 10) ISAR developed strategy plan, set research priorities and programs
- 11) Yield and production of target crops increased in targeted areas
- 12) Volume of domestic food trade increased

- 13) Volume of food imports from neighboring countries decreased
- 14) volume of food aid decreased

6.4.2. Indicators:

- 1) Soils Lab in Rubona renovated and functioning. Researchers of the targeted crops have access to computers and vehicles
- 2) ----(##) researchers and ----(##) technicians of ISAR trained in the respective disciplines and techniques
- 3) ----(##) associations from each target prefecture trained in seed multiplication, agronomic and processing techniques
- 4) --- Tons/kgs of seed/cuttings/tubers of sweet potato, cassava, potato, bananas and beans multiplied by -- associations and distributed/sold to -- member and --non member farmers
- 5) # of improved varieties (by crop) transferred to target associations, farmers and areas
- 6) # (%) of associations and farmers planting improved varieties.
- 7) # (%) of associations and farmers using improved agronomic and cropping techniques
- 8) # (%) of associations and farmers using improved IPM techniques
- 9) # (%) of associations and farmers using improved processing and storage techniques
- 10) % increased in Yield/production for targeted crops
- 11) % increased in marketed producer surplus
- 12) Volume of food imports from neighboring countries decreased by --%
- 13) Volume of food aid decreased by --%.
- 14) Average per capita food production increased by --%.
- 15) Price fluctuation of food prices decreased by --%.
- 16) Price of food decreased by --%.
- 17) Calorie intake of Rwandans increased by --%.
- 18) Protein content of food intake increased by

6.5. ILLUSTRATIVE BUDGET (US \$)

Line Item	first year	second year	Total
Personnel:			
In-country coordinator	150,000	150,000	300,000
Short-term T/A	60,000	30,000	90,000
Training: ISAR	150,000	100,000	250,000
Training: Ass./farmers	75,000	75,000	150,000
Research/lab Facilities	75,000	25,000	100,000

Vehicles (two)	60,000		60,000
Computers (6)	50,000		50,000
seed multiplication and distribution	125,000	125,000	250,000
Adaption & demo. trials	100,000	100,000	200,000
Processing & Marketing	100,000	100,000	200,000
Impact Evaluation		50,000	50,000
Workshops & Meetings	50,000	50,000	100,000
Surveys, monitoring and field days	75,000	75,000	150,000
Travel (local & Int'l)	50,000	50,000	100,000
Other direct oper. Cost	100,000	100,000	200,000
Contingencies	100,000	100,000	200,000
Overhead	240,000	220,000	460,000
Total	\$1,560,000	\$1,350,000	\$2,910,000

VII. ISSUES NEEDING FURTHER STUDY AND "ROADS NOT TAKEN"

7.1. CONSTRUCTION OF PHYSICAL MARKET CENTERS

The construction of donor-financed, government-sponsored physical market centers for agricultural produce is an idea that has been tried in a number of developing countries, with mixed results. In Rwanda, both MINAGRI and private traders agree that central assembly points for collection and storage of agricultural produce are needed. This is particularly the case given the low levels of marketable production after the genocide, making it economically difficult for traders to collect very small amounts by going from house to house. Some traders are currently grouping into associations and are discussing pooling their resources to buy or build collection and storage facilities.

However, government-sponsored physical markets elsewhere have often not worked well. Trader\transporters often simply bypass

the government market and make their own arrangements with producers or smaller traders who do the assembly. (This system of direct arrangements between traders was well developed and highly functional in Rwanda before the genocide.) The tendency to bypass the government's physical facility is particularly strong when local authorities (perhaps under financial pressure as a result of decentralization) see the market as a source of local revenue and impose a tax. In other situations, they may simply charge a fee to cover the expenses of running the market, which traders want to avoid paying. In some cases, when traders bypassed the market, local or national authorities have responded by imposing a legal requirement that traders must buy and sell at the government market. This in turn leads to a series of enforcement problems and raises transactions costs for traders.

Given the current situation in Rwanda, perhaps a better way to meet the need for collection and storage points would be to work directly with trader associations. Those associations that have established a serious track record could be helped with credit, or preferably with matching grants. They could be required to put a significant share of the cost of the construction in an escrow account, which would then be matched by donor funds. This latter approach would require traders to back up their stated need for physical facilities with a portion of their own funds, and would avoid all the difficulties of trying to collect on loans. It would also mean that traders would design the buildings to meet their own needs and specifications, rather than donors\government trying to decide what type of facility is needed (which in the past has often led to over-designing and unnecessary expense).

A second option has to do with the privatization of OPROVIA's sales operations, including 8-10 USAID-financed warehouses, which could be used to partially meet this need. The terms of privatization could be set such that medium-scale Rwandan traders, as individuals or as associations, would get first preference during the sales of the warehouses. In order to increase competition in the market and put the warehouses within the price range of the traders, they should be sold one-by-one, and NOT in a block, "all at once" sale.

7.2. MICRO-ENTERPRISE AND MICRO-CREDIT ACTIVITIES.

The team leans toward the view that any long-term USAID involvement in micro-enterprise and micro-credit should flow from the subsector analysis approach proposed in Section B on marketing and processing, and from the proposed support to associations. This would ensure that micro-enterprise activities were well integrated into the other priorities of USAID, and specific interventions would be financed only after in-depth

analysis established that such interventions were in fact addressing priority constraints.

The disadvantages of this approach are that USAID micro-enterprise activities would be limited mainly to the areas of agricultural processing and marketing, and that any specific support activities in this area (apart from working with the associations who are involved in micro activities) would not start until 2-4 years from now (perhaps one year to get the T.A. team in place, another year or more to get conclusions from the analysis, and another year to get the specific support activity into place. The team also recognizes that a rapid restarting of rural economic activity is critical to broad-based economic growth, and to slowing both rural-urban migration and the development of a dual economy with high income inequality.

CARE and other organizations, along with some of the donors, are currently studying and experimenting with micro-enterprise and micro-credit in Rwanda. One suggestion is to see what comes out of that work before moving further along the micro-enterprise track.

The team did not have a specialist in micro-enterprise and micro-credit per se. If the mission wishes to move more quickly, then it is recommended that one or two specialist be brought in to carry out a more thorough review of the prospects and opportunities in the current Rwandan context.

7.3. RESOURCE CENTERS PROPOSED IN THE WAGNER REPORT

This issue was implicitly discussed in the Mullenax report of May, 1998. There is some concern that establishing and staffing such centers is an overly "static" approach to training in rural areas. The centers would have to be designed and staffed in such a way as to respond to specific, anticipated training needs. However, anticipating what those needs are is not as easy as it may appear, and the needs can change rapidly over time. (It is worth remembering that USAID funded a project to train rural blacksmiths in the 1970s, with only limited success.) A more flexible approach to rural training may be needed.

There is no doubt that off-farm employment and income generation is critical in Rwanda, and rural skills training is presumably an important need, particularly given the events of 1994 and subsequent shortages of both skilled and unskilled labor. If USAID/Rwanda wishes to go further with this concept, then further study of the question could be a part of the scope of work for a micro-enterprise specialist, if one is brought in.

7.4. LAND TENURE

There are several serious land tenure issues currently in Rwanda.

One is the issue of land fragmentation into very small parcels, which has occurred over time due to inheritance patterns and the severe shortage of land. Another is the right of women to own and inherit land. The question of ownership and use rights to "marais" land is also an issue, as is the question of disputes with regard to "old caseload vs new caseload" refugees (however, the team was told that this latter issue is being worked out, and now seems to be less of a concern). The increase in informal "land markets", particularly in peri-urban areas, may also be a concern.

The GOR is currently revising the land tenure laws. If some assistance in thinking through these issues is needed, the University of Wisconsin Land Tenure Center has considerable expertise. Their expertise can be accessed through the new BASIS project.

7.5. RURAL ROADS

The team believes that rehabilitation of rural feeder roads is an important aspect of increasing the level of marketing of agricultural marketing and commercial trade, and rural income. USAID/RWANDA should consider funding some roads work in the Prefectures of program focus if funding is available. Following is a summary of current activities related to rural roads.

7.5.1. Direction Des Ponts et Chaussées - Minitrape

National roads have been rehabilitated by the Direction des Ponts et Chaussées of the Ministry of Public Works (MINITRAPE). An approximate hundred kilometers have been rehabilitated country-wide by these services however as I spoke with the Director of Ponts et Chaussées, he mentioned that MINITRAPE was only interested in national roads (these are main roads) but secondary roads rehabilitation is the responsibility of the communal authorities. Given that the road network in Rwanda is not in such a good shape at present and other related constraints such as security in the NW of the country, the Director expressed the government wish to have donor's intervention in the sector more strengthened. The rehabilitation took place in three prefectures mainly Kibungo, Kigali-rural and some part of Umutara.

7.5.2. P.N.A.S

PNAS is programme national d'action sociale, a World Bank funded project that has done some rehabilitation work on feeder roads. They have rehabilitated so far three important feeder roads in 3 communes totaling some 40km. PNAS has adopted a methodology approach in the rehabilitation work called HIMO (Haute Intensité en Main d'Oeuvre) which they believe creates employment in the rural sector especially for women headed households. PNAS is planning a study to identify targeted communities involved in

agriculture production to support their road network and they are awaiting funding probably from WB. Since they believe that rehab. work for roads in the rural area is part of the communal authorities commitments, a proper targeting (ciblage) is necessary.

7.5.3. Adra

ADRA, a US PVO already involved in Rwanda for a couple of years has also constructed a road in Umutara of 30 km. This road is very important especially in a place where roads never existed before like the former Akagera Park.

7.5.4. World Food Programme

While WFP has provided substantial assistance through FFW to rehabilitate infrastructures in more than 5 prefectures, it is however not considered as rehabilitation work as per MINITRAPE's standards. WFP's infrastructure programme have focused on the rehabilitation of feeder roads, which link the main "highways" with communes and sectors. All these roads are dirt roads, and require regular maintenance. In the absence of heavy machinery, much of this work can be done by manual labour, especially the clearing of drainage ditches and filling of the holes. In 1997 alone 831km were rehabilitated by WFP through FFW assistance.

7.6 FERTILIZER

A discussion of fertilizers in Rwanda should included Government of Rwanda's new vision for agriculture to become a business.

The Ministry of Agriculture, Livestock, Environment and Rural Development has engaged in a process of consultation to develop a new policy framework for the agriculture sector. The objective is to transform agriculture into a viable and sustainable business. Agro-business will be encouraged throughout the sector all the way down to farmer associations. Farmers will be encouraged to produce for income generation not for subsistence. The policy framework provides ministries and agencies concerned with rural development with broad policy guidelines on agricultural and rural development and a basis for specific policy formulation. The draft framework is being reviewed in donor and GOR circles.

To operate more as a business farmers will have to increase productivity of land. According to commerical traders of commodities low production is a constraint. The production of

high quality and quantity of commodities in a timely manner is important in the marketplace. Soil fertility has been a problem since the mid 1980s. The yields and per capita production levels of most commodities have declined long before 1994. Soil fertility has to be improved so that farms will have an opportunity to become viable and sustainable business.

Livestock manure is a good source of carbon, but a poor source of major plant nutrients. It is not a viable solution to solve low soil fertility and replenishing the soil with nutrients removed by harvest. Because most land is already farmed, agricultural intensification through the use of fertilizer applications and good land management is the only viable option. The Ministry of Agriculture, Livestock, Environment and Rural Development is working on a long term National Fertilizer Policy and an Emergency Fertilizer Programme. The GOR is committed to encouraging the use of fertilizers by farmers.

Fertilizer is a powerful productivity-enhancing input. Rwanda like the rest of Sub-Saharan Africa uses very little fertilizer. According to E.U. experience in Rwanda, there is a market demand for fertilizers, but it is low.

For the past three years the E.U. has imported about 2,500 tons of fertilizers (NPK, urea, and DAP) annually. They hold public sales of fertilizers to commercial traders and to farmer associations and PVOs. The cost of the fertilizer is only partly recovered through sales. Traders pay cash at about 100 Rfs per kilogram of fertilizer. Farmer associations and PVOs pay about 120Rfs per kilogram and are given three months to pay. The E.U. currently estimates that the free-market price for fertilizer at the commune level including all taxes, trucking and handling costs would be about 210 to 220 Rfs per kilogram (309Rfs/US\$). Fertilizers sold on credit are often not paid and distort the markets. The E.U. estimates that 180,000,000 Rfs are outstanding from sales to farmer associations. Traders typically mark up fertilizer prices only 10 per cent.

Market prices of most commodities in rural Rwanda have risen sharply in the past couple of years. In early 1998 according to the E.U. it was profitable to use fertilizers on most crops. The highest returns on investments in fertilizers are in the higher mountain areas and valleys. Rice and potatoes are leading profitable crops. It is particularly profitable for farmers to use fertilizers in the high productivity Northwest area.

The GOR is interested in fertilizers for economic reasons and they have received much advice from various quarters. For example, there has been suggestions to keep subsidies, to give fertilizers away to farmers and to take a free market approach. Based on our discussions with the EU, World Bank, Michael Schluter, FAO and commercial traders there are some important

issues concerning fertilizers that USAID/Rwanda should be aware of.

1. Sales taxes. There is a 15 per cent tax on everything, including fertilizers, brought into the country and every at point where it is sold. A long distribution chain runs up a significant cost in taxes.
2. Storage capacity of traders. The traders generally do not have large storage facilities and do not want to store fertilizers (costs and thefts).
3. Credit sales to farmer associations does not foster timely payment. It often turns into a give away.
4. There is low demand for fertilizers.
5. Subsidized fertilizers in Rwanda distorts fertilizers sales in Rwanda and in neighboring Uganda.
6. There are private traders with connections to fertilizer manufacturers, but they don't import fertilizers because of the E.U. program. E.U. does not pay taxes on the fertilizers.

USAID should not encourage direct subsidies and donor/public distortion, but rather a thorough review of ways (including those mentioned below) to facilitate the long-term development of private, economically-viable fertilizer use. The mission should stay in close touch with officials at the local World Bank and E.U. offices to reach a common understanding and to work together on assist the GOR in this important sub-sector.

Action issues:

1. GOR policy on taxes involving fertilizer should be reviewed.
2. GOR policies should encourage private sector importation, distribution and marketing of fertilizers.
3. Privatize in-country production and marketing of lime.
4. Develop policy partnership with private sector to increase demand for fertilizers by farmers on profitable crops.

7.7 SUSTAINABLE LAND MANAGEMENT

The natural resource base of agriculture is under stress from various farm mismanagement practices since the 1980s when the per capita production started to decline. Most of the land is being farmed including the steep hillsides. As rural populations increase farmers are sub-dividing their farms into smaller units which may not be sustainable. Pressure is increasing to cut trees to make charcoal because most people use charcoal for fuel in their households. The increasing cultivation of fertilizer

responsive cereals would likely increase the rate of soil erosion. With increasing populations of livestock the possibility of over-grazing pastures will increase.

On the positive side people do grow trees and have ownership of trees. Terrace farm plots are being built. Farmers in some areas do border plots with erosion slowing hedges of trees and elephant grass.

The Team is very pleased that the GOR is formulating a national policy on soil conservation and soil fertility. These steps have considerable merit because the emerging GOR policy of making rural farming more income oriented could increase the exposure of soil to erosion. The Team proposes that the Mission provide assistance to GOR to help them draft a national policy on soil conservation. Mission should consider USDA's Natural Resource Conservation Service as source of expertise.

VIII. GEOGRAPHIC AREAS OF FOCUS

Much of the package of interventions being proposed is country-wide. This is true for all of the policy activities, as well as much of the marketing/processing activities and the production technology work. With regard to the more "grassroots" investments proposed, the team suggests that current work being done in the food deficit Prefecture of Gikongoro provides a natural base from which to expand. This expansion could be within Gikongoro, and to neighboring Prefectures.

Ideally, USAID's activities should promote trade between deficit and potentially surplus areas. If the security situation improves, then work in the Ruhengeri and Gisenyi areas would be justified and desirable. (USAID made a major investment in the agricultural research station at Rwerere in Ruhengeri Prefecture in the 1980's)

IX. GREATER HORN OF AFRICA INITIATIVE (GHAI) AND REGIONAL PROGRAMS.

The proposed interventions have a number of linkages with GHAI and regional activities. On the policy front, it is foreseen that work would be done on cross-border and informal trade, in close coordination with GHAI and AFR/SD-funded studies on the same topic elsewhere in the regional. The same is true with regard to analytical work on regional transport issues. Regarding agricultural technology, the core of the proposed activities is to quickly increase Rwanda's access to technology innovations that already exist in neighboring countries, via the regional commodity networks that are currently operating. In addition, Rwanda can access the GHAI-funded Technology Delivery and

Dissemination small grants program that operates in the region.

X. MATRIX OF ACTIVITIES

ANNEX 1: COMMODITIES

Major commodities

This list gives a summary of the key issues regarding production, food security and constraints. Commodities on this list have a high user demand and are an important sources of food and cash income for rural households. The constraints cited below are points of interventions.

Bananas

Across the nation farm households allot most of their land to the cultivation of bananas. According to a recent economic survey, this commodity is the most important cash crop and is second only to labor sales as a source of cash. Labor sales are 30 per cent and bananas are 22 per cent of the total cash income of farms. About one third of the bananas are eaten directly. Farmers on

small farms sell more bananas than larger farms. Most of the bananas are brewed into beer which has a higher value. Sales of banana beer generates 21 per cent of the total household cash income, compared to only 11 per cent for coffee. Beer bananas have high yields and trade at low prices. Cooking banana production is mostly in the Eastern part of the country, but production is expanding in some periurban areas. Farmers are expanding banana intercropping with other crops. Agriculturalists and extension agents have given little attention to banana diseases and intercropping.

Constraints to banana production are root diseases which are common in East Africa. There is a lack of disease-free root stocks for farmers to use in planting new stands of bananas. Farmers often spread pests and diseases when they used vegetative cuttings from infected plants. Root diseases in cooking bananas is increasing and is becoming a problem. In addition, banana intercropping in one third of the fields and low soil fertility constrain production.

Beans

They are a national staple crop and are an important source of proteins. Rwandans obtain 65% of their protein intake from beans. Nearly half of the country's farmers grow climbing beans. These beans were developed by CIAT and ISAR and have higher yields than bush beans, but they one drawback because they require more farmer labor in staking plants. Under similar growing conditions climbing beans will have generally three times greater yield than bush beans. Climbing beans require a longer growing season which may infer with planting of sorghum. Potentially climbing beans fix greater amounts of atmospheric nitrogen and are more nitrogen self-sufficient than bush beans. Climbing beans are grown over a small area (about 10 per cent of the total bean production area) presumably due to labor requirements for staking plants. A World Bank Poverty Report found that there are severe labor and time constraints in women headed households. These women are less likely to grow climbing beans. Bean production has increased since 1994, but production in 1997 was only 60 per cent of 1991 figures. Most of the beans are sold and purchased in the rural markets.

Labor to stake climbing beans is a big constraint. low production, pests and root rot diseases in bush beans. According to traders, low production constrains national and international marketing. Another problem for farmers in some areas is the availability of wooden poles for staking climbing beans.

Sweet Potato

This crop is an important source of calories. Together with bananas and beans, these crops provide more than two-thirds of calories, proteins and cropping incomes in rural Rwanda. The 1994 war reduced the sweet potato seed stocks. A major effort

has been undertaken by USAID to increase the seed stock of sweet potatoes in areas where they are important food. Several Rwandan sources indicated that the supply of seed stock is no longer a major constraint. Rwandans place a high value on sweet potato as a food, for its tolerance to poor soils, drought tolerance and extended harvested period. According to FAO estimates sweet potato production has returned to levels before 1994. Yields per hectare have increased sharply and harvested area has increased. USAID support to PVOs to increase seed potatoes has been very successful.

The main constraints are on the production side. Many traditional lines have low yields, pest and fungal disease resistance and nutrient value. Introduction of improved germplasm would help to increase production. There are some marketing constraints, such as, storage and distribution.

Cassava

This is a staple crop in terms of food security for some of the rural poor. It is a source of carbohydrate and cash income. Cassava is not widely grown but is important in rural Kigali (Bugesera), Eastern part of Gitarama and Butare. Cassava production per capita has declined continually since 1980. Last year production was only 30 per cent of the production in 1980. USAID/BHR/OFDA plans to support a large scale restocking of plant material.

The big constraint to production is the disease cassava mosaic virus, and mealybug. It is imperative to bring in new IITA varieties with resistance to mosaic virus. Mosaic virus is advancing and in a few years will wipe out cassava production. Market constraints are centered around the bulky and perishable nature of the crop. Higher capacity for local processing of cassava would increase income and increase marketability flour in other areas. Some people in cities prefer cassava flour because they prepare "Ugali" with a minimum of cooking. Cassava flour is eaten with meat or beans, or vegetables.

Irish potato

Potatoes are grown mainly at high elevations. Before the war in 1994 ISAR and CIP collaborated to make big strides in the genetic improvement of potato production. The war decimated the potato seed stocks. There has been a big USAID effort to increase the availability of seed stocks in the potato growing regions. The restocking of potato production areas has been slowed because of civilian insecurity at high elevations. Potato production in 1997 was about 25 per cent of the 1991 production level. Civilian insecurity in the Northwest areas has constrained potato production in the formally potato growing areas. Potato production in other areas has increased and production of seed potatoes has become a valuable source of cash income. Potato yields per hectare are about half of what they were in 1990.

Constraints to potato production are the low availability of disease-free seed stocks from a Rwandan seed source. High quality disease-free germplasm is needed. As civilian security increases in the potato growing areas the distribution of quality seed stocks should increase. Rwanda should consider the option open of looking for global sources of disease-free seed stock if there are problems in producing high quality seed stocks internally.

Other commodities

Livestock/small ruminant

The 1994 war decimated the livestock and small ruminant population in Rwanda. The restocking of livestock and small ruminants is occurring. The team saw truck loads of cattle moving toward Butare and Gikongoro. WorldVision International reported that a livestock market has been restarted in Gikongoro. The team saw goats, and cattle along the main roads and the nearby pastures all the way from Byumba and to Gikongoro. Livestock is coming in from Uganda and other places. The restocking is evidence of the importance of livestock and small ruminants to farmers. Goat meat was being sold along the roadside in some communities.

The main constraint is the low number of small ruminants.

Fish

Production from farm aquaculture ponds has declined sharply since 1994. This is primarily due to the lack of new stocks of talapia and catfish (Calirus). Ponds were not destroyed, but have deteriorated from lack of maintenance. About 1000 have been cleaned by WFP. Farm pond owners need assistance in cleaning ponds, training in pond maintenance and access to fresh stocks of fish. The Rwasave Station at the National University of Rwanda in Butare is operational and sells fish. Fish production is far below potential capacity.

Another source of fish for the market place are the lakes in Rwanda. Currently some lake fish are marketed, but the production potential of lakes is unknown.

Large scale pond maintenance, fish stocks, and training in fish production are primary constraints. Constraint to lake fish harvest is the over growth of water hyacinths. The natural fish populations of lakes needs to be characterized. Lakes are natural resource base that needs protection and long term investment. We advise the mission at this time to support only an assessment of the farm ponds in Rwanda before taking any actions in this sub-sector.

Soybeans

They are a better source of protein than beans plus they are rich

in vegetable oil. After extraction of oil the remaining soy cake is excellent food for chickens, pigs and cattle. Soybeans represent a potentially important cash crop.

The primary constraints are new varieties with better yield and disease characteristics. A local supply of Rhizobium inoculant is lacking. Soil bacteria that nodulate soybean are not present in Rwanda soils. The bacterial inoculant facility in ISAR at Rubona was destroyed in 1994. GOR official expressed interest in re-establishing the legume inoculant facility. We recommend that the mission provide support for equipment and training of staff for a legume inoculant facility.

Wheat

This is cash crop that is grown at higher elevations mainly in the Northwest.

The main constraints are new varieties. A wheat flour mill located in a civilian insecure area in the Northwest and is not operational. Farmers are growing wheat, but they are concerned about a market for it.

Sorghum

Sorghum is the main cereal crop in terms of land area. Red sorghum is most important kind grown because 65 per cent of crop is used to make beer. It is grown once a year and usually after beans. Some white sorghum is grown. Farmers make a paste and feed children.

The main constraint is smut disease.

Coffee

Small holders produce 100 per cent of the crop. It is a good cash crop.

The constraints are low yields and disease problems. The private sector is expected revitalize the coffee industry.

ANNEX 2: INSTITUTIONS VISITED

1. OPROVIA

OPROVIA continues to operate a large (over 2000 tons), USAID-financed food storage warehouse at Kikukiro outside Kigali (built about 1980). The building is currently being used for WFP food aid. It is well maintained, and USAID-trained warehouse management is using modern food storage conditions (including fumigations) to safe-guard food from quality and quantity losses. Smaller USAID-financed warehouses in the prefectures are not currently operational, partly because OPROVIA's buying funds left the country during the 1994 exodus. OPROVIA'S marketing

operations are slated for privatization by the GOR.

In addition to the warehouse, OPROVIA maintains a laboratory for testing food quality, nutritional content, etc. Much of the laboratory equipment was donated by USAID at the time of the Univ. of Minnesota research project (roughly 1993 to 1989), and is still functional. Germany has recently donated some very sophisticated instruments, which do not appear to be getting much use. It is our understanding that the Ministry of Commerce intends to turn the laboratory portion of OPROVIA into a national bureau of standards aimed at testing food quality (a team from Rwanda will soon visit Kenya to look at how their national standards bureau functions).

In addition, the OPROVIA warehouse contains a large, relatively sophisticated grain dryer that arrived shortly before the war and genocide and has never been installed, as well as several large crates of agricultural processing equipment. The Minister of Commerce hopes to use the processing equipment to experiment with and demonstrate agricultural processing techniques for Rwandan produce. Once the processing techniques were developed, they would be shown to the private sector to encourage them to start processing businesses.

2. ISAR:

ISAR is the umbrella institution for agricultural research in Rwanda. Before the war, ISAR was one of the strongest research institutions in the region. Over the years, it developed and released several technologies. Those technologies not only were transferred and adopted in Rwanda but also diffused to neighboring countries. Farmers in the region adopted high yielding climbing beans and disease resistant bush bean varieties. In terms of human and capacity and infrastructure, ISAR had adequate capacity. There were 65 researchers with operational research facilities.

The war destroyed ISAR's human research capacity. Out of the 65 researchers only three returned to work. Most of the buildings, research facilities, equipment and vehicles were destroyed. When ISAR resumed its operations in 1994, almost all the facilities were inoperational. There were no seeds to start with.

Over the last four years, however, ISAR has been rebuilding its research capacity. ISAR has now 32 researchers and 17 technicians. It has started to carry out research on 22 programs. It has reopened the 12 research stations. Buildings and a few research facilities are rehabilitated and renovated.

The regional research networks and the IARCs (initially through the Seeds of Hope Project) have been assisting ISAR in some rehabilitation and restocking of improved germplasm. It is fair to note that with only a few researchers and resources ISAR has made progress in reestablishing variety trials and has conducted NGO demonstration plots and distributed improved seeds. It will take a lot of investment and effort to reach to a stage to what it used to be.

Some of the major constraints facing ISAR are: (1) inadequate number and limited research capability of researchers and technicians; (2) nonfunctioning research facilities, including laboratories; (3) Lack of vehicles and computers; (4) Inefficient institutional linkage and coordination; and (5) Lack of strategy planning, priority setting and programming.

3. IWACU

IWACU is a training center for co-operatives\associations, established with Swiss and USAID support. Located above Nyamirambo in Kigali, it has excellent facilities, including the only library in the area that was not pillaged and looted during the war and genocide. The facility can lodge up to 72 people at one time, feed 170, and has conference halls for up to 220. It has a total staff of 50, a fleet of about ten vehicles, is totally Rwandan managed, and generates about 25-30 percent of its budget from its own training activities. It is completely independent, receiving no government funding.

IWACU runs training courses in residence for a standard set of skills like accounting and co-operative management. For more specific, problem-oriented training, they travel extensively to the co-operative sites in the rural areas, with an average of 10 professional staff on the road at any one time. IWACU is expect to submit a proposal to USAID in the next few weeks, for support to agricultural associations in Butare, Gikongoro and Kibuye. They are in the process of changing strategies, to provide more intensive support to those associations that are more closely linked to markets.

4. PRIVATE TRADERS

A three hour meeting was held with a group of 15 private traders dealing in agricultural inputs and outputs, some of whom themselves represented associations of other traders. The discussion was very open and informative. Following are the key points that emerged from the meeting.

- It was noted that Rwanda's previous vibrant rural trade was greatly diminished. In their view, the principle constraints to reviving this trade are:

- Lack of marketable production
- The population's general lack of buying power
- Lack of vehicles and capital
- Lack of commercants (many were killed or exiled)
- Lack of facilities for storage and centralization of

produce

- Lack of seeds

Some of the traders have banded together to form a trader's association, through which they hope to build or buy storage and centralization buildings. They are hoping for assistance from donor credit schemes.

- The question of using OPROVIA's current warehouses for this function was discussed, since OPROVIA's buying operations are slated for privatization. They did not believe they would be able to compete for these assets, since they would go to the highest bidder. They liked the idea of selling these assets one-by-one, which would give them a chance to band together and possibly buy one or more of the warehouses--they would not be able to compete with larger, possibly expatriate businesses if all the buildings were sold together in one block.

- There has been a lot of discussion about donor funding of vehicle credit. They believe that this can contribute greatly toward getting rural marketing functioning again, provided that the traders who get the credit are resident in rural areas and engaged in trading already. They liked the idea of matching grants rather than credit, both for vehicles and for storage facilities.

- There was long discussion about fertilizer use and subsidies. They believe there is a market for fertilizer in Rwanda. Several of them have bought E.U. subsidized fertilizer, but they don't like the subsidy program. They were very keen on eliminating the 15% "ICHA" tax on fertilizer, in place of the subsidy program.

- With regard to seeds and the "Service Semance Selectionnee", they don't believe that SSS is have any significant impact on seed multiplication, and don't see the need for that role, but do believe that it has a role with regard to quality control.

- They have been asked their ideas on these topics many times by donors and the government, and would like to see some action, as well as regular updates or briefings on the status of the ideas that have been floated.

5. RWASAVE STATION AT NATIONAL UNIVERSITY OF RWANDA IN BUTARE

Mr. Canisius K. Kanangire, Director of Project Etude des

Ecosystems Agro-Piscicoles, described the operation of the facility. The station raises talapia and catfish and reportedly sells 100 kilograms of fish a week at price of 500 Rfs per kilogram (100 Rfs per kilograms less than imported talapia). We got a sense that fish production was very low. The Belgium government currently provides some support for station and one graduate student from Belgium. This support may end this year. Unless there is additional government or donor support the Station will continue to operation at reduced capacity. The station does not raise fingerlings for restocking of farm fish ponds. We did see about 10 pigs being raised beside a pond. The manure and urine went into the pond. Chicken coops over a pond were empty. In the past mixed farming of farm animals and fish were demonstrated to farmers. The Director commented that the Kigembe Station, south of Butare is scheduled to be privatized. An American is interested in buying the station to produce fish. The Director expressed concern about loss of the training facilities at Kigembe Station. We suggested to him that the GOR negotiate for the rights to the training facilities.

6. WORLDVISION INTERNATIONAL SITE IN GIKONGORO

WVI has a regional site in Gikongoro. The place on the day of our visit was busy with many activities. Mr. Irwin Asante, an agronomist, leads us to several terraced plots that farmers were using to grow wheat, Irish potatoes, and sweet potatoes. Farmers were growing wheat with a little fertilizer and manure. Farmers need to use manure, top soil, green manure and fertilizer to increase production in order to have enough to sell. Wheat is a cash crop and will be sold to a local mill. Kigali traders come to Gikongoro to buy commodities. Farmers practice crop rotation and will grow beans next and the previous crop was potatoes. WVI had planted teflosia along the edge of terrace to tie the soil to the hillside. The trees has another use. Farmers will make an extract from the plant to control insects. Calliandra is grown along other terraces. At a Irish potatoes site we say potatoes infected with bacterial wilt. SSS provided diseased seed stocks to an association of women headed households. The women at the plot site were upset by the prospect of harvesting poor quality potatoes. WVI does help association members manage their finances. WVI doesn't act as an intermediary, but puts associations in touch with traders. WVI does provide advice to farmers. We wondered what happens to farmers and the sustainability issue when WVI leaves the area. The farmers will have to deal with the traders themselves. Currently, WVI plays a extension role and looks out for the interests of the farmers.

ANNEX 3: OTHER DONOR PROGRAMS

1. WORLD BANK

The team met with Marie-Chantal Uwanyiligira at the World Bank offices in Kigali (and also with Jaakko Kangasniemi in Washington, who has just completed a PhD dissertation on Rwandan agriculture).

The World Bank is just beginning to formulate a development program in agriculture and rural development. In FY 1999 (beginning July 1, 1998), a pilot \$5.0 million loan will concentrate on fertilizer, rural infrastructure, and increasing access to vehicles for traders. MINAGRI is preparing more detailed project proposals, to be discussed with Bank staff before activities actually start.

For FY 2000, a \$20 mil. project is on the drawing board. This may include involvement in many of the same issues that USAID is considering, i.e., agricultural policy, including land tenure; support to local associations; and "action" research, possibly including support to ISAR. Other issues that may be covered include agricultural extension and the environment.

2. EUROPEAN UNION

The team met with Glauco Calzuola, head of the EU Delegation, Paul Renier (in charge of agriculture), and Dirk Brems (fertilizer imports). Mike Weber and John Mullenax also met previously with Alain Houyoux, who is working on agricultural data at the MINAGRI Food Security Technical Unit.

The E.U. believes that the time is right to move toward a longer-term, development-oriented program, and they expect that food security will be a major focus. However, they have not yet made any decisions about the specifics of what this program would consist of. They are currently leaning toward ground-level micro-projects, possible including micro-credit and "cash for work". They raised some doubts about food aid monetization, stating that the food problem is not so much supply, but rather lack of effective demand.

They have been heavily involved with subsidized fertilizer imports, and have had mixed results at best, including serious repayment problems when fertilizer was made available to farmer groups on credit. They have been discussing this problem with the World Bank and others, and intend to stop their current program after their next import of 2000 tons in September, at least until a well defined, coordinated, and private sector-based import system is in place. (see the Annex on Fertilizer for more detail on this issue.)

3. FAO

Peter Vandor, the FAO representative in Rwanda, briefed the team on FAO activities in Rwanda. Mr. F. Yrieta is the leader of a six member (UNDP, FAO, EU, World Bank) team on the Soil Fertility Initiative for Africa. The team will look at the present situation and initiatives already in progress. The team will analyze inorganic fertilizer use as well as the whole range of soil and land management and organic manure. The purpose of this work is to assist the GOR to develop a mechanism and master plan for a national soil fertility program. FAO provides technical assistance, but could participate in implementation stage with donor support. The team will look at the commercial movement of inputs (fertilizer, etc) and outputs (commodities) in the rural areas. FAO sees Rwandan agriculture being at the subsistence stage. A problem is how to increase use of agriculture inputs and create more agricultural outputs. Another problem is how to motivate the private sector in the rural areas. The former traders are gone or afraid to work in rural areas. Our team and the FAO team both view the commercial development of specific rural associations as a way to proceed, although this will take time. FAO sees social trust as a key issue to agricultural development. Security of land use is a concern among farmers. According to the FAO rep, the GOR has committed to making a significant amount of money available for grants to traders to facilitate movement of fertilizers to the farmers.