Report on the Pre-plenary Session: The Sub-Saharan Challenge Programme and Global Post-harvest Initiative - Linking Farmers to Markets

Entebbe, Uganda

Monday, 6 June 2005

45 delegates representing a cross section of stakeholders met from 8.30 to 13.00 am on Monday 6 June to explore synergy and avenues of collaboration between the Sub-Saharan Challenge Programme and the Global Post-harvest Initiative – Linking Farmers to Markets. The following is an account of the discussions that resulted in concrete recommendations that were presented to the FARA General Assembly on Thursday 9 June 2005.

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Background

The sub-Saharan Challenge Programme "Building Sustainable Livelihoods through Integrated Research for Development", led by the Forum for Agricultural Research in Africa (FARA), is a multi-stakeholder initiative that aims to build agricultural R&D capacity in Africa to meet the urgent food security and income generating needs of the poor. It is based on an innovation systems approach with four main components: 1) Intensifying subsistence-oriented small-holder farming systems, 2) Sustainably managing natural resources while intensifying their use, 3) Developing more efficient markets, and 4) Developing enabling policies. In its initial phase the Challenge Programme will be implemented through 'pilot learning teams' established in each on of FARA's three sub-regions: West Africa, East Africa and Southern Africa.

The Global Post-harvest Initiative – Linking Farmers to Markets was established following an International Workshop jointly organised held in October 2003 by FAO/AGS, the Global Forum on Agricultural Research (GFAR) and the Post-harvest Forum (P*h*Action). More than 100 participants representing different stakeholder groups attended the event, which addressed the challenges that face farmers and other rural actors to meet the new demands of the post-harvest sector in a rapidly changing world. The Workshop was preceded by five Regional Consultations in Asia-Pacific, Africa, Latin America and the Caribbean, West Asia and North Africa, and Central Asia and the Caucasus that provided an assessment of the needs of the post-harvest sector in each region. The Regional Consultation for East Africa was organised and reported on by ASARECA's FOODNET.

Building on the results of the five regional consultations, the International Workshop endorsed a *"Strategic Framework for a Global Post-harvest Initiative - Linking Farmers to Markets"*. One of the first steps in the implementation of this strategy is to build on strong regional and sub-regional axes. Networks of institutions, programmes and projects, both new and existing, are essential for creating the synergy required to achieve the strategy's proposed objectives. Where required, new partnerships will be created, across disciplinary and organisational divides at all levels, which will contribute to improve communication and the exchange of ideas and information within and across regions.

The GPhI and the sub-Saharan Challenge Programme share the common purpose of linking small-scale farmers equitably and sustainably to growth markets. They also share many operational principles, among them the active participation of stakeholders in project design and implementation and the establishment of inter-disciplinary and inter-sectoral partnerships to ensure effective generation and adoption of new knowledge and technology. In particular, the linkage of regional projects undertaken within the sub-Saharan Challenge Programme to a global initiative such as GPhI will result in important opportunities for mutual learning and sharing of experiences.

This FARA pre-General Assembly session has the following objectives:

- Sensitise participants on the objectives and scope of the sub-Saharan Challenge Programme's market component and of the Global Post-harvest Initiative;
- Review the regional priorities that have been identified during the various consultation processes that led to the International Workshop in 2003, incorporating additional demands and needs identified since then in different for a, conferences, research studies, etc;
- Explore avenues for collaboration among the two initiatives that add value, avoid duplication and ensure mutual learning and sharing of experiences.

The Programme of the meeting is presented in Annex 1

1. Opening Session

John Jagwe of FOODNET brought the meeting to order. He briefly outlined the objectives of the meeting, thanked the participants for their attendance and initiated a round of introductions. A total 42 persons attended the meeting (see Annex 2). The Session was opened by welcome remarks by Ola Smith, GFAR Executive Secretary, and Guy Poulter, Director of the Natural Resource Institute (NRI) in representation of the P*h*Action Group. Both mentioned the importance of the development of the Global Post-harvest Initiative (GP*h*I) in the FARA region, highlighting the extensive process that resulted in the development of the Strategic Framework, which targets the priorities identified by the various stakeholder groups in five Regional Consultations. The recently established SSA Challenge Programme, which includes many elements common to the GP*h*I, will be an important focus for development activities in the region. Close collaboration between the two initiatives should provide mutual benefits and ensure that development targets are met.

2. Setting the scene

The Sub-Saharan Challenge Programme

Ralph von Kaufmann from the SSA Challenge Programme (CP) presented the highlights and main components of the CP. In particular he mentioned the supporting pillars for the new Integrated Agricultural Research for Development (IAR4D) approach:

- Promotion of organizational and institutional change to enable cross-disciplinary research and development and multi-institutional collaboration
- Capacity building for project teams, farmers, and scientists in African institutions
- Information and learning (including documentation of new methodologies developed) to disseminate widely the findings of IAR4D work
- Ongoing monitoring and evaluation, and a systemic approach to impact assessment, to track progress towards overall goals, signal the need for mid-course adjustments, and document the returns on investment in IAR4D

Section 2.3 of the SSA CP Programme Proposal: “Developing more Efficient Markets”, highlights how the lack of markets is a principal cause of persistent poverty in rural Africa. For this reason he mentioned how:

- Policies are needed that encourage the formation of producer organizations so that smallholders can standardize and bulk up their commodities to reduce the cost of sales
- Infrastructural and institutional improvements are required to reduce high transport and marketing costs
- Improved incentives and capacity are needed for smallholders to save and invest which will require a new approach to rural finance that will enable smallholders to access credit and deposit facilities. Microfinance institutions are not yet serving agricultural producers well, even though they are otherwise effective in serving the poor

The Global Post-harvest Initiative

Rupert Best from the GFAR Secretariat outlined the main elements of the Global Post-harvest Initiative - Linking Farmers to Markets (GP*h*I).

This initiative builds on extensive multi-stakeholder Regional Consultations, which have helped identify the priorities to be address when endeavouring to establish and strengthen links between farmers and markets, through actions that include farmer organisation, post-harvest handling and processing, marketing and enterprise development, and the provision of effective research and business development services. The complexity of the issues to be dealt with suggested that a stronger and more coordinated and integrated approach to research, development and investment in the demand-side processes of the

production-to-consumption continuum. This was the rational behind the development of the Strategic Framework for the GP*h*I whose goal is to improve the livelihoods of producers and consumers through enhancing agri-food systems for local, national regional and international markets. The Framework is made up of four interconnected Strategies:

1. Developing appropriate policies for trade and business development;
2. Institutional strengthening through collaborative research and capacity building in market opportunity identification and development, business development services, post-harvest technology, food quality and safety;
3. Developing competitive and equitable agri-food systems, and investment in post-production infrastructure;
4. Fostering networks and communication for sharing information and learning, and for further programme development.

Within each Strategy there are Concept Note ideas for action-oriented projects. The Strategic Framework presentation pamphlet, which provides greater detail on each of the above strategies, was distributed to the participants.

As a guide for the discussion period, Best posed the following questions:

- Have we got the regional and sub-regional priorities right?
- How can the SSA-Challenge Program and the GP*h*I work together?
- Who are the regional and sub-regional champions with whom the GP*h*I can work in sub-Saharan Africa?
- What are the immediate next steps?

Regional priorities revisited

Andrew Temu, Professor at Sokoine University, Tanzania, presented an overview of the priorities identified during the Regional Consultation for the GP*h*I undertaken in September 2001, incorporating additional information from events and trends that have occurred since then.

He started by describing the main post-production issues by sub-region (East, West and Southern Africa), pointing out positive background features, challenges and exploitable opportunities. He then gave a regional overview for SSA. In particular he highlighted some critical post-harvest constraints that are affecting the region such as:

- Low purchasing power amongst consumers
- Storage losses, including those due to post-harvest pests
- Poor transport, utilities, and communication infrastructure
- Discontinuity of supply of raw materials – seasonality effect
- Lack of farmer organizations: hinders assembly of sufficient volumes
- Under-utilization of installed capacity in large scale processing enterprises
- Limited access to formal credit and other financial products
- Generally low level of public and private sector investment in post-harvest and marketing
- Gaps between R and D systems and users (producers, processors, industry)
- Trade challenges:
    - *Meeting food safety and phytosanitary standards and regulations;*
    - *Comprehending and contending with customs rules and regulations;*
    - *Tackling tariff and non-tariff barriers;*
    - *Effectiveness in RTAs and WTO negotiations, and*
    - *Faulty administration of trade including corruption*

Based on the above, Temu defined the main priorities for action:

- Developing and making use of market opportunities:
  - *added value products/value niches (organic, convenience)*
  - *high quality- traditional, and under-utilized staple crops,*
  - *nutraceuticals, street foods, traditional products, etc.*
- Development of effective services for the post-harvest sub-sector
  - *e.g. financial, business skills development, technology*
- Policies to help local produce face fair competition with imports
- Improving links: farms & added value processing systems
- Diverse range of post harvest technologies:

Temu endorsed the nesting of macro, meso and micro interventions in support of the post-harvest sector as presented in the GP*h*I Strategic Framework, and summarised the major elements required for SSA (Box 1). The full paper prepared by Andrew Temu is presented in Annex 3.

Box 1: The Recommended Approach for SSA

I) **A STRATEGIC FRAMEWORK – for what?**
- *Ensure interventions work in harmony*
- *Avoid duplication and conflicting actions*

(II) **IDENTIFY R&D INITIATIVES**
- **Macro Level**: Policies
  - *Key policies: trade domestic and external, and business environments*
  - *Monitor intra-regional and international trade agreements (WTO, RTAs)*
  - *Local policy for effective markets and agri-business development*
- **Meso Level**: Institutional Development
  - *Organisations in the agro-processing industry and the laws, by-laws*
  - *Analyse institutional arrangements, develop new ones*
  - *Best practices in agri-processing, sound business development, competitiveness, innovative public-private sector partnerships,*
- **Micro Level**: Food systems, Market chains, Info. Exch. & Networks
  - *Intra-and inter- enterprise organisation and relationships*
  - *Supply chains for sustainability of agri-food produce markets*
  - *Appropriate regulatory standards and quality and nutritional requirements*
  - *A broad range of post-harvest technology*

3. Post-harvest, marketing and enterprise development: living experiences and expectations from stakeholders' point of view

In this part of the session, two stakeholders presented their experience in improving farmer to market links.

A farmers' organisation

1. Mr. Leonard Msemakweli of the Uganda Cooperative Alliance, presented the experience of the Uganda Cooperative Alliance, an organization of small-scale farmers where each farmer has an average land holding of 1 ha per family. The main activity of the Alliance is to "fill in the gap" left by the withdrawal of government support in providing education, training and audit following the downsizing of the Department of Cooperative Development. Most of these farmers do not practice commercial farming and meeting family requirements has been their top priority in their production plans.

The UCA has being organizing farmers into viable co-operative groups. At the primary level membership is between 200 and 300 farmers. A number of such 'primaries' within a geographical area form an Area of Cooperative Enterprise (ACE). One of the roles of the ACEs is to organize meetings of members to jointly select enterprises (pre-production planning). Choice of enterprises is based on the market potential, relative profitability and natural resource endowments of the area.

With this example, Mr. Msemakweli highlighted the importance of creating associations in order to acquire a stronger voice in the market and bargaining power. As a result of these efforts he stated that price differentials compared with open market are 20-30 percent above, whereas the cost of inputs are now 10-20 percent lower. Production and marketing have been integrated with rural financial services. The producer can now save and can access credit for production as well as consumption. In this way farmers are managing to generate their own savings.

Nevertheless, Mr. Msemakweli pointed out some major constraints that are still preventing farmers from maintaining their competitiveness in the market. For example, most farmers produce poor quality and low volumes and with high production cost, resulting in poor bargaining position. The latter is a consequence of the fact that in most cases small producers are using traditional methods, rarely apply inputs and use low-level technology. In consequence yields are low. To overcome these problems he suggested that policy makers and research and development service providers should support smallholder farmers in areas, such as:

- Pests and disease control.
- Improved roads. This is a big challenge particularly during the rainy season when many rural areas become inaccessible.
- Introduction of quality standards, which fall within the realm of trade policy. Government must establish standards and enforce them.
- Policy to encourage more financial institutions on the market which will lead to more credit availability and a fall in interest rates.
- Irrigation systems.
- Lower taxes on inputs. Some of the imported materials are subject to high taxes, which are passed on to the farmers.
- Finding ways of introducing insurance for farmers. This could be one way of reducing risks in farming. This will cover the farmers and also make them more attractive to lending institutions.
- Industrialization of agriculture where agro-processing factories to process all the produce are set up so that no one sells raw products.

A Non Governmental Organisation, NGO

Mary Rimoy presented the history and experience of the Usamabara Lishe Trust in Lushoto Tanzania.
She explained that the West Usambara Mountains are located in the Tanga region of North East Tanzania. Altitudes range from 450 to 2,400 masl, and average rainfall is 600-2,000 mm, with temperatures between 16 and 22ºC. In 2002, total population of the area was estimated at 460,000 with farm sizes of 0.5 to 2.5 ha. Traditional staple crops are maize, beans and bananas; coffee and tea were introduced in the colonial era and missionaries brought the first vegetable seed.

In the area, over a twenty-year period, from 1981 to 2000, the Soil Erosion Control and Agro-forestry Project (SECAP) supported by GTZ promoted integrated, holistic soil and water conservation approaches in selected watersheds using participatory forest management for village and local authority forest reserves. In the second decade of the project, it was evident that protecting natural resources was not sufficient to lift farmers out of poverty. It was therefore in 1993-94 that consultants carried out a marketing survey in major urban centres and identified the potential for vegetables and fruits. Supported by the SECAP project, 100 farmers in 4 village 'societies' initiated production of 9 types of vegetables and in 1996 a first delivery of 300 kg was made to the Sheraton Hotel, Jangwami Sea Breeze and Masudi grocery in Dar es Salaam, the capital of Tanzania, 6 hours distant from Lushoto by road. Over the next

four years the farmers were supported through training and technical assistance by the SECAP project and were able to grow their enterprise.

At the termination of SECAP in 2000 it was necessary for this initiative to become self-sustaining. At this time, 60 farmers, of which 16 are women, decided to establish the Usambara Lishe Trust (ULT) as an NGO. Today ULT produces over 100 different vegetable and fruits and markets 5-6 t every week to 16 speciality market outlets in Dar es Salaam. ULT has established a reputation for producing high quality vegetables; and its legal status has facilitated access to credit for expansion. In recent developments, contact has been established with a company that exports vegetables to Europe, and the ULT is analysing the feasibility of achieving the necessary certification to enter this exacting market. Major constraints to growth include weak horticultural extension, input and research services, especially for fruit trees where market opportunities are unrealised.

A National Agricultural Research Institute, NARI

Ambrose Agona of the Ugandan National Agricultural Research Organisation, NARO, kindly agreed to step in the place of Sefora Masia of the Agricultural Research Council, South Africa, who sente her apologies for not being able to attend the meeting.

Agona spoke briefly about his institute's experience in post-harvest technology development, highlighting some of the most prominent achievements. He mentioned the intensified market orientation being adopted in defining the research agenda and the challenges of establishing partnerships and working with a range of different stakeholders from farmers to the private sector. He made particular reference to the need for working together and sharing information and experiences. In this respect, the recent formation of the Post-harvest Research Forum for East, Central and Southern Africa is an important step in this direction.

4. Plenary discussion and elaboration of recommendations to the FARA General Assembly

Following the presentations, Guy Poulter chaired the final session where the participants engaged in a rich discussion, which centred around the main questions raised earlier, with the objective of providing the basis on which to elaborate recommendations to the FARA General Assembly. The major points arising from these discussions are:

Have we got the regional and sub-regional priorities right?

The answer to this question was generally very positive. In addition some of the participants made some further comments and suggestions:

- Greater on emphasis should be given on the development of BDS to strengthen institutions along the market chain, (producers, traders, processors, retailers).
- There is a need to build upon existing best practices and approaches that have proved to be successful.
- Iinformation and islands of success do exist, and there is a need to collate and disseminate this information more effectively.
- Institutional arrangements need to be made clear, what worked well, where, with whom in what type of environment.
- A need for a database on best practices and business linkages (the example of NASFAM, Malawi was given where in partnership with ICRISAT 3 years were spent developing analytical capacity for EU markets, this could have been quicker if more information on technical and financial services were available).
- Having undergone the priority setting, the need is to analyse whether the best institutions and capacity to meet those challenges are in place.

- Stakeholders in the region should come together to tackle the key issues such as market impediments, institutional arrangements, information and knowledge sharing.

How can the SSA-Challenge Program and the GPhI work together?

In responding to this crucial question it was highlighted that GP*h*I can bring two important elements in support of the SSA-CP: a) access to a network of knowledgeable and experienced practitioners in the area of post-harvest handling and processing, quality management, marketing, enterprise development and business support services, and b) experience and know how in the development of partnerships / institutional arrangements in innovation systems that go beyond the farm gate. This complements the traditional strengths of the majority of government and non-government research and development organizations in the area of input markets and agricultural production.

On the other hand, the bringing together of multiple stakeholders in the Pilot Learning Sites provides a unique opportunity for on the ground learning and establishment of processes of co-innovation between local and external partners.

Who are the regional and sub-regional champions with whom the GPhI / SSA-CP can work in sub-Saharan Africa?

Many suggestions and concrete names of organizations and institutions with expertise in different areas associated with post-production activities and support were given. This illustrated that there does indeed exist an installed institutional and human capital on which to build. It was therefore pointed out that rather than the need for one champion, it would be useful to consider forming regional or sub-regional focus group(s) made up of different experienced stakeholders from the areas of trade, R&D and Government, farmers, industry etc. that would act as a mechanism for mentoring the post-harvest, market and enterprise developments in the Pilot Learning Sites and beyond.

What are the immediate next steps?

Rather than define immediate next steps, the participants commented on a number of important issues that should be taken into account by the SSA-CP as it continues planning at the Pilot Learning Sites. Most prominent among the suggestions were:

- The need to engage more strongly the private sector community at the local level, by for example involving Chambers of Commerce
- To make sure that the existing expertise in the region is used effectively in the SSA-CP by building on local skills and partnerships
- To engage more effectively with public sector agencies and the NGOs which play an important role as development partners operating at local and national regional levels
- The critical importance of strengthening the market orientation of agricultural research, development and educational institutions.

5. Conclusions and Recommendations

Based on the discussions summarized above, a small team composed of Andrew Temu, John Jagwe, Guy Poulter, Antonio Schiavone and Rupert Best prepared a set of conclusions and recommendations that were subsequently presented by Andrew Temu in the FARA General Assembly on Thursday 9 June.

Conclusions

1. The rapidly changing food, feed and agro-industrial demands of growing and rapidly urbanising domestic markets in sub-Saharan Africa are drivers that provide opportunities for generating income

and employment in rural areas through value addition and diversification of agricultural production systems. Creating wealth in rural societies, through the establishment of viable farm and rural agroenterprise linked to growth markets, is a pre-condition for investment in the maintenance and enhancement of the resource base on which agriculture depends.

2. The Strategic Framework developed by the Global Post-harvest Initiative (GP*h*I), which identifies regional priorities at the macro, meso and micro levels is a useful tool that could be adopted by the Sub-Saharan Challenge Programme to help orient its R&D interventions in the 'Developing Efficient Markets' research domain.

3. In sub-Saharan Africa there exist important experiences in the successful establishment of farmer enterprises that are linked to growth markets and in the provision of demand-led small business support services. However, the experiences remain isolated with an absence of well-articulated processes for scaling up and out.

4. There is an immediate need to identify regional and sub-regional institutions, organisations and/or individuals with a proven track-record of competency and experience in the different areas associated with small-scale farmer enterprise development, post-harvest, market and policy research that have the vision and are willing to 'champion' innovative approaches to agricultural research for development. The recently established Post-harvest Research Forum for East, Central and Southern Africa is an example of one such entity.

5. Appropriately engaging the private sector at different stages of the R&D process is fundamental in market-led processes. How this engagement is achieved, and subsequently consolidated into public-private partnerships for supply chain development and research, remains a significant challenge that requires attention.

6. Research, development and educational institutions in sub-Saharan Africa are weak in market and enterprise oriented approaches. Significant investment is required to build capacity and establish new institutional arrangements in order to provide appropriate research and development services to small-scale farmers.

7. While investment in establishing and strengthening small-scale farmer organisations is often important and critical for achieving market objectives, opportunities for strengthening and organising other supply chain actors and business service providers must be assessed and acted upon.

Recommendations

- The Global Post-harvest Initiative mobilise the competencies, skills and experience of its partners to provide conceptual and technical support to the Sub-Saharan Africa Challenge Programme.

- The Sub-Saharan Challenge Programme benefit from the accumulated experience of the partners involved in Global Post-harvest Initiative in the implementation of such processes that go beyond the farm-gate and involve actors and service providers along the production to consumption chain.

- The Global Post-harvest Initiative designate a resource person to participate in the planning and process validation steps at the Sub-Saharan Challenge Programme's three Pilot Learning Sites, who can contribute to the development of a common cross-site framework and action plan for strategic R&D along the production to consumption continuum.

ANNEX 1: Agenda of the meeting

Monday 6 June 2005

08:00	Registration of participants
08:30	Welcome remarks. Representative of FAO; Ola Smith, Executive Secretary, GFAR; Guy Poulter, Director General NRI and Chair, PhAction; John Jagwe, FOODNET.
08:45	The Sub-Saharan Challenge Programme: background, objectives, components and modus operandi, with special emphasis on the market, post-harvest and enterprise development issues.
09:05	The Global Post-harvest Initiative: background, partners, objectives and strategies
09:25	Regional priorities revisited. Professor Andrew Temu, Sokoine University
09:45	Discussion
10:15	Coffee and tea break
10:30	Post-harvest, marketing and enterprise development: living experiences and expectations: a) A farmers' organisation: Mr. Leonard Msemakweli of Uganda Cooperative Alliance, Uganda (15 min.) b) An NGO: Mary Rimoy, Usambara Lishe Trust, Tanzania (15 min.) c) A NARI: Ambrose Agona, National Agricultural Research Organisation, NARO d) Discussion
11:15	Plenary discussion and elaboration of recommendations to the FARA General Assembly
12:55	Closing Remarks

ANNEX 2: Regional priorities revisited. By Professor Andrew Temu, Sokoine University, Tanzania

Constraints, Priorities and Strategic Approaches to Address Post-Harvest Technology, Marketing and Agro-Enterprise Development in Sub-Sahara Africa: A Synthesis

A Paper Prepared for the Pre-Plenary Session of the General Assembly of the Forum for Agricultural Research in Africa
[Improving and Sustaining Investment in Agricultural Innovation]
Entebbe Uganda, 6-12June 2005

By

Andrew Ephraim Temu[1]

This paper presents a synthesis of post harvest processing, marketing and agro-enterprises challenges and priority areas for Research and Development (R&D) interventions in the Sub-Saharan Africa region. It draws from findings of various consultative processes. The key sources of information are the FAO/GFAR Global Initiative on Post Harvest Technology Regional Workshop for Africa held on from 17th to 19th September 2001, and the GFAR-FAO-PhAction International Workshop on Global Post Harvest Systems Initiative for 21st Century held from 7th to 9th October 2003 in Rome Italy.[2]

During these consultative meetings, stakeholders in the sub-sector appraised the status of post-harvest (Ph) in the sub-Saharan sub-regions and the region as a whole. Key problems, potentials, and constraints of the sector were identified. We evaluate these against other published research work for the region. Insights to the challenges and identified priorities provide a sound basis for developing action plans that would help to progress towards achieving fundamental objectives of maintaining a safe, secure, profitable and stable food supply in the region. It is within this context that FARA may embark on planning and implementing Research and Development initiatives in the area of post harvest[3], marketing and agro-enterprise. Notable is that FARA actions in this area shall, therefore, complement GIP*h*T plans of actions.

Sub-Regional Post-Harvest Issues

Generalized observations for the whole Sub-Sahara region normally masks the exact challenges faced by sub-regional entities and countries. Before summing-up the regional constraints, challenges and opportunities and hence priority areas for intervention, it is thought pertinent to highlight the sub-regional context upon which we make the regional conclusions. Three sub-regions are relevant in our case: East, West, and Southern Africa. The following are the specific pointers to challenges and priorities considering contrasting sub-regional agro-ecological and socio-economic features.

East Africa

East Africa has a diverse set of climates and agro-ecologies, favourable for the production of a wide range of commodities. Local indigenous knowledge on production, storage and processing of crops is strong, and can be further developed. The sub-region also enjoys low labour costs that strengthen the competitive position of her agricultural sector. In addition, there is a strong history of collaboration at sub-regional level; national institutions are used to working together and harmonization of national policies

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[2] See Ferris, S. (2001) and FAO (2005).
[3] *Major post harvest operations include: storing, processing and preserving, transporting, wholesaling, retailing. All these lead to consumption and nutrition.*

and regulations is progressing well. Pointing to specific products: the horticulture sector has some success stories in developing commodity chains through combining good post-harvest technology, policies, and institutional collaboration.

There are however internal weaknesses in East Africa that hinder faster progress of the Ph sub-sector. For example, both public and private organisations that ought to contribute to the post-harvest sector development are often underdeveloped, under-funded, and sometimes poorly managed. Private sector players operate under sub-optimal policy environments and hence lack incentives that would encourage them to achieve their goals. Institutional and sector strategies are still not adequately market driven, leading to the development of inappropriate technologies that are often not adopted. Traditional products in East Africa are thus caught in the low value, low quality, and low profit trap. On the research and extension part, there is an apparent gap between such services and the private sector. This affects both the impact achieved from present R and D, and the setting of priorities for further R and D. On a different dimension, despite a desired market-oriented approach, institutions lack capacity for in-depth market surveillance, market research, and for enterprise appraisal and development. Such internal weaknesses are not very helpful when the region is required to tackle challenges posed by external environments. Globalisation is a threat for the sub-region; a specific threat is the dumping of subsidized foodstuffs and other agricultural commodities from the developed world that undermines agricultural production in Africa. HIV/AIDs is another major threat to the fabric of society, with implications for labour availability and for food and nutrition requirements in urban and rural areas.

It is critical that such challenges are addressed for the sub-region to make progress. Reassuring, however, are several opportunities and potential avenues that need to be tapped into for the development of the sub-sector. The following are apparent:

i. There are expanding opportunities for diversification of commodities and products for a range of national, regional, and international niche markets.
ii. Urbanization is also creating a large internal market. Regional trade blocks encourage the growth of trade within the East Africa sub-region, and provide export opportunities to close-by and rather similar markets to the one at home.
iii. Building on indigenous knowledge, and learning from West Africa, there are opportunities for value added local products especially through improved quality, grading, and packaging.
iv. Lastly, new information and communications technologies provide mechanisms to enhance market access; and, the growth in rural finance options such as the now ubiquitous micro-finance initiatives, provide opportunities for expanded enterprise development efforts in rural areas. See for example Bertolini (2004) for an overview of the role of IT; and, Mukhebi (2004) for a Kenya case study on how IT can revolutionise Ph processes and agri-business.

West Africa

The traditional food system is seen as a major strength in West Africa. Local populations exhibit a strong preference for traditional foods that include a wide range of processed food products e.g. *gari* and *fufu*. The 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. It is however predominantly informal. Associated with this food system is 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. Additionally, organisation of farmers into associations provides significant social capital at local levels. There are a number of existing export commodities (e.g. coffee and pineapples) that already link the countries of West Africa with international markets.

Some internal weaknesses are also apparent in West Africa. Research and development organisations associated with the post-harvest sector in West Africa often work in isolation from each other, and from the enterprises they support. Gaps between research, extension, farmers, and processing industry are a notable weakness. This is also associated with the underdeveloped managerial capacity of many enterprises, and with the insufficient record of technology transfer in the sub-region. The extension

services in post-harvest technology could be further developed significantly. There is an inadequate focus in R and D: the view is that limited available resources could be better spent on relatively fewer commodities. Physical infrastructure is deficient, including road transport, utilities and communications. Market information is difficult to obtain, complicating decision making by actors in the commodity and food chains. Food quality grades and standards are lacking and credit is difficult to obtain. Globalisation, HIV/AIDS, and pockets of fragile political systems pose threats to the development of the sub-sector in West Africa.

Nonetheless, in West Africa, opportunities exist in:

i. Export markets, and these include markets within the West African region itself: regional trade in quality-traditional-food-products is reported to be growing fast.
ii. Urbanization is creating opportunities for processed, convenience, and added value foods in domestic markets; and, markets for by-products and wastes also create opportunities for more integrated food systems.
iii. New organisational arrangements within the food chain e.g. contract farming, coupled with developments in information technology offer opportunities for smaller farmers to link to growth markets.
iv. Lastly, business opportunities exist for improved transportation services that take advantage of growing internal and regional trade in food products.

Southern Africa

There is a thriving small-scale post-harvest processing sector in Southern Africa. This produces a range of traditional food products at the village level. On the other hand, major large-scale food processing enterprises in South Africa, Botswana, and Zimbabwe, are developing at a reasonable speed and are becoming internationally competitive – see Weatherspoon and Reardon (2003). In line with this development there is a strong sub-regional collaborative spirit, and supportive government plans and policies. Institutional support to the sector is strong, with good capacity for research and training. Regional training programmes in the areas of trade, food safety, and marketing are progressively proving to be effective. NGOs are conducting relevant extension services, but coverage is patchy. Other advantages in the region include: abundant cheap labour; production of exportable commodities, relatively better infrastructure for communications and transport within the sub-region.
Amongst weaknesses in the region are insufficient investments in support services, such as post-harvest research, extension, and development services, which have very scanty coverage at country level. This has resulted in rural population groups having very limited access to information, credit, etc and leads to persistent poor quality of produce and products. At the sub-regional level, there are elements of duplication of R and D efforts, inadequate capacity building, and poor interchange of information. In summary, sub-regional efforts do not translate adequately into national strategies. In addition to the already noted external challenges faced by East and West Africa i.e. Globalisation and HIV/AIDS, Southern Africa has an additional impediment of environmental natural disasters – Mozambique having suffered a greater share of this.

Opportunities in Southern Africa include:
Urbanization, which is occurring very fast in the region. Urban centres provide a broad scope for higher value products in national markets such as South Africa and for convenience foods. Ph Foreign Direct Investment (FDI) from South Africa to her northern neighbours has been growing since the early 1990s. Export opportunities are created by favourable policies, for example the preferential trade for export (AGOA), privatisation, and more liberalized markets – all contribute to this development.

i. There is an unexploited demand for indigenous products, both in national and export markets.
ii. The sub-region has a relatively better political stability, available land and climatic diversity, all favouring further development of the post-harvest sector. Information and communications technology and infrastructure are also developing at a reasonable pace.
iii. Micro-finance is one industry that is expanding fast.

In view of the above, and additional regionally based observations - see for example Mosha A.C. and Ferris and Mrema - we summarise the trends and priority issues that are pertinent to the Sub-Saharan region as a whole.

Key Trends Impinging on Post-Harvest Sub-sector

There are a number of key trends that have implications for the development of the post-harvest sector in sub-Saharan Africa. Continued ***population growth*** accompanied by very rapid rates of ***urbanization*** are a challenge. These factors jointly impact on food habits while providing opportunities for upgrading products in terms of quality and packaging for higher income segments that are predominantly urban; further opening-up the opportunity to develop convenient food products based on traditional foods. ***Trade liberalization***, removal of parastatal monopoly and engagement of the private sector, together with enhanced prospects for exports is a positive trend, although this is constantly being offset by ***increased competition from imported foods***. In addition opportunities for ***regional trade*** i.e. exports to adjacent countries with apparently similar food preferences exist; hence, in general, market forces that enhance commerce are penetrating into former local subsistence-based economies. There are also patterns of ***increasing vertical integration*** of major export oriented commodity chains, and concentration is also occurring in the agri-food sector, with ***penetration of multinational***, e.g. South African firms, into the rest of sub-Saharan local markets[4]. On the production side, one can classify important entities as follows. ***Subsistence producers***: principally individual farmers producing predominantly for their own consumption, selling small surpluses to local markets. They have precarious access to services and no use of purchased inputs, low levels of assets accumulation and are most vulnerable to economic and natural upheavals. ***Small-scale rural enterprises***: these have low levels of value addition, weak business orientation and incipient social cohesion among group members. Access to services is incomplete and irregular limiting enterprise growth. ***Commercially oriented enterprises***: they have higher levels of social cohesion incorporating value adding, handling, transformation processes and product diversification. They access regional, national markets and also services that permit enterprise growth. ***Advanced farm enterprises***, fully integrated into supply chains and meeting demands in terms of quality and frequency of supply, both for national and export markets. They are capable of identifying and paying for required business development services. ***Food insecurity*** continues to be a thorny issue, but it is being increasingly addressed at sub-regional level through market-oriented strategies. Food security is no longer seen as a function of on farm production, storage and processing of food, but also as an attribute of overall ***generation of sufficient income*** to provide adequate ***entitlements to food*** at household level.

Critical Post Harvest Constraints in the Region

For the region to make progress in the area of post harvest processing, adding value to locally produced commodities and penetrate broader markets, there are several constraints that need to be addressed. These include:

i. Low purchasing power amongst consumers in the region while producers are facing increasing competition from imported foods. Deliberate efforts are needed to generate and maintain cost saving technologies and processes.

ii. Farmers and traders suffer from storage losses, including those due to post-harvest pests. There is a clear need to develop and design suitable and adaptable post-harvest storage systems.

iii. Transport, utilities, and communication infrastructure is underdeveloped. This hinders processing and marketing logistics.

iv. Processors often succumb to discontinuity of supply of raw materials due to seasonal and other factors. Lack of farmer organization hinders assembly of sufficient volumes of produce to meet the needs of larger scale commodity chains.

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

vi. Limited access to formal credit and other financial products, especially for small-scale enterprises.

[4] See Weatherspoon and Reardon for a comparison of this trend with what happened in South America in the 90s.

vii. There is a low level of both public and private sector investment in post-harvest research and development, and there is an inadequate trained human resource. Gaps between R and D systems and users (producers, processors, industry) complicate the R and D process from research priority setting to dissemination of new technologies. The R and D system also suffers from scientists' failure to access and exchange technical information.

viii. Product quality suffers from a lack of application of methods for loss control and quality assessment; and, from the existing variable standards that are often inconsistently enforced.

ix. The region faces challenges centered on trade issues: meeting food safety and phyto-sanitary standards and regulations; comprehending and contending with customs rules and regulations; tackling tariff and non-tariff barriers; and, faulty administration of trade including corruption.

Sub-Sahara Opportunities for Ph Initiatives and Agribusiness Development

While the above challenges are constraining the region as a whole, there are opportunities and potentials that the region could exploit for the development of the sub-sector.

i. Added value product development based on traditional foods and product diversification from staple commodities is an opportunity. This may include upgrading traditional processes and products and improving the quality and food safety of local products to access higher value markets.

ii. Niche export markets for organics and nutraceuticals do exist. This, however, would require market intelligence of these novel commodity chains.

iii. There is potential and room to improve commodity chain organization between farmers and processors or traders, e.g. contract farming and vertically integrated out-grower schemes.

iv. There is a market for support services [Agricultural and Market Service Providers] that are more demand driven. These are required to provide services in the areas of management of enterprises, credit, market information, technology access, trade[5] and training.

v. In the technology area, opportunities exist for the development and application of low cost drying equipment e.g. solar based ones, storage, packaging materials and processes, and for cleaner production systems, more efficient waste and by-product use and recycling methods and plants.

vi. There is a general opportunity at institutional level to re-orient research priorities in line with market or demand-driven priorities. This would require forging partnerships with a wide range of stakeholders in the post-harvest system.

vii. Opportunities for exchange of information and technologies between countries, between regions, and across regions also exist.

Priorities for Action

Based on these constraints and opportunities highlighted by stakeholders in various regional workshops, a number of priorities for future action were identified. These are presented here:

i. Identification of market opportunities for a range of added value products/high value niches (organic, convenience, upgraded -high quality- traditional, and under-utilized staple crops, nutraceuticals, street foods, traditional products, etc). This will involve International market intelligence.

ii. Policy options to ensure that local produce faces fair competition from imported foods.

iii. Options for improving the organisation of links between farm production, added value processing, and overall marketing in prioritised commodity chains (e.g. contract farming).

iv. Options for development of effective services for the post-harvest sub-sector e.g. financial, business skills development, technology (information, selection, and access), market information and export promotion.

[5] See Mukheibi's (2005) Kenya Agricultural Commodity Exchange (KACE) and examples of the use of various IT facilities, and also Radio and Telephone Market information support systems in Uganda with the backing provided by FOODNET.

vi. 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.

The Recommended Approach

The approach towards addressing the identified challenges shall have to constitute two aspects: (i) A Strategic Framework (ii) Identification of interventions: Research and Development action plans.

A strategic Framework[6]

A strategic framework would be important to ensure that diverse sets of interventions work in harmony and towards achieving a common goal. It is important that such a framework avoids both: duplication of efforts and the possibility for conflicting actions. The framework, based on the nature of constraints observed, would ideally address policies – both at macro, meso and micro-level, technology development, and service provision initiatives. At the macro level, it is important that policy initiatives aim at creating a suitable environment for various stakeholders to take actions towards improved post-harvest and marketing processes. At the meso-level, the issues to address will be those related to institutional strengthening where they exist, and developing new ones where they are non-existent. At the micro-level, the strategy would address the development of food systems, market chains, and fostering information exchange and post-harvest technical networks.

Interventions and Prioritisation

Macro Level: Policies

Key policies that need to be addressed include those that govern trade, both domestic and external, and business environments. Internally the noted progress in liberalisation ought to be monitored and challenges emanating from it be addressed. The fundamental question – see IFPRI (2004) – is whether we have learned how to create markets partly through conducive policies that will deliver what we expect of them in the area of post-harvest sub-sector. Externally, it is crucial to monitor intra-regional trade developments and also trade agreements in the international markets. The R&D in this area has to acknowledge that policies affecting trade arise at three levels: in the multilateral forum of the World Trade Organization (WTO); within multi-country or bilateral regional trade agreements (RTAs); and in unilateral decisions of nations. At each level research questions can be asked with a view to addressing the post-harvest sub-sector, e.g.: What should be the highest sub-Saharan African priorities for the new WTO agricultural agreement? How important are various tariffs, and their variability, to post-harvest processes and what remedies to such policies would help the sub-sector in the region? What are the sanitary and phytosanitary challenges being faced by sub-Sahara Africa countries and how to resolve them? etc. The ultimate goal should be to enable governments and sub-Sahara Africa regional blocks to develop policies that will enable post harvest initiatives and agro-industries to be more competitive domestically and internationally.

Meso Level: Institutional Development

Institutions entail both organisations in the agro-processing industry and the laws, by laws and other rules of the game in the sub-sector. In this area, the goal for R&D should be to analyse and evaluate institutional arrangements, develop new ones, and offer for adaptations of models that would foster sound agribusiness development manifested by better investment decision making, growth of competitive market systems, and also those that would enhance income stability. There is also a need to work towards developing trade rules and regulations that support the growth of the industry. Key words under this area would be: best practices in agri-processing, sound business development, competitiveness, innovative

[6] This emulates the one developed by the Global Post-Harvest Initiative. The challenge is to translate the generic global framework into one that is relevant and points directly to the identified R&D needs relevant for the sub-Sahara region.

public-private sector partnerships, and profitability. Research outputs in form of information, methods, technologies and new organisational models are crucial for the development of the sector.

Micro Level: Food systems, Market chains, Information Exchange and Networks

At this level the goal would be to identify and evaluate options for better intra-and inter- enterprise organisation and relationships between actors that enhance local innovation and result in greater and more equitably distributed benefits through the supply chain for sustainability of agri-food produce markets. Such systems ought to integrate farmers and agri-enterprises into value adding supply chains that would ultimately result into growth. The aim would be to enable small and medium scale agro-enterprises that efficiently and sustainable produce and market products that meet appropriate regulatory standards and quality and nutritional requirements for local, national and export markets. To succeed, efforts towards developing markets for sustainable service providers for farmers are also needed. In line with food systems and value adding market chains, there is also a need to research on and develop information technology systems for the sub-sector. Such IT should support the access and use of technologies for generating income and employment, reducing post harvest losses, improve the marketability of farmers rural produce and enhance utilisation of wastes and by-products. National, regional and international networks, if designed properly also have a role to enhance further sharing of knowledge and experiences in post-harvest technology.

While addressing the above, one needs to direct attention to the exact target groups amongst primary producers. Apparently, these range from the primarily subsistence agricultural producers to pretty advanced commercial entrepreneurs who are already strongly integrated in the supply value chains. In between, there may be two or three categories of primary producers at various developmental stages. Such a dichotomy may be found within a country or sub-region, but different localities within the sub-region may have different mixes of the various stages of the farmer development agri-systems. Needs, and hence relevant research and development initiatives for the various categories would inevitably differ. Table 1 attempts to place weight and hence importance to the nature of R&D that may be more relevant for the different characteristics of sub-economies where a particular category of farmer pre-dominates. This exercise here in inconclusive, and is presented simply to trigger further thinking and articulation of the nature of interventions that FARA may wish to explore and invest in. An emerging pattern, however, is that for relatively underdeveloped subsistence agricultural systems, R&D in subjects under the micro-level category, i.e. post-harvest technology development and quality improvement, nutritional upgrading, value and safety enhancement rank high. Agricultural systems with primary producers at early stages of commercialisation would benefit more from research aimed at post-harvest technology and business development services. Those at either advanced stages of development, or highly commercialised and adequately integrated into value chains, would benefit more from research in macro-level issues: business policy and international trade.

Conclusion

Sub-Sahara Africa presents many opportunities for the development of post-harvest and agribusiness potentials. Policies: domestic markets liberalisation, international markets trends and globalisation; Institutions: both by-laws and regulations and organisations within supply value chains; and Technologies: post harvest processing, indigenous products and traditional foods are avenues through which the sub sector can be developed. While intervening with R&D, however, attention needs to be placed on the various typologies and levels developments of primary producer systems – cutting across relatively subsistence to highly commercialised and market linked systems. Whereas underdeveloped subsistence systems would benefit more from micro-level interventions, advanced ones would benefit from research on macro-policy, trade and business environment studies.

Table 1: Evolutionary stages, or profiles, of smallholder farmers and the post-harvest system R&D priorities for their

Key Primary Producers at various Stages of development of Agri-systems	*Primary Producer Characteristics*	*Total Score*	Strategy 1: Policy		Strategy 2: Institutional strengthening				Strategy 3: Supply chain		Strategy 4: Networking
			Trade policy	Business policy	Market tool-kit	Business developme nt Services	Post-harvest technology	Quality, nutritional value and safety	Supply chain integration	Post-harvest and market infrastructure	Communication learning, and exchange of experiences
1. Subsistence producers	Individual farmers producing predominantly for their own consumption, selling small surpluses to local markets. Precarious access to services and no use of purchased inputs. Low asst accumulation, most vulnerable	85	0 0 0 0 0 2 – 2	0 0 0 0 0 2 – 2	3 0 3 0 2 3 – 11	0 3 2 3 0 2 – 10	4 4 3 5 4 5 – 25	3 3 3 5 3 4 – 21	5 0 2 0 0 2 – 9	5 0 3 0 1 3 – 12	1 0 5 5 5 3 – 19
2. Small-Scale Rural Enterprises	Small-scale rural enterprises with low levels of value addition and weak business orientation and incipient social cohesion among group members. Access to services is incomplete and irregular, which limit enterprise growth.	131	2 0 2 2 0 3 – 9	2 0 2 3 1 3 – 11	5 0 4 4 4 4 – 21	5 3 5 4 4 3 – 24	5 3 3 5 3 4 – 23	1 0 3 5 3 3 – 15	3 3 3 5 3 3 – 20	4 0 3 5 5 4 – 21	4 0 2 5 3 4 – 18
3. Commercially Oriented Enterprises	Commercially oriented enterprises with higher levels of social cohesion that have incorporated value adding handling and/or transformation processes, and product diversification. Selling into regional and national markets. Access to services that permit enterprise growth.	134	4 0 5 5 2 – 16	4 3 5 5 3 – 20	2 0 4 5 5 – 16	3 0 4 5 5 – 17	2 0 2 5 0 – 9	4 0 3 5 3 – 15	1 0 3 5 3 – 12	3 0 3 5 4 – 15	5 0 0 5 4 – 14
4. Advanced Commercial Enterprises	Farmer enterprises are fully integrated into supply chains and meeting demands in terms of quality and frequency of supply, both nationally and for export. Are capable of identifying and paying for required business development services.	136	4 0 5 5 5 5 – 24	4 3 5 5 5 5 – 27	1 0 3 5 2 5 – 16	3 0 3 5 1 5 – 17	2 0 2 5 1 3 – 13	3 0 3 5 3 5 – 19	1 3 2 5 4 5 – 20	2 2 3 5 4 4 – 20	5 2 0 5 5 4 – 21
	Total	486	41	50	52	53	58	58	51	57	61

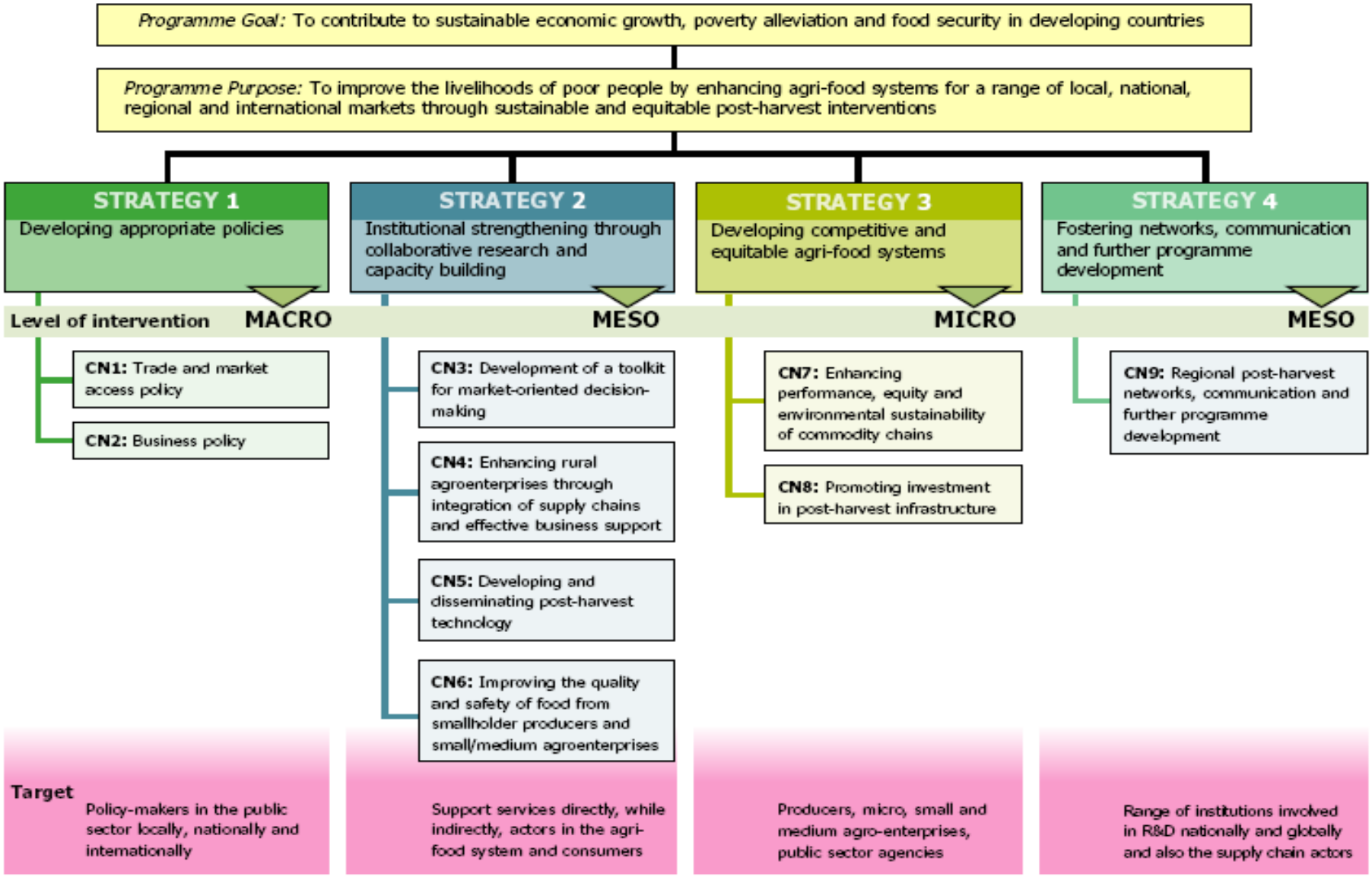
Senior Economists at SUA (PhD Holders) ranked the importance of various areas of R&D against the farmer development stages using the guide below. These results are intended to trigger further debate.

R+D needs:
- xxxxx Extremely Crucial
- xxxx Very Important
- xxx Important
- xx Relevant, but of low importance
- ▪ Not relevant, not important

Red: Relatively important R&D Yellow: Second ranked aspects in importance.

Whereas underdeveloped subsistence systems would benefit more from micro-level R&D interventions, the advanced ones would benefit from macro-policy, trade and business environment studies.

Annex 1: GFAR-FAO-PhAction Strategic Framework



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