FAO/GFAR Global Initiative on Post-harvest Technology, Phase 1

Summary Report of the Regional Workshop for Africa

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Organised by FOODNET

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THE REGION

The Sub-Saharan Africa Region has been described as the most important development challenge of the 21st century. With an estimated land area of some 24.2 million sq. km (18% of the world total), Sub-Sahara Africa is comprised of 48 countries wherein resides about 612 million people, or about 10% of the world's total.

**West and Central Africa**

West and Central Africa consists of 24 countries, namely Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Democratic Republic of Congo, Gabon, Gambia, Ghana, Guinea, Guinea Bissau, Ivory Coast, Madagascar, Mali, Mauritania, Niger, Nigeria, Rwanda, Senegal, Sierra Leone and Togo. These countries cover roughly 12 million sq. km and have a population of about 311 million people.

**Eastern and Central Africa**


**Southern Africa**

The Southern African Region consists of 11 countries, namely Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. The region covers roughly 7 million sq. km and has a population of about 142 million people.
Figure 1. Map of Africa
INTRODUCTION

This report highlights the outcome of the Africa Regional Workshop (Workshop) on the proposed Global Initiative on Post-Harvest (GIPH), conducted by the Food and Agriculture Organisation (FAO) in collaboration with the Global Forum on Agricultural Research (GFAR). The consultation took place in Entebbe, Uganda during the period 15-17 September 2001.

Major Inputs to the Workshop were:
- Three sub-regional papers prepared by expert consultants, for Eastern Southern and West-Central Africa.
- A series of specialist papers by various stakeholders in the post-harvest sector (Research, development/NGO, policy makers, businesses…).
- Information on existing post-harvest networks (FOODNET, PhAction).

Working Group Deliberations were conducted on the basis of:
- Sub-region, to identify sub-regional priorities and strategies, through SWOT analyses.
- Thematic areas, for detailed discussion of objectives and concrete activities in specific, high priority areas.

This summary report reviews the subregional reports, highlighting key issues and conclusions of the various working groups.

Overview of the FAO/GFAR initiative

The Agro-Industries and Post-Harvest Management Service of FAO (FAO/AGSI) with the endorsement of Ph-Action, has launched an international initiative geared toward facilitating development within the post-harvest sector of developing countries. This initiative will be implemented in two-phases:

- **Phase 1** - Development of a global perspective of the post-harvest sector, through the planning and implementation of five coordinated technical regional workshops. The workshop in Africa was the first to be implemented.

- **Phase 2** - Conduct of a five-day International Technical Consultation on Post-Harvest, with the objective of obtaining the endorsement of a plan of action for a Global Initiative on Post-Harvest (GIPH).

- **Phase 3** - Launch a Global Initiative on Post-Harvest (GIPH).

Activities of Phase 1 were fully funded by FAO/AGSI and implemented in cooperation with the Global Forum for Agricultural Research (GFAR).
THE WORKSHOP

The current Workshop was the first of five regional workshops implemented in Phase 1 of the GIPh initiative. The objective of this Workshop was to provide an appraisal of the current status of the post-harvest sector from both institutional and stakeholder perspectives in developing countries; to identify priorities, problems, potentials and constraints of the sector and to use the information derived as a basis for the development of Concrete Action Proposals geared toward post-harvest development in the Region. In order to accomplish this, the Workshop set out to:

- Identify and analyze the problems, potentials and constraints of the post-harvest sector in each region.
- Assess the technical, organisational, institutional and information needs of the post-harvest sector in each region.
- Identify major areas for improvement and development.
- Prepare a Regional Strategy for post-harvest.
- Identify concrete follow-up actions to be undertaken for implementation of this strategy.

Information derived from these Workshops will be used as a basis for the development of a GIPh and a plan of action for its implementation. The development of Concrete Action Proposals by these Workshops is therefore critical.

A. BACKGROUND PAPERS

Issues Emerging From Sub-Regional Reports

A number of trends and priority issues were identified and highlighted in each of the three sub-regional reports.

Trends

The three sub-regional reports concur in identifying a number of major trends that are affecting the development of the post-harvest sector in Africa. These are:

- *Demographic:* continued population growth (despite HIV/AIDS) accompanied by very rapid rates of urbanization. Urbanization impacts on food habits, providing opportunities for upgrading products (quality, packaging) for higher income segments, and for development of more convenience products based on traditional foods and commodities.

- *Trade liberalization:* Enhanced prospects for exports are offset by increased competition from imported foods and commodities in domestic markets. Opportunities for export to adjacent countries with similar food preferences exist (regional trade), as well as for more global export markets. In general, market
forces are penetrating into former local subsistence-based economies. The old parastatal commodity marketing boards have largely been dismantled, with the private sector filling (or not) the gaps and farmers are more exposed to fluctuating prices than previously. Traditional export commodities (coffee, cocoa etc) continue to suffer from price declines.

- **Concentration** is occurring in the agrifood sector, with penetration of multinational (and South African) firms into local markets, and increasing vertical integration of major export oriented commodity chains.

- **Food security** continues to be a major issue, but is being increasingly addressed at the sub-regional level through market oriented strategies, i.e. food security is not only seen as a function of on farm production, storage and processing of food, but also in terms of generation of sufficient income to provide adequate entitlements to food at household level. (e.g. ASARECA and FOODNET strategies).

**Priority constraints**

- **Low purchasing power in local markets**: In local markets, consumers have low purchasing power, and producers are facing increasing competition from imported foods.

- **Storage losses**, including those due to post-harvest pests.

- **Poor infrastructure and logistics** (transport, utilities, communications).

- **Discontinuity of the supply of raw materials for processing**, due to seasonal and other factors. Lack of farmer organisation hinders the assembly of sufficient volumes to meet the needs of larger scale commodity chains.

- **Under-utilization of installed capacity in large scale processing enterprises**, especially in West Africa.

- **Limited access to formal credit/financial products**, especially for small-scale enterprises. The financial products on offer are often not well adapted to the requirements, and barriers to accessing them are high.

- **Procurement of equipment and spares is difficult**, especially if imported and poor maintenance of equipment is common.

- **Low level of public investment in post-harvest research and development**, and few trained human resources. Gaps between R and D systems and users (producers, processors, industry) complicate the R and D process, from research priority setting through to dissemination of new technologies. The R and D system also suffers from difficulty of scientists in accessing and exchanging technical information.

- **Poor product quality** due to a lack of the application of methods for loss and quality assessment, and from the variable standards that exist, and which may be inconsistently enforced. Traditional products tend to be of low quality.

**Priority opportunities**

- **Value-added product development based on traditional foods** and product/market diversification from staple commodities. This includes opportunities for upgrading traditional processes and products and improving the quality and food safety of local products, allowing access to higher value markets.
• **Niche export markets for organics, neutraceuticals, underutilized crops.** This requires market intelligence for exploitation of these novel commodity chains.

• **Better commodity chain organisation between farmers and processors or traders** (e.g. contract farming).

• **Support services that are more demand driven,** providing services in the areas of enterprise management, credit, market information, technology access, training etc.).

• **Opportunity for the development and application of low cost technologies,** e.g. drying (e.g. solar), storage, packaging technologies (at all scales), and for cleaner production, more efficient waste and by-product use/recycling.

• **Opportunity to re-orient research priorities** in line with market or demand-driven priorities, and involving partnerships with a wider range of stakeholders involved in the post-harvest system.

• **Opportunities for the exchange of information and technologies** between countries and regions across the South exist.

### Priorities for Action

Based on these constraints and opportunities highlighted in the subregional reports, a number of priorities for future action were identified by the consultants. These are presented here, and should be compared with those that were generated in the working groups during the consultation process.

• **Identification of market opportunities** for a range of added value products/high value niches (organic, convenience, upgraded -high quality- traditional, from under-utilized and staple crops, neutraceuticals, street foods, traditional products etc). This will involve International market intelligence. The development of methods that can be applied by a variety of stakeholders is needed. Policy options to ensure that local produce faces fair competition from imported foods.

• **Improved organisation of links between farm production and added value processing/marketing in prioritised commodity chains** (e.g. contract farming).

• **Development of effective services for the post-harvest sector** e.g. Financial, business skills development, technology (information, selection, and access), market information and export promotion.

• **Improved storage and drying technologies:** research, development and extension for small- to large-scale (farm to industry) enterprises, including storage pest control/management, on farm storage for capturing off season high prices, adding value to wastes and by products (for food and feed use), and cleaner production/processing technologies.

• **Enhanced hygiene and sanitation in the food chain/system through the application of quality standards and quality assurance schemes.**

• **Better R and D partnerships between universities, institutes, industry and other stakeholders,** i.e. enhanced collaboration between different stakeholders in the system. This could collaboration in setting research priorities, and in generating and evaluating new technologies. **Human resource development** in the R and D system is important.
• Awareness creation among policy makers of the importance of the post-harvest sector and the potential impact of a range of policy changes could have on the sector. Opportunities to engage policy makers and to influence the setting of policies so as to maximize the contribution of the post-harvest sector to sustainable economic growth, food security and poverty alleviation exist and need to be seized.

B. WORKING GROUP DELIBERATIONS

Analyses of Sub-Regional Strengths, Weaknesses, Opportunities and Threats (SWOT Analyses)

As a strategic planning tool, SWOT analyses were conducted by grouping workshop participants on the basis of their sub-regional origin. Three working groups were constituted: West and Central Africa, Eastern Africa and Southern Africa. Each working group was requested to identify the major strengths and weaknesses of the post-harvest sector in their specific region (internal factors), as well as external opportunities and threats. This exercise allowed for a prioritisation process of all stakeholders. Results of this analysis are summarised below:

Eastern Africa

Internal strengths

• *Diverse set of climates and agro-ecologies*, favourable for the production of a wide range of commodities.
• *Local indigenous knowledge on the production, storage and processing of crops* is strong, and can be build on.
• *Low labour costs* strengthen the competitive position of the area
• *Strong history of collaboration at sub-regional level*. National institutions are used to working together, and harmonization of national policies and regulations is progressing well.
• *Success stories in the horticulture sector* that can be duplicated. Success stories have been achieved in developing commodity chains through combining good post-harvest technology, policies and institutional collaboration. These provide lessons that can be applied in other sectors/chains.

Internal weaknesses

• *Weak, under-funded, poorly managed institutions, which lack incentives and policies* (or implementation of policies) to encourage the achievement of their goals.
• *Institutional and sectorial strategies are still not market driven*, leading to the development of inappropriate technologies that will not be adopted.
• *Improperly targeted* information.
• *Low value, low quality, low profit traditional products*. Inefficient production and handling compound this problem.
• **Gap between extension services and the private sector.** This affects both the impact achieved from R and D, and the setting of priorities for R and D efforts.

• **Institutions lack capacity for market-based analysis, and for enterprise development initiatives** that drive a market-oriented approach.

### External opportunities

• **Expanding opportunities for diversification of commodities and products,** for a range of national regional, export and niche markets.

• **Large internal market opportunities created by urbanization.**

• **Regional export opportunities** encouraged by regional trade blocks within the East Africa sub-region.

• **Building on indigenous knowledge:** there are opportunities for value added local products, especially through improved quality, packaging etc.

• **Potential for improved market access:** new information and communications technologies provide mechanisms to enhance market access.

• **Opportunity for expansion in rural enterprise development** due to growth in rural finance options (micro-finance etc).

### External threats

• **HIV/AIDS** is a major threat to the fabric of society, with implications for labour availability in the most economically active segment of the population, and for food and nutrition requirements in urban and rural areas (see cross-cutting issues section).

• **Globalization** is a threat as well as an opportunity for the region. A specific threat is the dumping of subsidized foodstuffs and staple commodities (grains) from the developed world that undermines agricultural production in Africa.

• **Lack of competitiveness** hindered by a range of factors such as poor infrastructure, inappropriate policies (and their implementation), low level of education, corruption and poor governance.

• **Unstable operating environments,** caused by political conditions and natural disasters, e.g. floods and drought, diseases.

### West Africa

#### Internal strengths

• **The traditional food system** is seen as a major strength in West Africa. Local populations exhibit a strong preference for traditional foods, including a wide range of processed food products (e.g. gari and fufu).

• **Indigenous processing equipment, vibrant small enterprises and traders** associated with this system constitute an important resource for the sub-region. Trade in such products between countries in the sub-region is already important, if often informal.
• A diverse array of human resources, including those directly involved in the production and marketing of foods (farmers, processors, traders) and support institutions (NGOs, R and D institutions).
• Farmer associations provide significant social capital at the local level.
• Export linkages to international markets: A number of existing export commodities (e.g. coffee, pineapples) links the countries of West Africa with international markets.

Internal weaknesses

• Poor co-operation among post-harvest institutions: The institutions associated with the post-harvest sector in West Africa often work in isolation from each other, and from the enterprises which they support.
• Gaps between research, extension, farmers and industry are a major weakness. This is also associated with the poor managerial capacity of many enterprises, and with the poor record of technology transfer in the sub-region. Extension services in post-harvest technology are particularly weak.
• Lack of focus in R and D initiatives: limited resources would be better spent on fewer commodities.
• Deficient transportation and communication physical infrastructure.
• Difficulty in obtaining market information, which complicates decision making by actors in the commodity and food chains.
• Food quality grades and standards are lacking
• Poor access to credit.

Opportunities

• Opportunities for regional and international export. Regional trade in quality, traditional food products is rapidly growing.
• Urbanization is creating opportunities for processed, convenience and added value foods in internal markets.
• Markets for by-products and wastes create opportunities for more integrated food systems.
• Developments in information technology.
• Opportunities for smaller farmers to link to growth markets created by new organisational arrangements within the food chain (e.g. contract farming).
• Business opportunities for improved transportation services that take advantage of growing internal and regional trade in food products.

External threats

• Globalization is seen as a threat, through the increased imports of food products and basic commodities that occurs.
• Inadequate policy environment is often a hindrance to the development of the post-harvest system, either through inappropriate policies or through inconsistent implementation. Government instability is a related issue.

• HIV/AIDS, though not yet a major problem in the region, poses a threat for the immediate future is large (low labour productivity).

• Climatic and other disasters are real and constant.

• Insecure land tenure and a poorly developed land market result in an inflexible commodity production sector.

• Poor access to credit prevents further development of the sector.

Southern Africa

Internal strengths

• Thriving small-scale processing sector, producing range of traditional food products at village level.

• Internationally competitive major large scale food processing enterprises in South Africa, Botswana and Zimbabwe.

• Good sub-regional collaborative spirit.

• Supportive government plans and policies.

• Strong institutional support to the sector.

• Good capacity for research and training. Regional training programmes in the areas of trade, food safety and marketing are effective.

• Inadequate extension services: NGOs are conducting relevant extension services, but coverage is patchy.

• Abundance of, cheap labour.

• Production of exportable commodities.

• Good infrastructure for communications and transport within the sub-region.

Internal weaknesses

• Insufficient investment in support services, such as post-harvest research, and extension and development services which have very patchy coverage.

• Limited access of rural populations to information and credit.

• Persistent poor quality of produce and products.

• Duplication of R and D effort, a lack of capacity building and poor information exchange.

• Low educational level of the target population is low.

• Seasonal nature of the supply of agricultural products restricts commodity chain development.

• Excessive bureaucracy: innovation can be stifled by Government bureaucracy.
External opportunities

- Rapid urbanization rates provide scope for higher value products and for convenience foods in national markets (especially South Africa).
- Supportive export policies: example preferential trade for export (AOGA), privatisation, more liberalized markets.
- Unexploited demand for indigenous products, both in national and export markets.
- Relative political stability, available land and climatic diversity, all favouring further development of the post-harvest sector.
- Rapid growth and development of information and communications technology and infrastructure are also developing fast in the region.
- Increasing donors’ attention to the region.
- Expanding micro-finance opportunities in the Region.

External threats

- Globalization is a threat to the production of staple crops, through the import of cheap commodities.
- Competition in international markets for traditional commodity exports is being felt. This is also a threat to some small-scale food processors.
- HIV-AIDS is a major threat in the region, through loss of human capacity.
- Political instability is a problem in some countries of the region, as is the changes in policy that this causes.
- Natural disasters - drought and floods - are continually threatening the region. Mozambique has especially suffered.
- Price fluctuations in international markets, inflation and recession are economic threats to the orderly development of the post-harvest sector.
## Summary Table of SWOT Analyses

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• Local indigenous knowledge on the production, storage and processing of crops.  
• Low labour costs  
• Strong history of collaboration at sub-regional level.  
• Success stories in the horticulture sector. | • Weak, under-funded, poorly managed institutions, which lack incentives and policies.  
• Institutional and sectorial strategies are still not market driven.  
• Improperly targeted information.  
• Low value, low quality, low profit traditional products.  
• Gap between extension services and the private sector.  
• Institutions lack capacity for market-based analysis, and for enterprise development initiatives. | • Expanding opportunities for diversification of commodities and products.  
• Large internal market opportunities created by urbanization.  
• Regional export opportunities.  
• Building on indigenous knowledge.  
• Potential for improved market access.  
• Opportunity for expansion in rural enterprise development. | • HIV/AIDS  
• Globalization is a threat as well as an opportunity for the region.  
• Lack of competitiveness.  
• Unstable operating environments, caused by political conditions and natural disasters. |
| West Africa   | • The traditional food system.  
• Indigenous processing equipment, vibrant small enterprises and traders.  
• A diverse array of human resources  
• Farmer associations.  
• Export linkages to international markets. | • Poor co-operation among post-harvest institutions.  
• Gaps between research, extension, farmers and industry.  
• Lack of focus in R and D initiatives.  
• Deficient transportation and communication physical infrastructure.  
• Difficulty in obtaining market information. | • Opportunities for regional and international export.  
• Urbanization is creating opportunities for processed, convenience and added value foods in internal markets.  
• Markets for by-products and wastes.  
• Developments in information technology.  
• Opportunities for smaller farmers to link to growth markets. | • Globalization.  
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• Supportive government plans and policies.  
• Strong institutional support to the sector.  
• Good capacity for research and training.  
• Inadequate extension services.  
• Abundance of cheap labour  
• Production of exportable commodities.  
• Good infrastructure for communications and transport within the sub-region. | • Food quality grades and standards are lacking.  
• Poor access to credit. | • Business opportunities for improved transportation services.  
• Rapid urbanization rates provide scope for higher value products and for convenience foods.  
• Supportive export policies.  
• Unexploited demand for indigenous products.  
• Relative political stability, available land and climatic diversity.  
• Rapid growth and development of information and communications technology and infrastructure.  
• Increasing donor attention to the region.  
• Expanding micro-finance opportunities in the Region. | • Globalization is a threat to the production of staple crops.  
• Competition in international markets for traditional commodity exports.  
• HIV/AIDS.  
• Political instability.  
• Natural disasters.  
• Price fluctuations in international markets, inflation and recession.  
• Natural disasters. |

2. Cross-cutting Issues

HIV/AIDS

HIV/AIDS is already having a demographic impact in East and Southern Africa, and poses a major threat to West/Central Africa in the near future. HIV/AIDS affects the most economically active cohort of the population, and therefore reduces the availability and productivity of labour. There are also implications for the type of food
products that are demanded in the marketplace: HIV-AIDS sufferers require easily digestible, nutritious food.

In Southern Africa, the widespread prevalence of HIV/AIDS can be expected to provide incentives for investment in more capital intensive agricultural production and processing technologies. In other sub-regions, and in lower input production/post-harvest systems, the reduction in labour productivity implies that appropriate technologies that reduce the need for heavy labour are required if access to food and livelihoods are to be maintained through this difficult period. This has implications for post-harvest technology development.

Nutritionally, emphasis could be placed on increasing the provision of animal protein in the diet, and the development of processed, value added animal-based food products.

**Gender**

Throughout Africa, small-scale food processing operations are undertaken mainly by women. Their requirements need to be taken into account as part of any technology development initiative. Since women are also child-minders, the need for equipment to be safe in the presence of young children is also an important issue. Women are also pivotal to the success of post-harvest enterprises and businesses. Capacity building for women is not therefore simply a technical issue, but also involves the business skills necessary for operating in an increasingly complex market economy.

**Environment**

Decisions taken by farmers as regards the crops they produce, and the integration of these decisions into farm-level production systems, which in turn determine overall land use patterns, have a major impact on the sustainability of natural resources in a given area. These cropping decisions are increasingly determined by market forces in combination with the food security requirements of farming households. The post-harvest sector in a market oriented situation provides the conduit through which market information reaches farmers, and thus contributes to the decisions they make concerning what to produce. Commodity chain priority setting thus needs to take into account environmental factors, since there is a danger that market forces could promote crops and production practices that are not sustainable in the medium to long term.

Africa is prone to a number of environmental disasters - e.g. floods and drought. Such extreme weather conditions may be associated climate change on a global scale. These situations will continue to occur, and perhaps more frequently than in the past. Their impact will no doubt be exacerbated by increasing population pressure and growing environmental degradation. Commodity chain priorities must incorporate consideration for the occurrence of such disasters. Post-harvest systems that recycle wastes and by-products, and assist regeneration of natural resources, need to be encouraged (favourable policies and R and D innovations are needed). These should also address pollution that occurs from primary processing of many commodities. Decentralization of processing can, in itself, assist mitigation of the effects of concentration of pollutants in a given area. Recycling and use of wastes for animal feeding, and for production of organic fertilizers, requires further attention.
3. Strategic Priorities

Goal

To contribute to sustainable economic growth, poverty alleviation and food security in Sub-Saharan Africa

This statement identifies the broad development goal towards which the GIPh initiative in Africa will contribute. In line with the development strategies of the region as a whole, the goal is concerned with improving the welfare of the poor through enhanced food security and through sustained and equitable economic growth that delivers reductions in the incidence of poverty.

Purpose

To enhance smallholder farmer livelihoods through the development of sustainable, demand-driven and equitable post-harvest interventions in sub-Saharan Africa.

The statement of purpose identifies what the GIPh initiative will be able to achieve, and which contributes to the goal. The focus of the initiative is clearly placed on smallholder farmers. The initiative seeks to achieve significant and lasting improvements in their livelihoods. These will be demand driven, i.e. based on the needs of the smallholder farmer and responsive to the demands of the market and commodity chains with which the farmer is integrated. Thus, the initiative builds on the emphasis placed in many sub-regional strategies on market-driven development, with an emphasis on post-harvest interventions that enhance equity and poverty alleviation. This will involve government agencies, the private sector and civil society organisations such as NGOs and community and farmer associations. The initiative will seek to support and catalyse the actions of these groups, including the identification and development of new collaborative ventures between them.

Sub-regional strategies

Based on the sub-regional reports, and the SWOT analysis, strategies for each sub-region were clearly apparent.

East Africa

Strategy

To support the development of non-traditional exports of agricultural produce and products, including medium volume markets (horticulture and floriculture) and high value niche markets.

Rationale

Traditional export commodities are facing consistent declines in price over time. In addition, their R and D needs are met by existing institutions in the post-harvest sector. The strong policy emphasis on diversification of exports is hindered by the gaps in the support that R and D institutions are currently providing to these commodities. Thus the a sub-regional focus on commodities for these two types of export markets provides a
very useful complement to existing efforts, and one that has the potential to make a significant contribution to poverty alleviation in the medium term. There is a strong sub-regional focus on harmonization of trade regulations and standards. The policy and regulatory environment is thus highly supportive.

**West and Central Africa**

*Strategy*

To support continued development of traditional commodity chains, and especially the small-scale food processing sector in West Africa, through enhancing their capacity to exploit new markets, and to improve product quality, technical efficiency and business profitability.

*Rationale*

The subregional report for West and Central Africa highlights the contrast between a thriving small-scale food processing sector, oriented towards traditional products such as gari, and large scale food industry development, which has largely been a failure (especially where products have been aimed at national markets). This provides the rationale for a post-harvest strategy for the subregion that focuses on improving and developing this traditional sector, since this already provides livelihoods to many rural families, both in post-harvest activities, and through production of the commodities used as raw materials for processing. Upgrading the technical efficiency and product quality, as well as improvements in packaging and product presentation will allow these small-scale enterprises to take advantage of opportunities in the rapidly urbanizing cities of the region, as well as the increasingly important inter-regional trade in these products, which continue to form an important part of urban diets. Although R and D institutions have placed attention on this issue in the past, previous efforts have not been coordinated, and have been hindered by the gaps between research, extension and the private sector. This post-harvest initiative should seek to facilitate better coordination and integration of currently disperse efforts, and encourage the adoption of approaches to development of the sector that will maximise the chances of success.

**Southern Africa**

*Strategy*

1. To support the development of commodity chains for non-traditional export and higher value regional markets.
2. To facilitate further development of the traditional post-harvest sector, including storage and small-scale processing, for national food markets and on-farm food security.
**Rationale**

Southern Africa has a dual strategy of attention to the post-harvest sector of traditional commodities, complemented by development of new, non-traditional export oriented commodity chains. Storage, both for on-farm food security, and income generation (by capturing higher prices in the off-season), and basic processing (in particular milling) of staple crops such as maize, sorghum and millet is critical to the food security of the region. Opportunities to link small farmers to export markets are also seen as necessary for sustained poverty alleviation in these countries. Emphasis is placed on medium volume/value commodities such as sesame and groundnut, which show potential for adding value through simple post-harvest interventions, such as grading and packaging, and horticultural/vegetable crops. Growing urban markets, including high income market segments (e.g. in South Africa) provide further market opportunities within the region that can be exploited.

**4. Thematic Discussions**

Workshop participants prioritised a number of thematic areas for inclusion in the post-harvest initiative, based on a synthesis of the information contained in the sub-regional reports, the SWOT analysis and the emerging sub-regional strategies. These thematic areas (and the activities identified within them) are also compatible with the goal and purpose of the overall initiative.

The thematic areas identified (not in order of priority) are:

- Policy.
- Information.
- Post-harvest technology.
- Food quality and safety.
- Commodity chains, market analysis and business development.
- Capacity building.
- Networking.

For each priority thematic area, one or more key objectives, and activities to achieve them, were identified. These were generated and further defined in an iterative manner through working groups that received feedback from plenary during the development of this process. Objectives, outputs and activities, by thematic area are now described.

**Policy**

**Objective**

To provide information for the design and harmonisation of appropriate national and regional government policies that create an enabling environment for the development of post-harvest interventions and that enhance smallholder farmer livelihoods.
Activities

A series of sequential activities is proposed that together comprise a process aimed at achieving the stated objective. This process involves understanding the existing policy and regulatory regimes of countries in the region, selecting some key policy areas for greater study (based on their potential contribution to the overall goal and purpose of this initiative). For these key policy areas, a process of analysis, stakeholder dialogue, development of policy recommendations and their dissemination is proposed.

There is a strong trend within the different sub-regions for the joint development and harmonisation of polices and regulations, associated with the growing strength of sub-regional trade blocks (e.g., SADC, EAC, COMESA). This favours the growth of intra- and inter-regional trade (e.g. for high value products to South Africa, and for traditionally processed foods within the West Africa region). The post-harvest initiative should seek to influence this process, through the provision of information, analysis and concrete recommendations, so as to maximise the positive contribution that policies and regulations (at national, sub-regional and regional levels) can have on the development of a post-harvest sector that contributes to the goal of this initiative.

Potential priorities for action in the policy/regulatory thematic area were identified as:

- Trade policies that affect export of produce and products, and the import of competing goods from the world market.
- Access to markets, including the support to the provision of services that assist rural organisations to access markets.
- Equitable distribution of benefits through commodity chains, including the legal aspects of contracts that govern the relations between actors in the chain (e.g. linkages between smallholders and larger scale assembly agents or processors).
- Gender: policies and regulations that influence the degree of participation of women in economic activities in the post-harvest sector, their access to education, basic literacy, and support for gender-based organisations at the community level.
- Environmental policies, and their enforcement/application, regarding environmental effects of processing (wastes, pollution) and incentives for their mitigation, as well as policies that may be developed to tackle global environmental problems such as climate change, and their impact on crop and livestock production and post-harvest.
- Credit, both micro-finance and the formal credit/financial system
- Infrastructure: communications, transport, utilities.
- Taxes, rates, exemptions and reporting requirements for different enterprise scales and types of organisation (for-profit vs. cooperatives, associations and NGOs)
- Legal requirements for organisations/business, particularly for rural enterprises, farmer associations, etc that wish to enter the formal sector.
- Grades and standards. These are extremely important for trade between countries. Harmonization of grades and standards facilitates intra-regional trade as well as permits access to international markets.
The working group proposed a process for this policy thematic area in the post-harvest initiative. This builds on the successful experience of ECAPAPA (the policy network of ASARECA) in the development of policies for the seed sector in the East African sub-region

1. **Information collection**: inventory existing policies and regulations of national governments and regional bodies (IGAD, COMESA, EAC) in the areas outlined above, that directly or indirectly affect smallholders and the post-harvest sector. This will involve all consultations with a range of stakeholders (governments, NGOs, farmer organisations, the private sector/processors, traders, R and D organisations etc.). The task is to be undertaken by the sub-regional networks of ASARECA, CORAF and SACCAR with technical input from FAO and IFPRI.

2. **Prioritization**: a restricted number of key policy areas will be selected for study, based on their contribution to the overall goal and purpose of this initiative, and in consultation with stakeholders. For some policy areas (e.g. quality and safety regulations) it will also be necessary to prioritise a small number of commodity chains for detailed study.

3. **Information and data analysis**: to understand how policies and regulations influence the competitiveness and sustainability of smallholder farmers, and their linkages to the post-harvest system. Input from specialized institutions will be required, depending on the policy area under analysis. It may also be necessary to undertake specific research (primary data gathering through surveys) in order to assist formulation of appropriate policies, and assess the impact of alternative policy regimes.

4. **Policy dialogue and recommendations**: informed with the policy analysis previously undertaken, dialogue with the different stakeholders (at the technical level) will lead to formulation of the most appropriate policies options, standards and regulations, concluding with a set of recommendations at national and regional levels as appropriate.

5. **Dissemination and advocacy** among national governments (Ministries of Agriculture, Industry, Finance etc.) and sub-regional bodies for more appropriate policies and regulations through, for example, organisation of stakeholder and policymaker workshops, policy briefs, newsletters, etc. The involvement of policy making and/or regulatory bodies in the process itself will assist in the eventual adoption of the recommendations.

6. **Policy action**: Assistance to relevant agencies in the implementation of the agreed on polices and regulations, and the monitoring of their effectiveness.

The major responsibility for spearheading these activities should lie with the sub-regional networks ASARECA, CORAF and SACCAR, with technical assistance from FAO. It was also noted that this process is complex and can involve commitment of considerable resources and time: it will be necessary to carefully prioritise the key policy areas, and focus on one or few of them, in order to produce concrete results that have a positive impact on the post-harvest sector in the region.
Information

Objective

To create a facilitating mechanism for post-harvest information exchange/flow within the Sub-Saharan region and internationally.

Activities

The aim is to complement and build on existing mechanisms for information exchange that exist within the African region. This could include:

- Development of networks, workshops, and training events on specific areas of information and communications.
- Preparation of case studies of situations where information exchange has contributed to decision making at different levels.
- The organisation of summaries and reviews of specific post-harvest research and development topics.
- The use of the internet for information dissemination.

It is important that this initiative complements and adds value to existing sub-regional and Africa-wide networks, organisations etc. A process to ensure that this occurs was proposed:

1. **The inventory and characterisation of existing networks.** This includes those networks that are organised within and for the post-harvest sector, both in Africa (e.g. FOODNET), and internationally (INPhO, PhAction, PRODAR). It also includes networks that have a broader remit, but which are relevant to the post-harvest sector (e.g. networks on sustainable agriculture, rural innovation and development, food technology, etc.). These networks will be characterised with respect to their target groups and mandates: geographical coverage, position along the research and development continuum, range of disciplines/fields covered, media used, range, type and depth of content etc.

2. **Identification and characterisation of information needs.** The information needs of principal stakeholders (researchers, extension/development personnel, farmers, processors, traders, private sector agro-industrialists, policy makers etc.) will be assessed. Information needs in the areas of post-harvest technologies, markets, quality and food safety standards, R and D services and methods, policies and regulations, etc. Information needs could be assessed through workshops, regional e-mail conferences, and through case studies of specific commodity chains/post-harvest systems across the region.

3. **Analysis of information.** The purpose of the analysis is to identify gaps in the existing information networks, through a comparison of needs with the current situation, and identify the institutional capacity to fill those gaps.

4. **Identification of partners** to provide appropriate capacity to fill the identified gaps.
5. **Strategy formulation**: all partners formulate a post-harvest information and communications strategy for the region that integrates the existing capacity with proposed new initiatives that fill the gaps previously identified.

6. **Mobilisation of resources** to implement the agreed strategy.

7. **Implementation** of the information and communication strategy. This includes monitoring, evaluation and feedback to ensure that the strategy meets the identified needs.

**Commodity chains, Markets and Businesses**

**Objective**

To analyse and develop tools for agriculture and commodity chains to strengthen business and market access.

**Activities**

At the sub-regional level, two priorities were identified. One associated with the identification and development of specific commodity chains linked to new, higher value markets, where smallholder farmers can participate in the production and post-harvest components of these chains (e.g. sesame in East and Southern Africa), while the other is associated with strengthening of existing more traditional commodity chains, often involving smallholder families in primary post-harvest activities (e.g. gari in West Africa).

A process for identifying which specific commodity chains should be the focus of R and D interventions in any given area/community, and then for building or strengthening the linkages necessary to achieve the equitable and sustainable involvement of smallholder families in these chains, is needed. Implementing this process will require a suite of methods and tools that institutions and organisations can employ, suited to a range of levels from very local (e.g. for community organisations) to national or sub-regional (e.g. for policy makers and R and D institutions) institutions. The GIPh initiative can best contribute through the development and dissemination of these methods and tools. These will be concrete outputs of the initiative.

The process was conceived as:

1. Identifying priority commodity chains for a given area or community that can contribute to the purpose of the initiative (i.e. that can involve smallholder farmers and offer prospects for improving their livelihoods), considering:
   - Both pre- and post-harvest factors (the whole agri-food system), including climatic, edaphic and other factors that determine what commodities are suitable for production in a given area, and socio-cultural factors that will influence the interest of local people and their ability to produce and market specific types of products.
   - Crop and livestock production and post-harvest characteristics: indigenous crops, traditional foods, traditional export crops, crops for niche markets and by products.
   - Market criteria: the long term potential of the commodity chains in local, regional, and/or global markets. Emphasis will be placed on markets that provide
opportunities for added value, that are growing, and that have the potential to produce impact on a significant number of smallholder livelihoods (i.e. not on “boutique” niche markets that can benefit very few due to the small size of the market, even if the amount of value added is very attractive.)

The concrete output here is a suite of tools to assist in the identification of commodity and product priorities, based on matching agricultural production potential with the market criteria outlined above. There is scope for use of GIS to identify specific locations where development of these commodity chains has the highest potential to contribute to the overall goal of this initiative (e.g. incorporating spatial mapping of crop production, market access and poverty)

2. Diagnosis of the selected, prioritised commodity chains will identify opportunities and obstacles/bottlenecks, and the interventions needed to overcome or realise them. For commodity chains that already exist, opportunities may lie in improving product quality/safety, presentation and seeking higher value market segments. For novel commodity chains, considerable work will be required to develop the entire chain from production through to the end user (if national markets are sought) or to the exporter, if export markets are considered. In both situations, methods are required that facilitate the different actors in the commodity chain (producers, processors, traders, equipment suppliers, exporters etc) in jointly identifying these opportunities and problems, and in identifying and implementing the necessary interventions to realise or overcome them.

3. Once the type of interventions that are required are known, projects to implement them can be planned, and the necessary partnerships between the actors in the chain, and with support R and D institutions, can be developed. Pre- and post-harvest technologies may be an important component of these projects (e.g. new crop varieties, improved processing equipment). This links with the technology development theme area, especially if product development is required.

4. Finally, methods to assist in the strengthening of the business aspects of smallholder enterprises and collectively organised farmer associations are necessary to ensure sustainability of impact over time.

This thematic area will therefore require the development of a number of effective tools and methods for:

1. Market and agriculture analysis, for the identification of commodity chain priorities.
2. Commodity chain description and diagnosis.
3. Project planning, management, monitoring and evaluation.
4. Organisational assessment and strengthening.

In each of these areas, specific activities are proposed to enable these outputs (methods and tools) to be developed:

1. Opportunity identification through market and agriculture analysis
Some methods and tools are available, such as the Market opportunity identification manual developed through projects in Latin America by CIAT’s Agroenterprise
Development Project, and the DREAM software of IFPRI. These need to be evaluated in, and adapted to, the African context through a number of case studies, where they could also directly contribute to the identification of priority commodities for further development.

2. Commodity chain diagnosis and analysis
This requires participation of all actors in the commodity chain, together with market intelligence that helps orient the future direction of the chain towards new opportunities. The methods to be developed will need to identify key constraints, opportunities and gaps, and which new technologies have the potential to contribute to realising the opportunities, or overcoming the constraints. Case studies will again be an important element for the development of the methods and tools required here.

3. Project and business plan development
Projects aimed at strengthening existing commodity chains, or creating new chains, need to be designed, implemented, monitored and evaluated. These could include business plans associated with specific enterprises involved in this commodity chain development. An important element of this is cost benefit analysis, both as regards the business itself, and considering the cost of project/institutional support vs. the developmental benefits achieved over time.

4. Strengthening farmer associations and enterprises
The ability of smallholder farmers to derive sustainable benefits from their participation in improved commodity chains will depend to a large extent on their capacity for enterprise, whether as individual small enterprises, or in collective associations/cooperatives etc. Assessments of the strengths and weakness of these economic organisations are necessary, especially as regards their financial management, leadership, administrative capability, ability to access and use marketing information, credit and other inputs. Weakness will need to be addressed through capacity building (see this theme area). Development of methods for organisational assessment, with a market focus, is required.

Thus, the outputs from this process are tools/methods and information that can be widely applied in varying circumstances across Sub-Saharan Africa, but also we can expect to see some concrete results from their application through capacity building and networking in specific development situations/projects in the region. The process needs to take advantage of, and adapt, methods and tools already available, and to actively involve stakeholders in their development.

Stakeholder involvement
The stakeholders involved in this process are those directly participating in the commodity chains (farmers, processors, traders, large scale private sector enterprises) and their support institutions (NGOs, research organisations). The roles of the different types of stakeholder are summarised below:
NGOs

- customers for tools.
- hosts for case studies.
- second order dissemination/training on outputs.
- facilitation (time-bound i.e. in initial phases only, until farmer organisations/enterprises are sustainable).

Research organisations

- Coordination of case studies.
- Synthesis and analysis of case studies.
- Development of tools and methods.

Private sector (large scale)

- Customer for tools.
- Customer for second order dissemination.
- Provider of relevant market information.
- Eventual input and research financing.
- Service provision.

Community/Farmer organisations

- Production, processing, assembly etc.
- Customers of tools and services.

Post-harvest Technology

The thrust of the post-harvest technology thematic area is to improve existing small and medium scale processing enterprises, (both formal and informal) that produce a wide range of traditional basic food items that are vital to nutrition and food security in many areas of Africa. This includes the vibrant root crop processing sector in West Africa, as well as milling of basic grain staples in Southern Africa. Emphasis is on traditional products that are important in the basic diet of rural and urban people, and on the employment generated through the value added by such processing. This provides important opportunities for impact on disadvantaged groups (e.g. those with HIV-AIDS, women). Often, potential exists to make significant advances in value added (and thus the profitability of these enterprises) through relatively low cost interventions such as improved grading and packaging.

Objective 1

To improve the technical capabilities of existing small- and medium-scale processors, in the informal and formal sectors of the food processing industry.
Activities

- Carry out an inventory of available technologies for storage, processing and preservation of the different categories of food commodities in the region.
- Assess the performance and appropriateness of these technologies for the different unit operations carried out by food processors in the region.
- Identify gaps; including potential innovations, e.g. packaging that will make for a more successful operation.
- Commission research and development to fill the gaps
- Using different end-users for getting feedback from testing R&D innovations.
- Manufacturing and adaptation of processing equipment and facilities for different processors in different agro-ecological zones in the region.

Objective 2

To undertake process and product development in order to diversify the post-harvest sector.

Activities

- Develop and evaluate decentralized processing options, as an alternative to conventional processing. In this scenario, finished products from one operation will serve as raw materials for another processing venture.
- Product development for new value added foods from existing commodities e.g. from cassava, alcohol, crude starch, soluble starch or syrup and other starch based pharmaceutical products can be produced. This needs to be linked to market and economic assessment of the potential products in order to assess priorities.

Objective 3

Development of appropriate technologies for storage and processing of food commodities in the region.

Activities

- Identify different value added products that can be produced from food commodities in the region (based on market information, technical developments, consumer preferences etc)
- Adaptation of existing food storage and processing technologies to produce value added products.
- Promotion and commercialisation of the technology that has been developed
- Monitoring and evaluation.

For the above three objectives in the post-harvest technology thematic area, the role of the different stakeholders was proposed as:

Government: to formulate overall policies, including those for investment in R and D activities.

R&D institutions: to conduct and evaluate research.

NGOs: to disseminate information resulting from this research.
Farmers and processors: to participate in the R and D process, and provide key feedback on the acceptability of technologies.

Equipment manufacturers: to manufacture appropriate storage and processing technologies.

**Food Quality/Safety**

**Objective**

To establish and implement quality and food safety management systems, including HACCP, for food manufacturing processes.

**Activities**

- Establish food control laboratories.
- Establish quality grades and standards for fresh as well as for processed products.
- Undertake training of all actors in the food commodity chain including raw material specification, process control and finished product specification.

Notes:
1. The roles of the different stakeholders are the same as for the Technology Development thematic area above.
2. This area is also linked with the Capacity Building thematic area, in which training in food quality/safety is given a high priority.
3. This is also linked to the Policy thematic area, which covers the regulatory aspects of grades and standards are covered. Such regulations should not only be established “in theory” but that mechanisms to support their implementation “in practice” must be also be put in place. This will require an integrated effort that combines the three thematic areas of quality, policy and capacity building.

**Capacity Building: Training**

**Objective**

Market oriented strategies institutionalised through capacity building in targeted organisations and associations.

**Activities**

Priorities for training were identified by the working group, based on demands expressed by the range of stakeholders present, and considering sub-regional priorities. These are summarised in the following table, which indicates the area of training, the potential trainees and the type of institution that could undertake the training function.
<table>
<thead>
<tr>
<th>Training Area</th>
<th>Trainees</th>
<th>Trainers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market analysis and opportunity identification (for the commodity chain theme area).</td>
<td>Researchers, extension, NGO, private sector.</td>
<td>Regional institutions e.g. FOODNET, universities.</td>
</tr>
<tr>
<td>Product safety and quality control (grades/standards).</td>
<td>Farmers, extension workers, agro-processors, handlers.</td>
<td>NGOs, bureau of standards, FAO, UNIDO, UNDP.</td>
</tr>
<tr>
<td>Enterprise Development: (entrepreneurial and managerial skills, for the commodity chain theme area).</td>
<td>Private sector, NGOs, agribusiness, youth and women.</td>
<td>Agroenterprise development institutions.</td>
</tr>
<tr>
<td>Information processing (gathering, analysis, web pages, database development).</td>
<td>Researchers, NGOs, extension services.</td>
<td>IT institutions.</td>
</tr>
<tr>
<td>Higher degree education in agribusiness, post-harvest processing, food quality/safety and information technology.</td>
<td>Researchers, NGOs, extension services, private sector.</td>
<td>Universities.</td>
</tr>
<tr>
<td>Collective action, for the commodity chain theme area.</td>
<td>Youth, Women Community organisations.</td>
<td>NGOs Extension workers.</td>
</tr>
<tr>
<td>The project cycle, especially monitoring and evaluation, relevant for all theme areas.</td>
<td>Researchers, NGOs, Private sector.</td>
<td>Universities, ESAMI.</td>
</tr>
</tbody>
</table>

**Capacity Building: Networking**

**Objective**

To develop sub-regional coordination units that enhance and strengthen functional partnerships in agroenterprise research and development.

**Activities**

This objective is targeted to the West/Central and Southern Africa sub-region, since Eastern Africa already has the FOODNET network under ASARECA, which covers post-harvest and marketing R and D within its remit. The other sub-regions considered that a similar post-harvest and marketing network within the CORAF and SACCAR systems would be valuable in the integration, coordination and facilitation of R and D within each sub-region, and would also enhance the detailed formulation and implementation of strategies appropriate for each sub-region that are developed during the GIPh initiative.

The proposed sub-regional networks should bring together the different stakeholders in the post-harvest system, and thus provide a forum wherein the communication gaps that exist between, for example, research, extension and farmer/community organisations, or between the private sector and NGOs, can be bridged.
While CORAF and SACCAR should take the lead in establishing Post-harvest networks in their respective sub-regions, it was considered that this should also involve PhAction and appropriate CGIAR institutions, and that this should be an important and integral part of the GIPh initiative.

5. Subregional Priorities

The sub-regional working groups considered the thematic areas in the light of the strategies that were identified as a result of the SWOT exercise for each sub-region. They also made some recommendations as to the type of commodities that could be prioritised for each strategy. These are summarised in the Table below:

<table>
<thead>
<tr>
<th>Sub-regional strategy</th>
<th>East</th>
<th>West-Central</th>
<th>Southern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy</td>
<td>Range of policies relevant to non-traditional exports: e.g. trade, R and D investment, quality and safety regulations.</td>
<td>Upgrading traditional small-scale processing, for local and regional markets.</td>
<td>Non-traditional crops for export markets and improved traditional post-harvest system for local markets.</td>
</tr>
<tr>
<td>Information</td>
<td>Use of electronic media, mass media.</td>
<td>Information to assist accessing new markets (regional and global).</td>
<td>Market analysis and priority identification Case studies to learn from successes.</td>
</tr>
<tr>
<td>Commodity chain development</td>
<td>Identification and development/ strengthening of chains involving small farmers for non-traditional export and high value niche markets.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food quality/ safety</td>
<td>Harmonising standards Establishing standards in some markets (e.g. fish, processed foods)</td>
<td></td>
<td>Facilities Harmonization of standards.</td>
</tr>
</tbody>
</table>
| Capacity building-training | Business skills, Project cycle, (including M & E), Methods for priority identification. | • Enterprise development.  
• Market analysis.  
• Food safety. | • Product quality control and safety.  
• Agribusiness.  
• Food processing and storage. |
| Networks | Sub-regional post-harvest network establishment. | Sub-regional post-harvest network establishment. |
| Commodity priorities | Non-traditional exports: horticulture, floriculture, cashew nuts, Niche markets: medicinal plants, essential oils, spices, shea nuts, aloe. | Traditional staples: cassava, maize, sweetpotato, finger millet (sahel)  
High value: yams, rice, plantain, potatoes  
Niche: fruits and vegetables  
Fish (Tilapia): for export markets. | Traditional: maize, sorghum, millet, rice, cassava, sweet potatoes  
Pulses: soya, pigeon pea, cowpea, sesame  
Chile, paprika  
Fruit and vegetables (indigenous, exotic)  
Non timber forest products  
Meat and fish for export markets. |

**Priorities common to all sub-regions**

- Food quality/safety regulations and standards.
- Training in enterprise development/business skills.
- Methods for market analysis and opportunity identification.
- Sub-regional post-harvest networks (already operational in East Africa).
C. Conclusions

Two over-arching strategies for developing the post-harvest sector were developed by the participants of the workshop. One is based on the existing post-harvest system and traditional commodities, and involves upgrading products and processes, improving value added and quality, so allowing the products to enter higher value urban and regional markets. This strategy also encompasses storage of traditional commodities (for on farm use, or to take advantage of higher prices in the off season). This is the strategy identified by West and Central Africa, and by Southern African countries and this impacts on both food security and poverty alleviation goals.

The other strategy is focused on the development of novel or non-traditional export commodities/products, aimed at both regional and global markets, and including products with large volumes and those with niche, but higher unit value markets. This strategy was identified by East Africa sub-region, and also by Southern African countries, which thus adopted a dual approach.

The key thematic areas within which actions for the GIPh can be developed are relevant to both strategies. They are summarised in the Table in the previous section of this report. If the GIPh initiative is to address the needs and opportunities of Africa, it will have to encompass both the wide range of thematic areas, and the diverse set of stakeholders, that were identified in this Workshop. It will need to engage and link together those actors directly involved in the production, marketing and consumption of produce and products, and those with a support role, i.e. in research, development and policy/regulatory functions.

Many of the theme areas are congruent with the priorities of the Ph Action “linking farmers to markets” initiative, especially as regards market opportunity identification methods, commodity (or supply) chain organisation and development, food quality and safety and post-harvest technology development. It is important that the two initiatives should develop in tandem.

Concern was expressed by participants that the long lead time for this FAO/GFAR initiative could delay actions that are needed in the short term. It was recognised that several of the priorities identified in the different theme areas do not depend on large amounts of external funding, and that opportunities may exist for their initiation before the GIPh initiative is finalised. It is also likely that complementary projects in the PhAction “Linking Farmers to Markets” initiative will be able to start up in 2002, and thus offer prospects for moving forward in some of the priority areas identified in this workshop.

Finally, there was a clear and strong signal from participants for the West/Central and Southern regions of Africa to develop post-harvest networks similar to the FOODNET network in East Africa, under the auspices of their respective sub-regional groupings (CORAF and SACCAR).