THE FAMILY ECONOMY AND AGRICULTURAL INNOVATION IN WEST AFRICA: TOWARDS NEW PARTNERSHIPS

Overview

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ACRONYMS AND ABBREVIATIONS

		Headquarters
AAGDS	Accelerated Agricultural Growth Development Strategy	Ghana
ADB	African Development Bank	Tunisia
ADF	African Development Fund	Tunisia
ADOP	Appui direct aux opérateurs privés *(Direct Support for Private Sector Operators)*	Burkina Faso
ADRK (ADKR)	Association pour le développement de la région de Kaya *(Association for the Development of the Kaya Region)*	Burkina Faso
AEDF	Agricultural Extension Development Funds	Ghana
AIP (IPA)	Accord inter professionnel *(Interprofessional Agreement)*	
AISSA	Agricultural Intensification in Sub-Saharan Africa	Togo
AMMED	Association malienne d'éveil au développement durable *(Malian Association for Promoting Awareness of Sustainable Development)*	Mali
ANADER (NRDA)	Agence nationale de développement rural (*The National Rural Development Agency)*	Côte d'Ivoire
ANCAR (NARAA)	Agence nationale de conseil agricole et rural du Sénégal *(National Agricultural and Rural Advice Agency)*	Senegal
AOPP	Association des organisations professionnelles paysannes *(Association of Professional Peasant Farmers' Organisation)*	Mali
APCAM	Assemblée permanente des chambres d'agriculture du Mali *(Permanent Assembly of Mali's Chambers of Agriculture)*	Mali
APEJ	Association pour la promotion de l'emploi des jeunes *(Association for Promoting Employment for the Young)*	Mali
APFOG	Apex Farmers Organization of Ghana	Ghana
ARPON	Appui à la riziculture paysanne de l'Office du Niger *(Programme for the Improvement of Small-Scale Rice Cultivation in the Office du Niger)*	Mali
ATC	*Assistants Techniques Cotonniers (Cotton Technicians)*	Burkina Faso
AV	Association villageoise *(Village Associations)*	
BNDA	Banque nationale de développement agricole *(National Agricultural Development Bank)*	Mali
CAE	Centre agro-entreprise *(Agro-Enterprise Centre)*	Mali
CAFON	Coopérative artisanale des forgerons de l'Office du Niger *(Blacksmith's cooperative at the Office du Niger)*	Mali
CAGIA	Central d'achat et de gestion des intrants agricoles *(Cooperative for Supply and Management of Agricultural Inputs)*	Benin
CAMES	Conseil africain et malgache pour l'enseignement supérieur *(African and Mauritian Council on Higher Education)*	Burkina Faso
CAP	Centre agricole polyvalent de Matourkou *(Multi-purpose Agricultural Centre, Matourkou)*	Burkina Faso
CAREC	Caisse rurale d'épargne et de crédit *(Rural Credit and Savings Bank)*	Mali
CC	Cotton correspondent	Burkina Faso
CCOF	Cadre de concertation des organisations faîtières *(Coordination framework for umbrella producer organisations)*	Burkina Faso
CESAO	Centre d'études sociales en Afrique de l'Ouest *(Centre for Economic and Social Studies in West Africa)*	Burkina Faso
CFFA	Centre de formation de formateurs d'agriculteurs *(Centre for Training Agricultural Trainers)*	Burkina Faso
CFJA	Centre de formation des jeunes agriculteurs *(Training Centre for Young Farmers)*	Burkina Faso

		Headquarters
CG	Comité de gestion de la filière coton *(Cotton Sub-sector Management Committee)*	Burkina Faso
CILSS	Comité inter-Etats de lutte contre la sécheresse au Sahel *(Permanant Inter-State Committee for Drought Control in the Sahel)*	Burkina Faso
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement *(French Agricultural Research Centre for International Development)*	France
CMDT	Compagnie malienne de développement du textile *(Malian Textile Development Company)*	Mali
CNOP	Coordination nationale des organisations paysannes du Mali *(National Coordination Framework forFarmers' Organisations in Mali)*	Mali
CNRA	Comité national de la recherche agronomique du Mali *(National Committee for Agricultural Research)*	Mali
CNRA	Centre national de recherche agronomique de Côte d'Ivoire *(National Centre for Agricultural Research in Côte d'Ivoire)*	Côte d'Ivoire
CONFEJES	Conférence des Ministres de la Jeunesse et des Sports des pays d'expression française *(Conference of Youth and Sport of French-Speaking Countries)*	
CPF	Confédération paysanne du Faso *(Farmer's Confederation of Faso)*	Burkina Faso
CPR	Centre de promotion rurale *(Centre for Rural Promotion)*	Burkina Faso
CPS	Centre de prestation de services *(Provision of Services Centre)*	Mali
CRRVA	Comité régional de la recherche et de la vulgarisation Agricole (*Regional Committee for Agricultural Research and Extension)*	Mali
CRU	Commission régionale des utilisateurs des résultats de recherche (*Regional Commission of Beneficiaries)*	Mali
CSIR	Council for Scientific and Industrial Research	Ghana
CTA	Centre technique de coopération agricole et rurale (Technical Centre for Agricultural and Rural Cooperation)	Netherlands
ECOWAS	Economic Community Of West African States	Nigeria
EDIF	Export Development and Investment Fund	Ghana
ENEF	Ecole nationale des eaux et forêts *(National College for Water and Forests)*	Burkina Faso
ENESA	Ecole nationale d'élevage et de santé animale *(National College for Livestock Production and Animal Health)*	Burkina Faso
EPIC	Etablissement public à caractère industriel et commercial *(Public Establishment of an Industrial and Commercial Nature)*	
FAGE	Federation of Associations of Ghanaian Exporters	Ghana
FAO	Food and Agriculture Organization of the United Nations	Italy
FCRMD	Fédération des caisses rurales mutualistes du delta *(Federation of Mutualist Rural Banks of the Delta)*	Mali
FIA	Fonds des intrants agricoles *(Agricultural Input Fund)*	Mali
FIJ	Fonds d'insertion des jeunes *(Fund for the Integration of Youth)*	Burkina Faso
FJA	Formation des jeunes agriculteurs *(Training for Young Farmers)*	Burkina Faso
FNGN	Fédération nationale des groupements Naam *(National Federation of Naam Groups)*	Burkina Faso
FNRAA	Fond national pour la Recherche agricole et agro-alimentaire *(National Fund for Agricultural and Agro-Industrial Research)*	Senegal
FPFD	Fédération des paysans du Fouta Djallon *(Federation of Farmers of Fouta Djallon)*	Guinea
GEPC	Ghana Export Promotion Council	Ghana
GFRAD	Groupe d'étude de femmes de recherche-action et de développement *(Group for the study of Women, Action Research and Development*)	
GHE	Gambia Horticultural Entreprise	The Gambia

		Headquarters
GIE	Groupement d'intérêt économique *(Economic Interest Group)*	
GIPD	Gestion intégrée de la production et des déprédateurs *(Integrated Management of Production and Pests)*	
GJA	Groupement des jeunes agriculteurs *(Young Farmers' Group)*	Burkina Faso
GMO	Genetically Modified Organism	
HAG	Horticulturalists' Association of Ghana	Ghana
ICRISAT	International Crop Research Institute for Semi-Arid and Tropics	Niger (West and Central Africa Office)
IDR	Institut de développement rural *(Rural Development Institute)*	Burkina Faso
IDRC	International Development Research Centre	Canada
IER	Institut d'économie rurale *(Rural Economic Institute)*	Mali
IFAD	International Fund for Agricultural Development	Italy
IIED	International Institute for Environment and Development	Senegal (Regional Office – HQ in London)
IITA	International Institute for Tropical Agriculture	Nigeria
IMS	Initiative mil-sorgho *(Millet-Sorghum Initiative)*	Mali
INERA	Institut de l'environnement et de recherches agricoles *(Environment and agricultural research institute)*	Burkina Faso
INSAH	Institut du Sahel *(Sahel Institute)*	Mali
ISNAR	International Service for National Agricultural Research	Ethiopia
KIT	Royal Tropical Institute	Netherlands
MAEP	Ministère de l'agriculture, de l'élevage et de la pêche *(Ministry of Agriculture, Livestock and Fisheries)*	France
MAHRH	Ministère de l'agriculture, de l'hydraulique et des ressources halieutiques *(Ministry of Agriculture, Hydraulics and Water Resources)*	Burkina Faso
MDRE	Ministère du développement rural et de l'environnement *(Ministry of Rural Development and Environment)*	Mali
NAWFA	National Women Farmers' Association	The Gambia
NEPAD	New Partnership for Africa's Development	South Africa
NERICA	New Rice for Africa	
NGO	Non-Governemantal Organisation	
ODI	Overseas Development Institute	United Kingdom
ON	*Office du Niger*	Mali
OPA	Organisation professionnelle agricole *(Professional Agricultural Organisation)*	
OPSF	Opération pilote de sécurisation foncière *(Pilot initiative to promote land tenure security)*	Burkina Faso
PADDAB	Programme d'appui danois au développement de l'agriculture au Burkina Faso *(Danish Agricultural Development Sector Programme Support in Burkina Faso)*	Burkina Faso
PAFJT	Projet d'appui à la fixation des jeunes dans leurs terroirs *(Programme to promote the settlement of the youth in their home region)*	Burkina Faso
PAICB/LCP	Projet d'appui aux initiatives communautaires de base pour la lutte contre la pauvreté *(Grassroots Community Poverty Reduction Initiatives Support Project)*	Burkina Faso
PASAOP	Projet d'appui aux services agricoles et aux organisations paysannes *(Agricultural Services and Producer Organisations Programme)*	Mali
PDAV	Programme de développement des animaux villageois *(Village Agriculture Development Project)*	Burkina Faso

		Headquarters
PEA	Permis d'exploitation agricole *(Agricultural production permit)*	
PNDSA II	Second projet national de développement des services agricoles *(National Agricultural Services Development Project, Phase II)*	Burkina Faso
PO	Producer Organisation	
PRSP	Poverty Reduction Strategy Paper	-
PTD	Participatory Technology Development	
RECAO	Réseau des chambres d'agriculture de l'Afrique de l'Ouest *(Network of West African Chambers of Agriculture)*	
RELC	Research and Extension Liaison Committee	Ghana
REPO-Net	Research-Extension-Producers' Organizations Partnership Network	
ROCAFREMI (WCAMRN)	Réseau Ouest et Centre Africain de recherche sur le Mil *(The West and Central African Millet Research Network)*	Niger
ROCARS (WCASRN)	Réseau Ouest et Centre Africain de recherche sur le sorgho *(West and Central Africa Sorghum Research Network)*	Mali
ROPPA	Réseau des organisations paysannes et des producteurs agricoles de l'Afrique de l'Ouest (West African Network of Farmers' Organisations and Agricultural Producers)	Burkina Faso
SADEF	Sahelian Area Development Fund	Mali
SAEC	Société africaine d'études et de conseils *(African Studies and Advisory Association)*	Burkina Faso
SAP	Structural Ajustment Programme	
SNFJT	Stratégie nationale de fixation des jeunes dans leurs terroirs *(National strategy to promote the settlement of the youth in their home region)*	Burkina Faso
SOFICOCI	Société de financement des intrants coton de Côte d'Ivoire *(Association for the Financing of Cotton Inputs in Côte d'Ivoire)*	Côte d'Ivoire
SOFITEX	Société des fibres et textiles du Burkina *(Burkina Textiles and Fiber Company)*	Burkina Faso
SP/AJPA	Secrétariat permanent à l'appui aux jeunes producteurs agricoles *(Permanent Secretariat to Support Young Farmers)*	Burkina Faso
STA	Société de transformation alimentaire *(Food processing company)*	
SWAC	Sahel and West Africa Club	France
SWAC Secretariat	Sahel and West Africa Club Secretariat	France
SWC	*Soil and Water Conservation*	
T&V	Training and Visit	
T&V	*Training and Visit*	
TEC	Tarif extérieur commun de l'UEMOA *(Common External Tariff of the WAEMU)*	
UNDP	United Nations Development Programme	United States
UNJPAB	Union nationale des jeunes producteurs agricoles du Burkina *(National Union of Young Farmers of Burkina)*	Burkina Faso
UNPCB	Union Nationale des Producteurs de Coton *(National Union of Cotton Producers)*	Burkina Faso
URDOC	Unité de Recherche-Développement et Observatoire du Changement *(Research-Development Unit and Observatory of change)*	Mali
URESCO-CI	Union régionale des coopératives de savane de Côte d'Ivoire *(Regional Union of Savannah Cooperatives in Côte d'Ivoire)*	Côte d'Ivoire
UROPAJE	Union régionale des organisations professionnelles agricoles des jeunes de l'Est *(Regional Union of Young Farmers' Professional Organisations from the East)*	Burkina Faso
USA	United States of America	

		Headquarters
USAID	United States Agency for International Development	USA
USPP	Union sous-préfectorale de producteurs *(Sub-Prefecture Producers' Union)*	Benin
VAT	Value Added Tax	
VDF	Village Development Fund	Mali
VVV	Vulgarisateur villageois volontaire *(Voluntary Village Extension Agent)*	Burkina Faso
WAEMU	West African Economic and Monetary Union	Burkina Faso
WARDA	West African Rice Development Association	Mali
WECARD	West and Central African Council for Agricultural Research and Development	Senegal

Contents

EXECUTIVE SUMMARY

Over the last few decades, West Africa has witnessed unprecedented demographic growth and dynamics of change. One of the key questions guiding the Sahel and West Africa Club (SWAC) Secretariat's work is:

> *Where and how will the approximately 430 million inhabitants live in 2020, as compared to roughly 290 million people living in the region toady?*

The family economy dominates the economies of West African countries and plays a determining role in developing responses to this population's needs. With regard to agriculture, which, on average, contributes some 30% of the region's GDP, most agricultural activities are organised and undertaken by family farms. These remain the most significant type of production at the heart of the rural family economy. The fundamental question concerning agricultural family economies is:

> *What role should the family economy play to support the transformation process linked to the rapid population increase and the dynamics of change at the regional and national levels?*

Family agriculture in West Africa has undergone significant changes due to physical, natural, socio-economic and political factors at the national, regional and international levels. These concerns have been at the heart of the studies and strategic thinking carried out by the SWAC in 2002-2003 on the transformation of family farming in West Africa of which one of the subjects examined was the place of agricultural innovation in the process of structural change in West African agriculture[1].

The SWAC Initiative launched in December 2003 on "The family economy and access to agricultural innovation in West Africa: towards new partnerships" is a core part of the Agricultural Transformation and Sustainable Development Unit's Work Programme[2]. The work carried out in this initiative addresses institutional, policy and organisational innovations. It includes: physical innovations (example: seeds); institutional, social and organisational innovations (e.g.: setting up a structured network of producers, better organisation of input distribution networks, etc.); and innovations in terms of information and practices (e.g. cultivation techniques). For each agricultural product, practice or institution where there is an innovation, *particular attention has been given to the key element of innovation in the process*. Identifying this element provides a better understanding of the innovation's key characteristics and the obstacles linked to its use in other contexts or regions.

This initiative is based on the conclusions of this preliminary strategic thinking and explores the following fundamental question:

> *How can access to innovation be strengthened in order to improve livelihoods as well as regional opportunities to add value to agriculture and promote the family economy in West Africa, in particular for the most vulnerable populations?*

The Initiative's aim is to stimulate analyses, collect field data and case studies that encourage debates between regional actors, with a view to informing the development of regional policies and actions in order to promote and strengthen producer access to agricultural innovation, where most producers are anchored in the family economy.

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1 Toulmin C. and Guèye B. 2003. *The Transformation of West African Agriculture and the role of family farms*, SWAC, Paris,June ; and Jean Sibiri Zoundi. 2003. *Technological Innovation and the Transformation of Agriculture and Family Farms in West Africa*, SWAC, Paris, June 2003. See: http://www.sahel-club.org/en/agri/ and http://www.oecd.org/sah/agritransformation.

2 See: http://www.oecd.org/sah for more information on the SWAC's activities.

The main activities carried out within the framework of the Initiative consisted of consultations and policy analyses and case studies in four countries, two of which are Francophone (Burkina Faso, Mali) and two of which are Anglophone (The Gambia, Ghana). This report presents a wide range of experiences, case studies and lessons concerning innovation drawn from across West Africa, the constraints and opportunities of access for family farms to agricultural innovation, paying particular attention to the most vulnerable populations. These experiences could help **build a regional approach to access to agricultural innovation** needed to develop the family economy. During the implementation of this initiative, the results were validated via a participatory process which included various actors involved in agricultural innovation with a view to encouraging synergies with other West African initiatives. Organised by the SWAC in collaboration with the WAEMU[3], a workshop on "Agricultural Transformation in West Africa: Towards New Partnerships for Agricultural Innovation" was held in Ouagadougou, Burkina Faso from 15 to 16 June 2004.

The main conclusions of this initiative's analyses and consultations follow:

- **Key elements of agricultural services reform in West Africa over the last few years has involved: (i) the participation of producers in financing agricultural services; (ii) the promotion of demand-driven research and extension approaches; and (iii) the involvement of the private sector in providing agricultural services.** States must continue to implement the reforms in order to offer efficient services that respond to producer demands. At the same time, with the disengagement of the State, the West African actors consulted questioned whether the private sector is capable of providing quality upstream or downstream services in relation to production. Success stories such as the example of the financial autonomy of the palm oil research institute in Ghana are still rare. The commercial sale of research results at the regional level has not been as successful as anticipated.

- **The nature of the process of agricultural services reform in West Africa could hinder access to agricultural innovation by the most vulnerable populations, often more dependent upon public services.** Historically, public services have always played a major role in the research and dissemination of agricultural innovation, in particular for the most vulnerable groups for which access to innovation depends upon their capacity to pay for services rendered. Most West African countries have adopted a new demand-driven approach to agricultural service provision[4]. Certain countries like Ghana have implemented this approach with the primary aim of *"marketing the results of research*". The goal of this marketing of research results is two-fold: making the research more effective and efficient while responding to producers' demands; better informing extension services and producers and capitalising on research results. In Mali, local communities must contribute financially some 20% of the total cost of agricultural services (essentially training producers on new agricultural production practices and techniques) obtained within the framework of the Agricultural Services and Producer Organisations Programme (PASAOP).

- At the research level and despite initiatives to adapt evaluation criteria by which researchers are promoted (e.g. the CAMES System), the key question of the status of research and agricultural extension institutions is still pertinent: *What status and which financing mechanisms for public extension and research institutions that follow the logic of demand driven services by producers would maintain the role of scientific and strategic monitoring? What is the role and contribution of the private sector, agribusiness and producer organisations (POs) in the promotion of efficient and effective research?*

- **The reforms of extension services have left an "institutional void" which could hinder access to agricultural innovation. The POs and private sector actors do not yet have sufficient human and financial capacity to take over**. The reduction of manpower and financing in extension organisations in an environment where producer organisations lack

[3] The workshop's report can be found on our site: www.oecd.org/sah/processingagri .

[4] The expression "*demand driven services*" is often used to indicate an approach where agricultural services are offered at the request of producers, private sector and agribusiness actors.

sufficient capacity to be able to provide appropriate agricultural services could hinder access to agricultural innovation. Thus, a fundamental question is: *How could this "institutional void" that is endangering access by producers to innovation in many countries be managed over the short- and medium-term?*

- **The lack of appropriate land tenure policies makes it difficult for certain categories of producers in the family economy (non-indigenous, migrant, women, youth, family farmers with few connections to markets, etc.) to adopt agricultural innovation.** For example, large investments are needed to manage soil fertility and tree planting. In the case of animal breeding, the lack of land security limits the fodder production and the improvement of natural pastures.

- **Local communities and organisatons actively participate in the management of natural resources, particularly regarding access to land.** The strategic thinking and actions on "*land security*" emphasise the need to develop participatory approaches involving and giving more responsibility to local communities, women and the young in the creation and implementation of regulations linked to land issues. For example, Mali and Senegal are in the process of implementing local conventions for collaboration between producers and local administrations, within the framework of decentralisation. There have been similar experiences in Burkina Faso.

- **Some initiatives by public authorities encouraging access by the youth to agricultural innovation in West Africa (e.g. Burkina Faso and Mali) have had mixed results due to low socio-educative investments and "top-down" approaches.** The majority of the West African population[5] is under 20 years of age. It is also essential to define an agricultural policy allowing the young to acquire and capitalise on agricultural innovation. For example the Regional Union of Young Farmers' Professional Organisations from the East (UROPAJE) of Burkina Faso maintains solid partnerships with the research and contributes directly to the dissemination of new information on agricultural practices and techniques.

- Innovations concerning specific agricultural commodities and livestock present regional opportunities worth exploring.

    - ✓ **Rice**. The implementation by the West African Rice Development Association (WARDA) of high-yielding rice varieties NERICA (New Rice for Africa) as well as the technological development of post-harvest processing using materials made by local blacksmiths (Blacksmith's Cooperative of the Office du Niger, Mali – CAFON) has helped productivity rise significantly. In Mali, for example, the yields have risen from 3 tonnes in the beginning of the 1990s to some 6 tonnes today.

    - ✓ **Cotton**[6]. The cotton production support system provides an example of an innovative process based on producer demand, an accessible extension and advisory-support service, and a suitable marketing mechanism that has guaranteed producer incomes. The situation in the cotton sub-sector also highlights the pertinence of fostering synergies based on communities and the improvement of productivity and agricultural production. This integrated approach has been key to the success of technology in the sub-sector. The reforms underway in the cotton sub-sector must take into account the economic and social importance of cotton in West Africa. The question that political decision-makers and development partners need to answer is: *How can an efficient innovation process be guaranteed in the context of liberalisation and privatisation of the cotton sub-sector?*

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5 50% of the West African population is under 20 years of age. Facing difficulties integrating into the economic life marginalises the young which in turn makes them good candidates for recruitment into the armies of "war lords".

6 Hussein, K., Perret, C. and Hitimana, L., 2005, *Economic and social importance of cotton production and trade in West Africa: role of cotton in regional development trade livelihoods,* Sahel and West Africa Club/OECD, Paris, March.

- ✓ **Fruit and vegetables.** The strong global demand and strengthening of partnerships between producer organisations and agribusiness have encouraged the adoption of new high-yielding technologies. Ghana's pineapple yields have increased by approximately 20% and exports increased 10-fold between 1993 and 2004. Other innovations at the regional level concern onions, mangoes, papayas and tomatoes.
- ✓ **Poultry.** Three main factors have contributed to the successful innovation of the "poulet bicyclette"[7] on which the livelihood of 6 million family farms are dependent in Burkina Faso: (i) approaches that maximise the synergies between local knowledge (chicken coops built with local materials and the use of traditional medicines to combat chicken mortality) and exogenous innovations (preventative treatments for avian flu, cures for internal and external parasites provided by voluntary village vaccinators.; (ii) State support through investments to train village vaccinators and to provide vaccines and medication and; (iii) the development of a significant trader network that covers marketing at both national and regional levels (Benin, Togo and Senegal).
- ✓ **Palm oil.** In Nigeria a win-win partnership between agribusiness (Okomu Palm Oil Company PLC) and small family farms have, on the one hand, helped family farmers acquire more productive and profitable palm planting material. On the other hand, the Okomu Palm Oil Company has been able to reduce costs linked to expanding palm oil production plantations by working with a large number of small family farms.

Two elements have played a key role in the above-mentioned examples of innovation:

- The strengthening of partnerships between the actors: producers – public sector (public agricultural services, political decision-makers) – civil society (PO, NGO) – agribusiness and the private sector (traders, etc.).
- The adoption of a participatory approach including, notably, producers in the decision-making process and implementing research and development programmes.

Value chain analysis can strengthen the innovation process by determining the contribution of each actor with a view to maximising synergies and complementarities between actors.

At the SWAC Ouagadougou Workshop on agricultural innovation mentioned above, it was suggested that regional institutions such as the ECOWAS, the WAEMU and CORAF address the following questions:

> *How can more appropriate regional policies be promoted, assuring greater protection of strategic products like rice, with a view to creating an environment encouraging producers to invest in innovation?* At the Ouagadougou Workshop, participants recommended that regional institutions (the WAEMU, ECOWAS) establish a list of strategic products for which regional protection policies within the framework of international agreements could be instituted. *How can domestic taxation on agricultural inputs (notably TVA) be reviewed at the country level to promote better access by producers to agricultural innovation?*

The workshop for strategic thinking and exchange of views between regional actors provided an opportunity to establish an informal network of institutions and organisations committed to finding alternatives in order to better capitalise on agricultural innovation and sustainable agriculture.

The lessons learned from consultations carried out within the framework of this initiative have led to the following imperatives for different regional actors.

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[7] Referred to here as the "chicken bicycle" because live chickens are transported to town markets by bicycle.

(i) Support the process of establishing a network *"New partnerships for agricultural innovation*" through encouraging: exchange; support initiatives to capitalise on and disseminate information.

(ii) Inform and raise awareness of regional actors concerned by the different issues raised by the initiative, with a view to generating actions needed for political decision-makers, notably those concerned with research institute and agricultural extension reforms and national and regional policies having an impact on the access to agricultural innovation.

Discussions with regional actors also led to the identification of three strategic questions that regional actors could explore further concerning agricultural innovation in West Africa:

1. How can the necessary contribution of agricultural innovation to improving livelihoods, productivity, competitiveness, the transformation of farming systems and models of society in West Africa be strengthened in a context of rapid demographic growth and economic reform?

2. How can agricultural services be adapted to support actors in the family economy working in agriculture (producers, actors involved in processing agricultural products and agribusiness) while providing solutions to the challenge of quality norms and standards demanded by international trade rules?

3. What is the role of innovation in the ECOWAS regional agricultural policy and the NEPAD strategy for agricultural development? How can regional strategies, developed in consultation with all actors, be developed concerning the regulation and monitoring of the introduction of biotechnology? In particular, how can access to biotechnology by family farms be facilitated?

This report sets out the synthesis of work carried out within the framework of the Sahel and West Africa Club (SWAC) Secretariat Initiative on "The family economy and agricultural innovation: towards new partnerships". It summarises the results of the following activities:

(i) An electronic consultation carried out from December 2003 to March 2004 with key regional and international actors;

(ii) Field work undertaken in four West African countries: Burkina Faso, the Gambia, Ghana and Mali;

(iii) A regional strategic thinking workshop on access to innovation organised in June 2004 by the SWAC Secretariat in collaboration with the WAEMU.

This initiative is part of the work programme of the SWAC's Agricultural Transformation and Sustainable Development Unit.

The three key concepts used in this report should be clarified before going further: (i) innovation, (ii) family farming and (iii) agribusiness.

Innovation

The "innovation" concept has been used here in a broad sense, integrating institutional, policy and organisational innovations. It includes:

(i) Physical innovation (example: crop varieties, animal breeds, etc.);

(ii) Institutional, social, organisational innovations (example: setting up producers' networks, better organisation of input distribution networks, etc.);

(iii) Innovations in terms of information and practices (example: cultural practices).

For each type of innovation, ***endogenous innovations*** (farmer innovations) can be distinguished from ***exogenous innovations*** (innovations derived from research, extension, private companies, and agribusiness, etc.).

This concept is not limited only to innovations from new discoveries derived from research. It can cover changes linked to ways in which producers, institutions and societies are organised. The innovations can also include the processes of change within communities and those linked to using agricultural technologies or practices already known in one part of West Africa but unknown in other areas of the region. Concerning each agricultural product, practice or institution, *it is the factor of innovation in each case that is the most significant*. Identifying this factor helps understand key characteristics of innovation and the obstacles linked to its use in other contexts or regions.

Family agriculture

Access to innovation varies according to the type of producers concerned. This report focuses on the categories of producer involved in the family economy, family farming or agribusiness. The work carried out by the Sahel and West Africa Club in 2002 – 2003 and the debates in relation to this initiative have helped distinguish three main types of family farms.

Type 1: Producers constrained to produce primarily for home consumption, in particular cereals production, and who maintain very limited links with the market. This category of producers - the most vulnerable - faces far greater constraints in access to innovation than other categories and constitutes the majority of farms in West Africa.

Type 2: Farms with extensive links to markets, for which the production of cereals for home consumption is fairly evenly balanced with cash crops.

Type 3: Farms that are essentially market-oriented, mainly producing cash crops such as cocoa, cotton, coffee, fruit and vegetables, meat, milk, etc.

Agribusiness

The term "**agribusiness**" refers to farming where production is market-oriented. This type of farming generally uses significant amounts of capital and maintains close ties with input provision chains, processing and marketing networks or is even involved in these activities. Agribusiness should not be confused with Type 2 family farms, which are oriented towards the market. Agribusiness produces essentially for the market, represents farming where manpower is essentially provided by the family and uses modest amounts of capital. The agro-food processing industry is one of the aspects of agribusiness.

I. INTRODUCTION

1.1 Background and justification

Over the last few decades, West Africa has witnessed unprecedented demographic growth and dynamics of economic and socio-political change. One of the key questions guiding the Sahel and West Africa Club (SWAC) Secretariat's work is:

> *Where and how will the approximately 430 million inhabitants live in 2020, as compared to roughly 290 million people living in the region today?*

Agriculture is a key sector of West African economies: it contributes to almost a third of GDP and employs about 70% of the entire active population depending upon the country. The family economy plays a dominating role in the economies of West African countries. Most agricultural activities are organised and implemented by family farms, the most significant form of production at the heart of the rural family economy. The family farm takes into account the non-agricultural and agricultural activities and strategies (including animal breeding and fishing), aspects before and after production (supply of inputs, processing and marketing). This agriculture is in permanent evolution under the effect of various factors linked to socio-economic and political environment.

In this context, the transformation of West African agriculture, and more specifically family farming, is essential to increase production and productivity, and meet the needs of its populations which is expanding more rapidly than in any other area of the world. Agricultural innovation is vital in order to respond to this challenge and is the basis for improving efficiency, productivity and creating value-added in agriculture. As regards the agricultural sector and its role in the family economy, the following strategic questions follow these observations:

> *How will these profound changes and the unprecedented population growth affect West African agriculture? What role will agriculture play in the medium- and long-term development of the region? What is the role of agricultural innovation in this process? How is the process of agricultural innovation related to changes in models of society?*

Economic policies and reforms at the international and national levels (liberalisation, structural policy adjustment, etc.) in force since the 1980s have had significant consequences on the agricultural sector:

- *at the national and regional levels,* for example, land policies do not as yet help secure land for family farms. At the same time, difficulties in coordinating between farms often generates negative effects in terms of cross-border use of natural resources, land use and access rights as well as ownership rights, etc.
- *at the international level,* some Northern countries promote free competition whilst at the same time implementing policies to protect and subsidise agriculture. As a consequence, certain products being imported to West Africa could cost less and stifle the demand for domestic (regional) production.

These economic and policy changes are often accompanied by social changes. A general movement from a collective organisation of agricultural activities towards a more individualised form of farming has been observed in West Africa.

During consultations held by the Sahel and West Africa Club (SWAC) Secretariat in 2002-2003 on the transformation of West African agriculture, access to agricultural innovations was considered as a priority by regional actors. Innovation plays a decisive role in the promotion of rapid, equitable and sustainable agricultural processing. Innovation is also imperative for increased agricultural productivity, research on sustainable and appropriate practices for environmental conservation and biodiversity, and poverty reduction and the creation of value added in order to assure food security over the medium- and long-term.

These concerns have been the basis for which studies have been carried out by the SWAC Secretariat in 2003 on West African agricultural transformation, of which one of the themes was the role of agricultural innovation in the structural change process of the family economy involved in agriculture at the regional level. This initiative is supported by the conclusions of this study.

1.2 Key questions and objectives of the Initiative

Beyond the insufficiencies linked with agricultural institutions, whether they are endogenous, or via regional exchanges or stimulated by agricultural services (research and extension institutions), NGOs, agribusiness or the private sector, agricultural innovation plays an essential role in agricultural transformation. Agricultural innovation offers solutions to practical issues, such as productivity, sustainability, and the improvement of livelihoods for rural populations. The family economy must offer responses to these challenges with a view to facing the constraints in the agriculture sector and take advantage of opportunities offered by the national, regional and international markets.

Over the last few decades, West African countries have invested in the development and dissemination of agricultural innovations with an aim to increasing agricultural productivity as a whole and the production of food crops, in particular. Several mechanisms and approaches have been developed to this effect with a view for producers to efficiently use these agricultural innovations. The following question remains relevant:

> *How can access to agricultural innovation be improved for all categories of family farms in order to profit from comparative advantages that the West African regional market offers and generate value added?*

The initiative's main objective is to stimulate analysis and encourage debates between regional actors on policy development and regional actions with a view to promoting and strengthening access to agricultural innovation, particularly by the most vulnerable producers knowing the constraints first and foremost to producing for home consumption. Particular emphasis is put on access to innovation by women, youth, and migrants in the family economy. These exchanges aim to provide concrete elements to help inform decisions by institutions, the States, and regional actors for better access by agricultural producers to innovation.

On the basis of the concerns raised in the SWAC Secretariat's analysis on the transformation of West African family farms[8] and expected results by actors from a large electronic consultation carried out by the SWAC Secretariat from June to September 2003, the initiative aims to respond to the three following concerns:

(i) How to encourage and strengthen access to agricultural innovation by all categories of producers? What is the role of socio-economic, political and institutional (legislative, administrative and organisational, land security framework)?

(ii) How to enhance the role played by innovation to increase producer's capacity to take advantage of the regional markets, to increase their revenues through the creation of value added, and improve their livelihoods? How to encourage access by certain categories of producers faced with specific constraints, notably those constraints faced by farmers obliged to produce first and foremost for home consumption, women, youth and migrants?

(iii) What are the roles played by other actors such as agribusiness and networks providing inputs and transformation in access to agricultural innovation? How to optimise the role of agricultural services before and after production in improving access to agricultural innovation?

[8] Documents available on the site: www.sahel-club.org/eng/agri/index.htm.

II. APPROACH

The initiative adopted a participatory approach which involved consultation with a number of actors and institutions in West Africa and their partners in the North. The consultation process included five main stages:

(i) In 2002-2003, the execution of three studies by the SWAC Secretariat on the transformation of West African agriculture. One of the studies focused on the role of technological innovation in the transformation of family farms[9];

(ii) A meeting of the SWAC Secretariat's Strategy and Policy Group in October 2003, enabling actors in the region and other SWAC partners to assess the significance of the initiative;

(iii) The setting up of an electronic forum with actors, specialists and key institutions at regional and international levels, which ran from December 2003 until March 2004. A summary of the findings can be viewed at the Club's internet site: http://www.oecd.org/sah/agritransformation.

(iv) A visit to four countries to consult actors on the ground and to carry out case studies. Visits were made to two Francophone countries (Burkina Faso and Mali) and two Anglophone countries (the Gambia and Ghana). The study criteria included regional geographic differentiation (between Sahelian and coastal countries) and the existence of innovative institutional approaches (e.g. the restructuring of agricultural services, involvement of actors from civil partnerships and the private sector, etc.);

(v) The implementation of an evaluation process involving key actors and the development of related regional initiatives such as the rural innovation workshop-fair in Ségou (Mali), organised jointly by Inter-Réseaux, IFAD and CTA in March 2004[10]. As part of this, the SWAC Secretariat organised a regional workshop in collaboration with the West African Economic and Monetary Union (WAEMU) which took place on 15-16 June 2004. The main aim of this workshop was to encourage analysis and strategic thinking which would inform the discussion between regional actors regarding access to agricultural innovation. The objectives of the workshop were:

- To facilitate the exchange of information on a wide scale and to involve institutions in the initiative;
- To identify innovative procedures and agricultural or livestock rearing projects taking place on a regional scale;
- To further analysis of promising approaches and new partnerships in order to remove obstacles to accessing innovation[11].

There were around 50 participants in the workshop representing several sectors: producer organisations, agribusiness, the private sector, research and extension institutions, ministries of Agriculture, NGOs and regional and international institutions.

Throughout the development of the initiative, a participatory and consultative approach was followed, namely through informal consultation with a cross-section of actors including heads of regional intergovernmental organisations, political decision-makers, representatives from research and extension bodies, producer organisations, private sector actors, agribusiness and NGOs.

Knowledge accumulated through the initiatives of the SWAC Secretariat, regional and international organisations, research and extension organisations such as ISNAR, CORAF/WECARD, SAFGRAD (Semi-Arid Food Grain Research and Development) and other development projects and programmes have all been taken into account in this analysis.

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[9] The reports of these studies are available at the Website address: www.sahel-club.org/fr/agri/index.htm

[10] For more details on such innovations: http://innovation-paysanne.info

[11] Documents relating to the Ouagadougou workshop are available at: http://www.oecd.org/sah/agritransformation

III. SOCIO-ECONOMIC, POLITICAL AND INSTITUTIONAL FACTORS AND ACCESS TO AGRICULTURAL INNOVATION

3.1 Endogenous innovation processes

Analysis of experience in the countries visited reveals the enormous capacity rural communities have for developing strategies to add value and to discover their own solutions to problems of drought, soil fertility and pest attack.

In the Sahel, Burkina Faso and Mali, for example, successive dry periods and acute soil deterioration have prompted communities to innovate in developing soil and water conservation (SWC) techniques and agroforestry. For example, a technique to improve the depleted "***zaï***" soil in the central plateau of Burkina Faso (Zoundi, 2003[12]) is being extended to other West African countries such as Niger. This rural innovation, and other agricultural developments achieved through research and extension have given hope to rural communities by allowing them to work previously uncultivable soils. Such innovation has also helped reduce the migration of rural populations to other areas.

In some cases, the process of rural innovation has consisted in adapting technology which is developed through research and recommended by the agricultural services, but for which producers have insufficient funds to invest in. In Burkina Faso and Mali, this phenomenon is particularly apparent in the application of mineral fertiliser which researchers deem to be necessary in areas of uneven rainfall, but where producers have great difficulty affording chemical fertiliser. In areas of climatic risk such as these, the knowledge collected by rural communities has allowed them to develop alternatives, i.e. (i) technique of applying chemical fertilisers very locally (in micro-doses) when access to the required quantity is limited; (ii) use of organic manure produced on the farm (from composting and other techniques); (iii) choice of crops and soil more suited to reduced application of chemical fertiliser, thus reducing the risks associated with dryness. Moreover, the lack of ploughing tools has prompted some communities to innovate by substituting the process of ploughing before sowing with other techniques which have been identified by research, such as dry sowing and mulching, where the soil is most depleted or where water infiltration is minimal.

Whatever the motivating force behind such agricultural innovation, it is notable that the techniques developed require minimal financial resources. However, labour costs are sometimes high, as in the example of the mulching technique used for traditional ***zaï***.

The importance of these farmer innovation skills has led to the initiation of research projects in several countries, examining subjects as diverse as agro-forestry and the conservation of phytogenetic resources, and which focus on the development of local communities' endogenous skills and knowledge. The aim of such projects is to suggest solutions to agricultural development problems which are based on endogenous knowledge and agricultural communities' capacity for innovation. This establishes a new paradigm predicated upon the concept of "co-research", an approach which recognises farmers as actors able to make a decisive contribution to research efforts. Certain region-wide initiatives, e.g. the SWC II project, have been launched, coordinated by the International Institute for Environment and Development (IIED). Regional networks of innovating farmers in Burkina Faso, Mali and Niger were set up within this initiative. In March 2004, the Ségou regional working-fair dedicated to agricultural innovations organised by IFAD, the CTA and Inter-Réseaux demonstrated the importance of endogenous innovation in this region. The aim of the fair was essentially to allow innovating farmers in the region to share their skills with other producers in order to develop and disseminate these techniques.

[12] Zoundi, S.J., 2003. Innovation technologique dans le processus de changement structurel de l'agriculture familiale en Afrique de l'Ouest : Quel rôle pour la recherche et la vulgarisation agricole ? Sahel and West Africa Club, Paris (France), p.46. The document can be viewed at: www.sahel-club.org/fr/agri/index.htm.

3.2 Towards reforms of agricultural services giving producers a central role

Public agricultural research and extension organisations continue to play a key role in the process of exogenous innovation. The current trend is for agricultural services to strengthen the links between research, extension and producers, a need identified by other projects, such as the WECARD initiative (ODI/CIRAD/ITAD, 1999[13]) on "Strengthening Research-Extension-Farmers' Organisations Linkages in West and Central Africa".

One of the most significant developments of the last ten years for agricultural research and extension organisations has been the introduction of a new vision focusing on "provision of agricultural services in response to producer demand". This vision is explained in detail in numerous strategy documents, programmes and development projects and it is being applied by the Agricultural Services and Producer Organisations Programme (PASAOP) in Mali and the Accelerated Agricultural Growth and Development Strategy (AAGDS) in Ghana.

With regard to research, this approach mainly involved:

- The strengthening of decentralised research structures with the aim of bringing these structures closer to their beneficiaries;
- The establishment of organisational liaison mechanism between research and beneficiaries, such as the RELCs in Ghana (Research-Extension Liaison Committee) and the Regional Committees for Agricultural Research and Extension (CRRVA) in Mali;
- Trials of new methods to provide research services tailored to producer demand, such as Participatory Technology Development (PTD) in Burkina Faso or the contracting between research institutions and the Regional Commission of Beneficiaries (CRU) in Mali.

In order to encourage research institutions to implement these measures, proposals were made to researchers within the evaluation system of the CAMES (African and Mauritian Council on Higher Education. See Annex 10 for further information). Thus, new criteria were introduced into the researchers' performance evaluation files which take into account technical extension documents (rather than scientific publications alone).

With regard to extension, the abandonment of the Training and Visit (T&V) system introduced under the aegis of the World Bank in the 1980s has coincided with the gradual introduction of extension methods based on contracting. The private sector has an important role to play in the provision of agricultural services. In Burkina Faso, for example, a pilot demand-led advisory-support project, based on contracting services, was tried out in 2002-2003 within the framework of Phase II of the National Agricultural Services Development Project (PNDSA II).

The new initiative of "*service offer in response to producer demand*" was implemented at regional, national and international levels.

Within individual countries

(i) ***An investment supported by Participatory Development Approaches (PDA).*** For example, several research and extension bodies were closely involved in a regional project to strengthen PDA capabilities in collaboration with the Royal Tropical Institute (KIT) and the World Bank[14].

[13] ODI/CIRAD/ITAD, 1999. Strengthening Research-Extension-Farmers' Organisations linkages in West and Central Africa. Overview Paper. Study commissioned by WECARD, the Department for Development and the French Ministry of Foreign Affairs. WECARD. (Dakar). The report can be viewed at: www.odi.uk/rpeg/coraf/overview.pdf.

[14] This project to develop the tools of Participatory Development Approaches (1997-1999) involved five West African countries (Benin, Burkina Faso, Côte d'Ivoire, Guinea, Mali) and Madagascar. Some components of the project are available at: www.kit.nl/about_kit/html/village_participation_in_agric.asp.

This project helped develop and broaden awareness of certain methods designed to improve and support producer participation in the innovation process (research and extension).

(ii) ***The development of tools designed to enhance the capabilities of producers and researchers***. Training modules to improve research partnership between researchers and producers were set up by research and extension institutions in collaboration with the International Service for National Agricultural Research (ISNAR).

(iii) ***The introduction of new financing mechanisms to allow direct allocation of public funds to producer organisations***. This process provided a basis for the creation of funds to finance research and development activity and agricultural advisory-support structures in several countries:

- Funds to support CNRA managed research and development in Mali within the framework of the Agricultural Services and Producer Organisations Programme (PASAOP);
- The Agricultural Extension Development Fund (AEDF) in Ghana;
- The National Fund for Agricultural and Agro-Industrial Research (FNRAA) in Senegal.

In most cases, the aim was to separate the *execution* from the *financing* of these projects, but there was also a need to ensure that those involved in providing these services were actually responding to producer demand.

(iv) ***The introduction of a new mechanism to supply agricultural services based on contracting***. This contracting of research or extension services is based on producer demand, as has been practised by the Research-CRU system of contracting (see Annex 10) in Mali, and the extension-PO system of the pilot demand-led advisory-support project in Burkina Faso.

(v) ***The gradual implementation of new techniques for managing research and extension organisations which allow producers to take part in decision-making.*** In certain semi-private institutions, producer participation in social capital gives them a say and an effective role in decision-making. This applies, for example, in the National Centre for Agricultural Research (CNRA) in Mali, the National Rural Development Agency (ANADER) in Côte d'Ivoire, the National Agricultural and Rural Advice Agency (ANCAR) in Senegal, and even in some cotton companies such as SOFITEX in Burkina Faso.

Within West Africa

(i) ***Much strategic thinking at the regional level in West Africa has influenced research mechanisms appropriate for providing agricultural services*** in order to improve research and extension results. Several strategic thinking forums covering West Africa and Chad are worthy of mention here, among them the Research, Extension and Producers' Organisations Partnership Network – REPO-Net[15].

(ii) ***Various regional initiatives aim to strengthen the capacities of producers and research institutions*** so as to optimise research findings, such as:

- The USAID/SAFGRAD Initiative on "Marketing Research Results" (Burkina Faso, Ghana, Mali, Senegal);
- The INSAH/USAID/ROPPA Initiative on "Transferring Technologies" (Burkina Faso, Niger, Senegal).

[15] Further information on REPO-Net is available in the Agricultural Research and Extension Network (AgREN) bulletin, No. 47, January 2003: www.odi.org.uk/agren/papers/newsletter47.pdf.

At the international level

It is particularly the strategic thinking carried out within the framework of the Neuchâtel Group which enabled development agencies to formulate a shared vision of financing for agricultural advisory-support services (See Box 1). Essential to this vision is the promotion of financing mechanisms which strengthen the beneficiaries' capabilities and power, most notably through contracting, in such a way as to guarantee service provider accountability to producers.

Box 1: The Neuchâtel Initiative[16]: Strategic thinking on extension policies

This is an informal group of representatives from cooperation agencies and bilateral and multilateral institutions involved in the development of the agricultural sector. Created in 1995 following a meeting organised by the Swiss cooperation agency in Neuchâtel, this group included representatives from the German (GTZ), American (USAID), British (DFID), Danish (DANIDA), French (MAE and AFD), Swedish (SIDA), Swiss (DDC), and Dutch (DGIS) cooperation agencies and representatives from the FAO, the IFAD, the European Commission, the CTA and the World Bank.

Its aim is to improve the effectiveness of extension services by:

- Strengthening the role of agricultural service beneficiaries in the identification of priorities and in the regulation of fund allocation and utilisation;
- The establishment of demand-driven services;
- The negotiation of cost sharing between producers, intermediaries, consumers, local governments, governments and the international community;
- The capitalisation on endogenous innovation developed by producers;
- The establishment of an independent advisory body responsible to the beneficiaries of agricultural services and financial partners to ensure improved monitoring of service quality.

Source: Edited text taken from "*Grain de Sel* no.27", a special issue for the 'agricultural innovation fair' organised by Inter-Réseaux, June 2004.

3.3 The response of private sector producers and agribusiness to the agricultural services reforms

Policies aimed at improving community and private sector accountability have been developed particularly through:

(i) The implementation of decentralisation; and

(ii) The drafting of regulatory and legal frameworks which encourage or strengthen the emergence of professional producer organisations, as well as moves to give the private sector a more significant role in providing agricultural services.

In the majority of cases, these liberalisation policies have helped to enhance farming capabilities which become increasingly involved in the contracting process. This is certainly evident in the Francophone countries of West Africa, particularly Benin, Burkina Faso, Côte d'Ivoire, Mali and Senegal. Here, the associative movement is stronger than in the region's Anglophone countries, where the contracting process has mainly been implemented by private sector actors.

This new vision of service provision determined by demand has played a fundamental role in facilitating producer access to agricultural innovation. In particular, it has allowed producer organisations to forge partnerships with research and extension institutions. These POs are then in a position to identify exactly what their producers require. There are several examples of this arrangement in operation:

[16] For further information, please go to the following Websites: www.neuchatelinitiative.net and www.lbl.ch/int.

- Partnerships between the Federation of Farmers of Fouta Djallon (FPFD) in Guinea, the Guinean Agronomic Research Institute (IRAG) and the National Service for Rural Promotion and Extension in (SNPRV) in Guinea;

- The National Federation of Naam Groups (FNGN) and the Environment and Agricultural Research Institute (INERA) in Burkina Faso.

Since demand stems from the producers, producer organisations within the framework of these partnerships have developed other processes facilitating access to agricultural inputs and the gathering and marketing of products. Such arrangements ensure much wider exploitation of agricultural innovation, such as the adoption of new, high-yielding potato varieties by the FPFD in Guinea, and cowpeas (niébé) and maize taken up by the FNGN and the Sissili Provincial Federation of Agricultural Producers (FEPPA-SI) respectively in Burkina Faso.

In conclusion, the new approach of "*demand-driven service provision*" adopted by research and extension organisations is a valuable development in terms of improving producer access to agricultural innovation. Nevertheless, the benefits of this approach to producers depend largely on the ability of producer organisations to analyse their own production environment, exposing concerns and translating these into projects upon which contracting with R&E organisations can be based. Ensuring equal access for all categories of producer depends particularly upon their level of involvement, commitment and representation within these agricultural structures.

In addition, the implementation of this vision in some countries, e.g. Ghana, has been based on measures aiming to the "marketing of research results" (Box 2). In Mali, the provision of agricultural support and advice within the framework of the PASAOP requires a minimum financial contribution of 20% of the total service agreement cost agreed with the private parties.

This raises the following questions: ***How best to support the most vulnerable groups of producers, which may be excluded from such organisations, in gaining access to agricultural innovation through this new vision of demand-driven service provision? What are the implications for R&E institutions?***

Box 2. The policy of "marketing research results" and producer access to agricultural innovation: the case of the Council for Scientific and Industrial Research (CSIR) in Ghana

Context and origin
During the 1990s, the problem of financing research led to a reduction in research activity. It was suggested that this situation could provide an opportunity to prepare documents for disseminating and marketing existing research results.

Objectives
In 1996, the government of Ghana set its Council for Scientific and Industrial Research (CSIR) the task of coordinating the marketing of research results from its 11 national research institutes. At present, the government expects the CSIR to generate around 30% of its own budget from such research sales revenue.

Results
The CSIR employs a highly qualified sales team and has a department devoted solely to marketing research results. Yet this body still has difficulty achieving its targets. Eight years after the introduction of this reform, the CSIR only generates 5-10% of its total budget from marketing research results, as opposed to the 30% it was supposed to raise. Only the palm oil research institute has been able to finance itself.

Lessons
New, high-yielding varieties of palm oil have been distributed thanks to the development of private tree nurseries which have made such varieties available to producers. This shows that the marketing of research results can be profitable for certain products.

…/…

…
In general, however, the marketing of research results in Ghana has had a limited impact upon access to agricultural innovation. These results demonstrate the complexity of this issue and raise three basic questions which should be kept in mind before embarking on any such projects:

- ✓ ***To which products should the marketing of research results apply?*** *Since the sale of research results is not necessarily profitable for all products, it is preferable to draw up a list of products which present greater marketing opportunities than other products.*

- ✓ ***What other support measures should be taken to ensure successful marketing of research products?*** *This would involve drawing up an inventory of agricultural inputs (seed, seed costs, fertilisers, availability of crop inputs, etc.) which are required in order to encourage innovation in relation to these products.*

- ✓ ***Upon which production categories should the proposed innovation focus?*** *Finding the answer to this question is a way of identifying target producer categories which are in the best position to adapt to innovation given the necessary and available resources. It also allows additional measures to be taken to ensure access to credit (for purchasing crop inputs), particularly for the most vulnerable producer categories.*

Another concern is the ability of research and extension organisations to assert themselves effectively through this new approach. In spite of initiatives to re-work promotion and evaluation criteria for researchers (e.g. the CAMES System), questions over the status of agricultural research and extension organisations remain. What status should public R&E institutions promoting this logic of "*demand-led services*" have? What incentive mechanisms are there for their staff? How should they be evaluated?

Finally, the reduction in human and financial resources and the very limited representation of extension organisations on the ground pose a major problem. This situation is due to the difficulties created by structural adjustment policies, particularly the lack of human, financial and physical resources in an environment where the majority of producer organisations still do not have the capabilities required to provide adequate agricultural services. This in turn raises the question of ***how to manage the "institutional void" which is obstructing producer access to innovation in so many countries?***

3.4 The cotton sub-sector: an example of an integrated innovation process[17]

Context

With very few exceptions, the cotton producing regions of West Africa have always been seen as areas hugely reliant upon agricultural inputs and innovation. Such success of technology can generally be attributed to the convergence of several factors, i.e.:

- Investment supported by the States and cotton companies to cover basic social provision and production – an approach often called "community development" (c.f. Innovation processes in the cotton sub-sector: CMDT, Mali, Annex 2),

- A demand-driven innovation process.

Nevertheless, over the last decade, most West African cotton producers have embarked on a restructuring programme which is based upon liberalisation and privatisation. Using the cotton sub-sector as an example of the innovation process highlights important questions regarding producer access to innovation in this new environment. Most of the questions remain unanswered, since some of

[17] Extract from: The innovation process in the West African cotton sector: Stakes and challenges for producers in the liberalisation/privatisation of the cotton commodity sub-sector, Zoundi, S.J., 2004, ROPPA.

the reforms are in their very earliest stages. But the issues exposed should allow different actors (producers, governing bodies, development partners) to further their strategic thinking on the most viable options for reform, particularly on how to guarantee producers better access to agricultural innovation.

In response to numerous challenges and stakes in terms of productivity and fibre quality, cotton companies have invested directly in the innovation process, on the one hand by supporting the development of technology and, on the other, by managing agricultural advisory-support mechanisms, as is the case in Burkina Faso, Benin and Mali. Company involvement in agricultural advisory-support structures has mainly been in the form of recruitment and in the setting up of networks of advisors working directly with producers in order to adapt, demonstrate and widen dissemination of new practices and technologies. In Burkina Faso, for example, a network managed by the Burkina Textiles and Fibre Company (SOFITEX) boasts 100 Cotton Correspondents (CC) and 275 Cotton Technicians (ATC) (Zoundi, 2004[18]). In Mali, a CMDT-managed network had 1,000 agents before it was streamlined and its personnel cut by half.

The creation of new technologies within the context of liberalisation and privatisation

In some countries, including Burkina Faso, the move towards liberalisation and privatisation has been accompanied by a reinforcement of the producers' role in the cotton sector and their greater involvement in decision-making regarding the provision of agricultural services. Producer participation in the governance and management of this sector has allowed them to direct research and extension services according to their own needs. One clear example of this is the National Union of Cotton Producers (UNPCB) in Burkina Faso, which is granted 30% of SOFITEX's social fund (Zoundi, 2004). Moreover, producers form the majority (7 out of 12 members) of the company's Management Committee (CG), also furthering opportunities for them to have their wishes heard. In some cases, producers are even stakeholders in extension and research organisations. The Regional Union of Savannah Cooperatives in Côte d'Ivoire (URECOS-CI), for example, owns 16% of the shares of the National Centre for Agricultural Research (CNRA) and an 8% share in the National Rural Development Agency (ANADER) (URECOS-CI, 1999[19]).

Liberalisation measures focus on the disengagement of the State and increased engagement of economic operators in the supply of agricultural inputs in the marketing and provision of other services. Inter-professional associations which unite producers, ginners and other private actors become the means of managing how this sector operates. Nevertheless, while the increased presence of private operators in this mechanism constitutes a considerable improvement, concerns remain over their level of capability to manage certain essential activities, particularly essential to govern producer access to and utilisation of technology.

Present levels of support for research in the cotton sector give grounds for suggesting that mechanisms to generate new technology will not be achievable in the medium term. For the most part, support is in the form of State research institutions which are dependent upon other ministerial departments. This is certainly the case in Burkina Faso. The trend witnessed in all these countries is for the technology creation process to be dependent on the regulations governing contracting. Mechanisms established for decision related to funding enable producers to have their say in the decision-making process. Consequently, the basic issue is no longer one of understanding how research institutions can operate in terms of producer demand. The primary concern is the ability to strengthen and ensure the survival of research services which involve public research bodies, in an environment where privatisation continues to take on increasingly more significance. Research requires significant investment.

[18] The cotton sub-sector in Burkina Faso: Producers' situation and position, Zoundi, S.J., 2004. Document drafted for the Farmers Confederation of Faso (CPF).

[19] The URECOS-CI's position in the socio-economic development of the Côte d'Ivoire. Document drafted for the international workshop organised by the World Bank on "Agricultural Producers' Organisations: Their contribution to rural capacities building and poverty reduction", World Bank, Washington DC, US.

The question remains over how to ensure the authorities' accountability for technology generation. Is this a way for producers in the cotton sector to keep a strategic watch on their industry?

Challenging producer responsibility through contracting advisory and support services

In most cases, the provision of agricultural services is based on contracting, and mechanisms designed to ensure service providers are acting in response to producer demand.

However, such arrangements seem to favour private service providers, *raising concerns that the provision of quality services to producers could be left to drift.* This is certainly an issue in Mali, where the creation of a cotton producers' organisation is integral to the restructuring of the cotton sub-sector, as are trials and implementation of an agricultural advisory-support mechanism established by the private sector. Once again, this raises questions of how to ensure producers' needs are met in the provision and guaranteeing of quality services.

Support and advice managed by cotton companies

The logic of this integrated industry requires that each cotton company recognises its own involvement in the entire chain from production down to selling cotton. Producers, particularly those of the UNPCF in Burkina Faso, certainly appear to have assimilated this principle, against a backdrop of advancing liberalisation in the central and western cotton regions.

However, this gives rise to the following questions:

(i) How can cotton companies be persuaded to take on responsibility for the cost of an advisory-support mechanism, when maximisation of profits is their guiding principle?

(ii) How can the risks of an uncoordinated approach to support, advice and dissemination of innovation in this cotton sub-sector be minimised in the context where the State has entirely withdrawn its involvement? How can credibility, policing and pressure be maintained so that discipline is respected in a new environment where corruption and influence will, from now on, become normal practice?

Advisory-support mechanism managed directly by producer organisations (POs)

The direct provision of advice and support by the POs themselves could be seen as one stage in the process of making producers accountable. These POs would then be better able to make their voices heard by the ginning companies. However, this raises the question of how to ensure that producer organisations have the necessary capabilities to manage such advisory-support structures autonomously. It is essential to weigh up the advantages in terms of *strengthening the producers' power of veto* against the disadvantages linked to the *bureaucratisation of the POs and the risk of diluting their efforts to the detriment of other more strategic issues* such as participation in the formulation of agricultural policy.

Access to resources needed to adopt new technology (inputs, equipment, etc.)

Access to agricultural inputs and equipment is essential to the effective utilisation of technology. These inputs are applied on cereals as well as cotton. In this regard, initiatives to transfer accountability to producers in Burkina Faso have highlighted the complexity of the operation in terms of controlling costs associated with domestic transactions (taxes), on-time delivery to producers and financial guarantees (Ouedraogo *et al*., 2004)[20].

[20] Ouedraogo, D., Lauby/Samandoulgou L., 2004. *Situation des lieux, enjeux et perspectives de l'opération "Intrants Céréales" de l'Union nationale des producteurs de coton du Burkina.* Final Report MAHRH/PA/OPC/UNPCB.

Lessons and questions

(i) Bringing support and advice within the reach of producers has proved beneficial to producers' assimilation of new skills and the improvement of their production system. Investment by the States and cotton companies has turned cotton-producing areas into models of progress in terms of developing of new technology. *How can this momentum be maintained in the current liberalisation and privatisation environment so that West Africa's cotton industries can improve their competitiveness?*

(ii) *What are the consequences of reform in the cotton sub-sector, in particular as concerns the increasing tendency to privatise research? What consequences do such measures have on African countries' dependency on other States to generate innovation (matters of sovereignty)? What are the implications for social equality, i.e. guaranteeing all categories of producers access to agricultural innovation?*

(iii) In addition to strengthening producers' technical and economic capacities, a further significant challenge is posed in creating an environment favourable to increased investment in cotton production, particularly in encouraging the application of innovation. This raises further questions:

- ✓ *Is guaranteed minimum pricing the best way to attract investment for innovation? Do the POs have sufficient influence on policies to negotiate a guaranteed pricing system? What are the alternatives to this?*
- ✓ *Is the promotion of cotton processing at regional and local levels an adequate defence against price fluctuations on the world cotton market?*
- ✓ In most cases, domestic operating costs, e.g. taxes (VAT in particular), transport and handling, are huge. This has an adverse impact on producers' ability to invest and on cotton production costs. Notwithstanding producers' attempts to control the supply and distribution of inputs, the priority continues to be their effectiveness in influencing national policy on domestic taxes on inputs. *Which policies concerning supply of inputs are the most important for cotton and other businesses within the "cotton system"?*
- ✓ *How can the sustainability of "cotton systems" be guaranteed in an environment which encourages agricultural innovation? In certain cases, the environmental sustainability of a production system is compromised because of inadequate land ownership legislation which discourages producers from investing in the management of sustainable soil fertility techniques. How can this be resolved when producers are experiencing increasing difficulty obtaining fertilisers?*
- ✓ Analysts (Fok, 2003[21]) claim that the future of the West African cotton industry rests upon addressing technological challenges aimed at the improvement of productivity and competitiveness. In the light of price increases for inputs, which can sometimes represent more than 70% of total production costs, it is increasingly important to explore alternatives which will reduce these costs as much as possible. Statistics show that at least 20% of the world's cotton output is from genetically modified crops and that the area sowed to genetically modified cotton (sometimes known as Bt cotton) was 6.8 million hectares in 2002 (Nubukpo, 2004[22]), which is 14 times the total area sown to cotton in Burkina Faso or Mali. *What part should biotechnology play in improving the competitiveness of African cotton?*

[21] Fok, M., 2003, *Préserver un futur au coton africain: La revendication légitime d'équité dans les échanges mondiaux ne sera pas suffisante.*

[22] Nubukpo, K., 2004, *L'avenir des filières cotonnières ouest-africaines: quelles perspectives après Cancun ?* Communication to the Commission Économique de la Francophonie, Paris (France).

Beyond the biotechnology debate, improvements to productivity and in the cost/quality ratio in the context of a fair market (free from any subsidy) will surely prompt West Africa's cotton producers to ask which technological improvements are most likely to ensure that West African cotton can compete with cotton from China, the US or Europe? Is this the technological challenge of the future[23]?

3.5 Land ownership and producer access to innovation

Land ownership is still a fundamental issue for West African producers. With rural land in particular, concerns regarding agricultural investment are perpetuated by the clash of legal rights versus common practice. Many producer organisations in the region, such as the National Women Farmers' Association (NAWFA) – a women's association in the Gambia –, the Coordination Framework for Umbrella Producer Organisations (CCOF) in Burkina Faso and the Association of Professional Peasant Farmers' Organisation (AOPP) in Mali (see Box 3) have all made land ownership an area of strategic thinking and action.

Box 3. Access to land, conflict and agricultural innovation[24]

The Gambian association NAWFA and the AOPP of Mali held a special meeting to discuss land issues during the SWAC Secretariat's regional workshop in Ouagadougou on 15-16 June, 2004. The meeting allowed participants to share their experiences of the participatory processes under way in Mali and Niger concerning land, and to highlight the links between access to land and access to and adoption of innovation. These processes mainly take the form of consultation between actors involved in land ownership (local actors, administrative and political authorities, local authorities, researchers, etc.) at local and national levels. Their intention is to encourage access to natural resources while reducing conflict. The key stages in these participatory procedures were as follows:

- ✓ The identification of key actors in land matters: relevant ministries, federated or umbrella producer organisations, researchers, university, etc.;
- ✓ A documentary review by specialists (universities, researchers, etc.);
- ✓ The gathering of data through dialogue in each country's regions and territories;
- ✓ The establishment of dialogue, visits and analysis of experiences of land conflict and how such conflicts are settled.

This approach identified several local solutions to address conflict, access to natural resources and land tenure security which could be used as guidance for other West African countries, for example informal negotiating forums to settle disputes over access to natural resources and local negotiations between livestock and crop farmers over the use of pasture and water courses. Such local solutions, which have proved successful, are not adequately recognised; they merit attentive observation and dissemination within West Africa.

Niger's 1993 Rural Code reform illustrates an attempt to address conflict regarding land tenure by means of national legislation implemented in a participatory context. The reform is based upon the establishment of multi-actor commissions made up of individuals and institutions involved in land management. Each actor has specific responsibilities: for example, traditional local authorities sign the land leasing or sale contracts.

These discussions led to the following conclusions and practical recommendations:

- ✓ Experiences and ideas for the resolution of land disputes should be shared with local, regional and national partners;

…/…

[23] Even though, at present, West African cotton is seen to give the best return on sales.

[24] Extract from discussions at the Ouagadougou workshop on agricultural innovation (see workshop documents at http://www.oecd.org/sah/agritransformation).

…

- ✓ Problems and types of access different groups of actors and social classes affected by land tenure have should be analysed;
- ✓ Local actors and producers should anticipate the publication of legal texts on land tenure and the importance of the participation of rural actors from every category in the drafting of such legislation.

It was recommended that issues of land ownership be approached as part of an ongoing consultation and adaptation process which would allow land laws to be re-interpreted with due consideration for producer practices and strategies.

All the strategic thinking and actions relating to the management of natural resources and "*land tenure security*" highlight the need to develop participatory approaches which enlist the accountability and engagement of local communities in the formulation and implementation of land ownership regulations adapted to local circumstances. This would necessitate:

- The implementation of local conventions recognised in law by local authorities within the framework of decentralisation. This is already taking place in Mali and Senegal;

- Trials approaches to rural land planning in rural surroundings, an initiative put into practice by the ongoing Pilot Initiative to Promote Land Tenure Security (OPSF) in Burkina Faso.

The absence or inadequacy of land tenure policies often places obstacles in the way of marginalised social groups (foreigners and late settlers, women, the young, migrants, etc.) attempting to adopt the agricultural innovation which attracts substantial inward investment in soil fertility management. This is a particular problem in the cotton-growing region of western Burkina Faso where non-native and non-landowning groups are hindered from investing in soil fertility innovation, thereby increasing the threat to the sustainability of their productive land. Similar problems are also experienced in the livestock sector where lack of secure land tenure limits the promotion of certain innovations, e.g. the production of fodder and improvement of natural pasture.

This situation has led to the increased conferment of authority on settled communities with regard to resource management and access to land.

3.6 The role of young people in promoting agricultural innovation

Youth is a concern for several West African countries, not only due to its role in socio-economic development but also because of security implications. Almost 50% of West Africa's population is made up of the young and the difficulties they face in becoming economically active make them recruitment targets for warlords.

This explains the significance of the issue and the development of initiatives in several countries, e.g. the national strategy in Burkina Faso to persuade young people to stay in their own localities, or the Association for Promoting Employment for the Young (APEJ) in Mali.

The issue of the role of the young in agriculture is approached in different ways in different countries. In Burkina Faso and Mali, the initiatives of political authorities have had mixed results. Annex 3 lists several strategies developed in Burkina Faso.

Based on outcomes in Burkina Faso and Mali, the main lessons to be learned from such initiatives are as follows:

(i) Thanks to support from various projects, programmes and NGOs, many youth organisations are developing new agricultural technology, e.g. the Young Farmers' Professional Organisations from the East in Burkina Faso which has forged a strong relationship with research. Nevertheless, certain weaknesses remain on a political level:

- The poor commitment of policy makers to socio-educational investment;
- Inadequate training for the young in financing agricultural production activities, product marketing support and access to land.

(ii) Unsuitability of approaches adopted, i.e.:

- Top-down approaches which do not encourage any real appropriation of action by beneficiaries;
- Administrative systems which do not encourage sufficient involvement and accountability on the part of producer organisations and the private sector.

3.7 Lessons and questions

(i) Analysis of socio-economic, political and institutional factors influencing the innovation process reveals the relevance of reforms undertaken by research and extension organisations, particularly those relating to promoting *demand-driven service provisions*. This approach strengthens producer capabilities and improves their level of accountability, two factors which help to better capitalise on agricultural innovation.

However, this situation raises several questions:

- *How can fair access to agricultural innovation be guaranteed for all categories of producers, particularly the most vulnerable, by this new approach, when producer organisations are required to demonstrate certain capabilities? What are the implications for research and extension institutions in terms of approach and for decision-makers in terms of policy selection?*
- *What status do research and extension institutions have in this new environment of service provision driven by demand? What status do their staff have? Which criteria and evaluation methods are appropriate under this new vision?*
- *Which policies and actions need to be promoted to encourage research institutions to engage in this process of demand-driven service provision while continuing in their strategic and scientific monitoring role?*

(ii) Access to agricultural services is increasingly conditional upon *financial commitments* from beneficiaries. Without challenging the basis for this approach, which is designed to improve the accountability of beneficiaries, the following question remains: *how can access to innovation be guaranteed, particularly for less wealthy producers, who work in high-risk environments? How can such reforms be modified according to the status of the groups using these agricultural services?*

(iii) As a result of economic reform, notably structural adjustment policies, the availability of public services has been decreasing faster than the private sector and professional producer organisations have been able to develop. In certain cases, this has created a void in the provision of agricultural services, again calling into question the sustainability of financing mechanisms for R&E institutions.

In such circumstances, producers have begun to question the *accountability and sovereignty of States* over innovation creation, and the guarantees of access for all producer categories prompted by concern for *social equality*. *Is it this concern which has encouraged the government of Ghana, for example, to continue supporting small farmers under the Accelerated Agricultural Growth Development Strategy (AAGDS), while farmers in more commercial sectors have to pay for agricultural services provided by the private sector? To what extent should public authorities be engaged in and responsible for the development of new technology and access to innovation for all producer categories in an environment of liberalisation and privatisation of agricultural services?*

(iv) Land tenure security in rural communities plays an essential role in facilitating producer access to certain agricultural innovations, particularly those concerned with preserving production capital (soil and water conservation techniques, agro-forestry). The lack of land security policies limits the ability of certain producer groups, such as women, the young, and migrants, to invest in agricultural innovation.

(v) Encouraging young people to remain within their own communities could be seen as a solution to issues relating to integration into the urban job market. In Mali, for example, studies suggest that some young people are returning to their home areas precisely because of these entry barriers to urban living. *Which policies would encourage the rural young to capitalise on innovation and contribute to job creation in rural areas and thus to the willingness of young people to remain in rural areas? What roles should be played by different actors (the State, producers, the private sector)?*

(vi) The cotton industry is a shining example of an innovation process driven entirely by demand, an accessible advisory-support structure and a marketing system which creates the income producers require. Investment by government and the cotton companies has played a key role in disseminating innovation. The cotton sub-sector also demonstrates the importance of synergy between integrated approaches which aim to cover communities' basic social requirements and improve agricultural production and productivity. The reform process underway in the cotton sub-sector has provided the impetus for all actors (governors, development partners, producer organisations) to establish a basis for efficient innovation and the improvement of the competitiveness of West African cotton.

IV. AGRICULTURAL INNOVATION AND IMPROVEMENT IN LOCAL COMMUNITIES' LIVELIHOODS AND REGIONAL OPPORTUNITIES

4.1 Agricultural innovation and regional opportunities

West Africa offers major regional opportunities. Several products are already traded and transformed at regional and cross-border levels, in particular. Cross-border trade, for example, covers livestock (large cattle, poultry), certain dry traditional cereals (millet, sorghum, maize, in particular), rice, oil seeds and pulses (black-eyed peas, soy, etc.), fruit and vegetables (citrus fruit, pineapples, manioc, bananas, tomatoes, onions) etc.

However, producers and POs are not provided with sufficient information on agricultural innovations available at the regional level. The work of the INSAH, which consists in listing promising technological innovations at the regional level, is therefore key. Concrete innovation examples (physical, institutional or organisational) with strong regional potential, presented at the regional workshop on agricultural innovation in June 2004 (see table), supplement other initiatives such as those of the INSAH and the 'farmer innovation workshop-fair' in Ségou, Mali, jointly organised by Inter-Réseaux, the IFAD and the CTA in March 2004 (see innovation details at the following address: http://innovation-paysanne.info).

Experiences shared at the innovation process workshop

Country	Institution (s)	Theme / sector	Innovation factor / factor promoting innovation
Burkina Faso	Burkina Faso Ministry of Agriculture	The role of young people in innovation.	Setting up a training and post-training support policy for young farmers.
Burkina Faso	FIAB	Partnership between processing companies and producers.	Contracting between processing companies and cereals producers creating lucrative markets for these products
The Gambia	NAWFA, National Women Farmers' Association	Access to land and innovation for women	Allocating a participatory approach to the allocation of land to women's sesame producer groups, members of NAWFA to national institutions and village chiefs. In 26% of villages where NAWFA is represented, women have already received at least 5 ha. They can thus make long-term investments without the risk of their land being taken away from them.
Gambia	NAWFA / CRS GM (NGO) / export companies	Producer organisation, facilitating role of NGOs and sesame exporting companies	New high-yielding varieties and new processing technologies for agricultural products, fostering better links between production and the market.
Ghana	HAG	Partnership between family farms and agribusiness.	Contracting between family farms and agribusiness concerning horticultural products (mainly pineapples), thus creating access opportunities for agricultural inputs and markets.
Mali	IER	Innovation policies and processes for producers forced to focus mainly on self-sufficiency	Support to producer organisations so they may influence and contribute to the development and circulation of technologies. Example of Regional Commission of Beneficiaries (CRU) and the National Commission (CNU) in Mali
Mali	AOPP Association of Professional Producer Organisations	Endogenous innovation process and producers' access to agricultural innovation.	Several types of technical and organisational innovations (see http://innovation-paysanne.info)

Country	Institution (s)	Theme / sector	Innovation factor / factor promoting innovation
Mali	Sasakawa Global 2000 (SG2000)	NGO acting as an interface between the private sector and producers.	The NGO plays a bridging role between the private sector and producers by providing information and negotiating prices for producers, thus creating a lucrative cereal market.
Mali	WARDA	Rice/NERICA: regional innovation opportunity in the rice sector.	New varieties produced by crossbreeding African and Asian varieties; regional and international partnerships to promote them
Nigeria	IITA	Manioc: growing regional economic importance.	New disease-resistant manioc varieties and product processing technologies: regional partnerships for promotion at the NEPAD level.
Nigeria	Okomu Oilpalm Company Plc.	Palm oil	Agricultural produce processing technology and new high-yielding varieties; contracting between agribusiness and family farms, creating access opportunities for agricultural inputs and profitable markets.
Senegal	SAED	Vetiver	Multipurpose plants (fight against erosion, cottage industry, chemical and industrial use)

Source: K. Hussein, J. S. Zoundi, L. Hitimana, 2004, *The Transformation of West African Agriculture: Towards New Partnerships for Agricultural Innovation*, Sahel and West Africa Club / OECD, October. (www.oecd.org/sah/agritransformation).

The fundamental question is then *what could be the role of innovation in optimising these regional opportunities?* This question fully justifies interest in the role of innovation in improving the value added to products with regional potential and their contribution to economic development and the improvement of West African producers' livelihoods.

4.1.1 Innovation example concerning a product showing regional potential: rice

Context

Besides cotton, which is a cash crop mainly exported to international markets (except in Ghana and Nigeria where almost all cotton production is used by local industries and the cottage industry sector), rice is a highly strategic regional crop and offers considerable profit potential through the regional market. Its strategic importance and value lie in the fact that the West African region is currently being drained of hard currency due to massive rice imports.

Regional rice production has to deal with several issues and tough competition from imported, cheaper Asian rice, mainly through *dumping*[25] practices. Paradoxically, the region has strong rice production potential with vast cultivable zones in Mali, Guinea or Côte d'Ivoire. In Mali, for example, the authorities have shown their ambition to make this country the "*the Sahel's rice granary*" focusing on the irrigable potential of the Office du Niger evaluated at 1 million hectares. Yet for the time being, this is nothing more than wishful thinking. The example below offers an insight into the issues and challenges involved in this crop. It demonstrates the role agricultural innovation could play – particularly in Mali – owing to its considerable rice production potential.

[25] Dumping refers to a practice whereby a product is exported at a price that is lower than its production cost. One of the ways to achieve this lower price involves subisidising producers or exporters.

The scale of production systems and high consumption of rice make it a regional crop. In Mali and Senegal, for example, average annual per capita consumption is 42 and 72 kg respectively (Yamdjeu, 2003[26]).

Despite efforts made by West African States and subsidies granted to the sub-sector in certain countries like Senegal, the development of this crop remains tied to the production and trade policy of Asian countries. In the years preceding the devaluation of the CFA Franc (1991-93), for example, rice production in the seven WAEMU countries reached 950,000 tonnes (WAEMU/FAO, 1994). This production was equivalent to imports which were estimated at almost one million tonnes, i.e. around $ 250 million.

The situation remains unchanged despite the devaluation of the CFA Franc in 1994. Many observers believed that devaluation would improve the competitiveness of local rice production, but the opposite has occurred. In certain countries, the situation has even deteriorated, like in Senegal for example where imports rose from 435,500 to 709,575 tonnes between 1995 and 2002 (Yamdjeu, 2003). At the last WARDA board meeting, held in Cotonou, Benin, in 2003, a request was made to adopt policy measures to regulate imports or even protect the WAEMU zone. Countries are currently making efforts in terms of hydro-agricultural development and the promotion of effective technology. Mali, for example, has tremendous irrigable land resources (approximately 2,200,000 hectares) of which under 10% are actually farmed. Annual paddy rice production amounts to 735,000 tonnes. Through the introduction of a new development and irrigation policy, this production should increase to 4.5 million tonnes by 2010, according to an optimistic forecast that confirms that Mali could be the Sahel's rice granary (Yamdjeu, 2003).

The role of innovation in improving the competitiveness of rice

In Mali, local rice production allows relative national self-sufficiency (over 90%). In 1999, the rice sector contributed 44 billion CFA Francs to the country's GDP (5% of GDP), just behind livestock and cotton (Yamdjeu, 2003). As well as the investment policy (development of new irrigable land by the Office du Niger – ON), this revival, which started with the restructuring of the ON in 1994, is mainly due to the efforts made in agricultural intensification.

In the Office du Niger zone, the different stages of the 'Programme for the Improvement of Small-Scale Rice Cultivation in the Office du Niger' (ARPON) put a strong focus on intensification. This, in particular, has resulted in:

(i) The promotion of more productive and appropriate technologies developed with the support of agricultural services: higher yield varieties, crop management (pricking out, soil preparation), post-harvest technology, etc.

(ii) Support to the organisation of upstream and downstream production services (credit systems, organisation of small-scale producers (CAFON) for the production of equipment needed to apply new rice production and processing techniques, etc).

(iii) Support for producers' organisations (village associations) for better upstream and downstream control of production.

Producers and supporting services believe that this environment has facilitated the implementation of various technology packages. Productivity levels have risen from 3 tonnes during the restructuring period to over 6 tonnes today.

[26] Yamdjeu Wambo A., 2003. 'Quel prix pour le riz ? Du grain à moudre pour les politiques nationales et régionales'. *Grain de Sel* N° 25 December 2003, pp 17-19.

The regional dimension of rice and the role of agricultural innovation

"*Mali, the Sahel's rice granary*" is a slogan which reflects policy makers' regional ambitions for rice produced in Mali. This dynamism is encouraged by Mali's competitive advantage in rice production in comparison with certain countries like Senegal. Studies conducted after the devaluation of the CFA Franc in 1994 (WAEMU/FAO, 1994) clearly indicated that Mali and Côte d'Ivoire were countries where national production could be competitive.

Since the implementation of the WAEMU TEC – Common External Tariff – in 2002, local rice has been competing directly with imported rice. Likewise, the introduction of the VAT on agricultural inputs has created additional costs added onto the sales price of local rice, thus lowering its competitiveness with imported rice.

Yet rice production potential in the region has increased with market opportunities arising in other countries in the region like Burkina Faso or Guinea. Several measures could be taken to deal with this situation:

- Agricultural market protection with respect to a few agricultural imports in the WAEMU zone as demanded by producers like ROPPA as part of the strategic "*Food sovereignty*" vision;
- Regulation of imports within the WAEMU zone;
- The granting of subsidies to locally produced rice, if only by reducing taxes on agricultural inputs, which certain inland countries, such as Mali, Burkina Faso or Niger, are unable to do owing to the role played by the tax system in producing national revenue;
- A significant reduction in the cost price of local rice through improved productivity and cost-effectiveness.

For many specialists, innovation should help raise certain urgent challenges, in particular the improvement of productivity, quality and cost-effectiveness as well as the creation of opportunities to capitalise on local rice.

(i) Innovation in terms of improved productivity, quality and cost-effectiveness. Improving productivity involves developing and distributing effective, productive and disease-resistant varieties of rice and introducing technology to support these varieties (crop systems: pricking out, preparation of the soil, fertility management, fight against disease and pests, etc.).

In recent years, a major step forward has been made concerning these varieties with the development of NERICA (New Rice For Africa) by the WARDA (WARDA, 2001a[27]; WARDA, 2001b[28]). An ongoing initiative has been set up to promote NERICA varieties at regional level. This takes into account tests on adaptation of Asian varieties to the West African environment, as well as the promotion of supporting technologies. A programme supported by the African Development Bank (ADB) is also being developed in this area. It involves seven countries (Benin, the Gambia, Ghana, Guinea, Mali, Nigeria, Sierra Leone). Besides adaptation and socio-economic evaluation issues, these actions also take into account seed production technology.

For quality and cost-effectiveness issues, research in post-harvest technology (threshing, storage of the paddy, machining technology, etc.) should produce high quality rice at very competitive cost prices. The quality of processed rice is considered to respond very well to consumer requirements (in particular for the Côte d'Ivoire market).

[27] WARDA, 2001. New Rice for Africa (NERICA), WARDA, Abidjan (Côte d'Ivoire).

[28] WARDA, 2001. *Bintou et son nouveau riz pour l'Afrique : Briser la spirale de la culture itinérante dans la région la plus pauvre du monde*, ADRAO, Abidjan (Côte d'Ivoire).

(ii) *Innovation in terms of creating opportunities for capitalisation on local rice.* Technology research on the processing or adding value to broken rice is a relevant alternative that could encourage innovation. The WARDA is currently carrying out a range of initiatives to use broken rice, traditionally considered to be worthless, as a type of flour for pastries (cakes, croissants, pancakes, etc.), partially or totally replacing wheat flour. Estimates show that the development of appropriate processing technologies can upgrade broken rice with a commercial value of 50-60 CFA Francs per kg to a more competitive product (50% rice flour and 50% wheat flour) for use in pastries for a saving of almost 125 CFA Francs per kg (around 275 CFA Francs per kg for this mixture as opposed to 400 CFA Francs per kg for pure wheat flour). 100% transformed rice products also have the advantage of being gluten-free (certain consumers being gluten-intolerant).

In short, the development of appropriate technologies to process broken rice offers opportunities to improve margins for local rice producers.

Questions raised

Although innovation can play a role in improving national or regional competitiveness of rice, the following question deserves to be asked:

What role can innovation play in a regional context characterised by low protection against strategic speculation like rice? How can obstacles linked to divergent countries' agricultural policies within the WAEMU and ECOWAS be overcome so that regional policies may take into account this concern?

Two major lessons emerge from this case study:

(i) **An obvious role for agricultural innovation in optimising this regional opportunity** by contributing to improved rice productivity, cost-effectiveness and added value. Several types of innovation are required to improve productivity:

- High-yielding varieties such as NERICA, with good nutritional value and resistant to disease and pests;
- Appropriate crop technology (crop systems, fertility management, integrated management of production and pests);
- Post-harvest techniques aiming to improve yield through processing and rice quality improvements.

As far as improving quality and the added value of rice are concerned, agricultural innovation should aim to solve the following issues:

- Meeting consumer requirements by improving the quality of processed rice (improved storage of paddy rice and processing for high processing yield and better quality of processed rice);
- Providing added value to local rice, in particular by developing the processing for broken rice.

(ii) **Current policies do little to promote agricultural innovation**. A few technology packages have already been implemented, as is the case of NERICA varieties or GIPD techniques. However, the current challenge facing States is to promote the use of such innovations as illustrated by ongoing programmes designed by the WARDA to promote varieties of NERICA in several countries in the region. Yet this step raises many questions:

- *How to promote West African rice producers' real investment in agricultural innovation revolving around rice as a "strategic product" in an environment where local rice production has little protection (e.g. the WAEMU external tariff) and where an international practice of " dumping" continues to exist?*

One of the major problems is the divergence of agricultural policies between countries in the region. The major concern is identifying how to overcome obstacles in the implementation of a regional policy conducive to the development of the rice sub-sector.

- *How to promote better use of agricultural innovation for rice production when producers struggle to access agricultural inputs owing to their countries' excessively high taxes?*

4.1.2 Example of livestock products showing a regional opportunity: local chicken or "poulet bicyclette[29]" in Burkina Faso

Context

The Sahelian countries of West Africa show enormous potential in livestock products, in particular for meat (beef, small ruminants), but also local poultry, produced mainly in Burkina Faso, Mali and Niger. These products are already intensely traded at regional level, essentially between the Sahelian and coastal countries (Benin, Côte d'Ivoire, Ghana, Nigeria, Togo, etc.). Other Central African countries, such as Gabon, are part of the trading zone for ruminant meat. Despite the regional market potential shown by the coastal zones of West Africa, they tend to import large quantities of frozen meat from Europe and Latin America, Argentina, in particular. Local poultry production is an area where innovation has had a spectacular effect, making Burkina Faso the regional reference in so-called traditional poultry production.

The case study on "*poulet bicyclette"* in Burkina Faso not only demonstrates the existing market potential for local poultry but also acts as a model where exogenous and endogenous innovations have allowed small farms to connect to markets and thus improve their income and livelihoods. This example is a real success story in terms of agricultural innovation in Burkina Faso and also shows possible synergies between Sahelian and coastal countries.

Agricultural innovation in local poultry or "*poulet bicyclette*" in Burkina Faso: *A synergy between endogenous and exogenous innovation processes*

Traditional poultry farming is essentially rural and a cornerstone of the family economy in rural areas. Its strategic importance lies in the fact that this production involves at least 5 to 6 million small rural producers and produces intense trading between Burkina Faso and other countries in the West African region, and in coastal zones in particular. It is almost always practised in family farms and the latest inventories conducted in 2003 indicate a population of 24 million hens and 6 million guinea fowls.

Nationally, traditional poultry farming covers practically all urban households' poultry meat requirements. For example, in the case of Ouagadougou only, studies conducted in 1998 (Ouedraogo and Zoundi, 1999[30]) indicate that over 20,000 poultry (hens and guinea fowl) are sold every day. This represents over 5.8 billion CFA Francs distributed annually to rural producers but also over 5 billion CFA Francs distributed between the different actors working in the processing and sale of chickens.

Regionally, "*poulet bicyclette*" trading involves live animals (especially with coastal countries) but the sale of poultry meat has progressively increased in recent years, especially in Benin, Togo and Senegal.

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[29] The name "Poulet bicyclette" (or "bicycle chicken") comes from the fact that these chickens, produced in rural family farms, are taken to the nearest market on bicycles, usually hanging from the handlebar. Nowadays, with the development of sales, these chickens are taken to large towns in trucks by collectors and dealers and even by train for animals exported to Côte d'Ivoire. However, chickens are still usually transported to primary markets by bicycle.

[30] Ouedraogo S., Zoundi S.J., 1999. *Approvisionnement de la ville de Ouagadougou en Poulet de chair. « In » Agriculture urbaine en Afrique de l'Ouest : Une contribution à la sécurité alimentaire et à l'assainissement des villes* – Smith O.B., CRDI, Ottawa (Canada).

Reasons for technological success

Local poultry production is an activity where innovation has had a spectacular effect, thus making Burkina Faso a regional reference in the production of traditional poultry. One of the major problems in this activity is the high mortality often reaching 80% of poultry, in particular due to fowl plague, cholera and internal and external parasites. To deal with this situation, producers resorted to traditional therapy based on plants and other local products. But the introduction of exogenous innovations had a spectacular effect that helped significantly reduce mortality and increase productivity. This technological "boom" within these small farms is the combined result of several factors.

An innovation process that responds to demand from producers situated in the family economy, taking into account their know-how. The technology packages proposed essentially consisted of a sanitary protocol including:

- Specific treatments, particularly against aviary flu;
- Remedial treatments against internal and external parasites;
- Sanitary preventive measures (food and premises hygiene, etc.).

This technology package met producers' major concern, i.e. high animal mortality. It is important to highlight that the strength of this technology package lay in the fact that certain technological procedures were developed also took into account local knowledge. Most innovation provided in terms of building and food hygiene, like improved henhouses and drinking bowls, used local materials such as clay pots, already used by producers. Likewise, and in most cases, exogenous innovations were introduced in synergy with endogenous knowledge. This was particularly the case of traditional remedies to fight against the mortality of young guinea fowl and incubation techniques in very hot weather.

An innovation distribution network structured around endogenous community skills and capacities. Circulation of this technology package among producers received the support of a network of relay farmers. This network, which could easily access all producer categories, created a real boom for access to this innovation.

To pass on technical advice and provide the various services required (preventive and remedial treatments), it was necessary to *break away from the classic extension system* and build a strategy revolving around *relay farmers,* called *Vaccinateurs volontaires villageois* (VVV), then *Vulgarisateurs volontaires villageois* – Voluntary Village Extension Agents (VVV). The strength of this approach, which could be called a **"***close, accessible demand-led –advisory-support mechanism*", lies in the fact that it mainly involves small, isolated family farms needing close support and advice and a range of services when appropriate.

VVVs are key actors identified by producers and benefiting from the support of technical extension services. They represent local expertise that is not paid by public services. Their services (veterinary products) are paid by producers. The implementation of this system was possible with the ***commitment of the State and its high, continued investments***. In 1978, the *Projet de développement des animaux villageois* (PDAV) – Village Agriculture Development Project – was set up. Its implementation supported the development of VVV networks. The role of public extension structures consisted, above all, in strengthening capacity (VVV training, organisation of producer awareness days for the development of traditional poultry farming using audiovisual material, etc.) and support for the supply of agricultural inputs (vaccines and medication) to the VVV network. At the end of the project in 1995, the government undertook to continue investments in this area. The project was therefore transformed into a programme and received specific public funds in a zone currently covering 34 provinces out of a total 45 in the whole country.

Efficient post-production downstream services provided by the private sector. At the outset, traditional poultry production did not necessarily target the market. It was a highly strategic form of

production for producers and was aimed at household consumption and also several socio-cultural rites. It also allowed the acquisition of cash for everyday consumer needs such as cola, tobacco and local beer.

Very soon, this sub-sector experienced the spontaneous development of private operators including village collectors, wholesalers and retailers in towns, agricultural product processors and even exporters.

In this way, small producers were connected to local, national and regional markets (villages, departments and provinces). The involvement of private sector actors in trading gave greater value to local chicken and was an incentive for producers to use innovation with a view to improving productivity and competitiveness.

Conclusions

The successful innovation in the traditional poultry farming sector leads to the following main conclusions.

(i) **A close and accessible advisory-support mechanism is an appropriate approach**. The VVV network is the major key offering producers access to innovation. The important factor here is the role played by public extension services whose action targeted mainly ***the transfer of local competencies, thus making services closer and accessible to users, when needed***. This experience illustrates the role played by the public sector in terms of strengthening private sector capacity to provide agricultural services to producers. It also illustrates the efficiency of this approach for these categories of producers who work in scattered family farms.

(ii) **Heavy investment is needed.** Continued public investment since 1978 has been key to the success of the development of traditional poultry farming. It has helped reinforce and, above all, maintain the relay farmer network within a close and accessible advisory-support mechanism.

(iii) **Downstream incentive was also a stimulating factor for innovation.** The dynamism of private downstream actors created a buoyant market with a profitable price for the producer. This market opportunity progressively attracted new producers wishing to invest in local poultry production. These improved farms are mainly established in peri-urban areas and exclusively target the market. In some cases, funds are transferred from town to rural areas by employees that invest in these farming activities in the countryside. This observation raises the question of access of the rural population to technology as it requires increasingly high investment such as improved henhouses or incubators. *What role should micro-finance institutions play in the development of this sub-sector?*

(iv) **The synergy between endogenous and exogenous innovation processes has allowed a large number of producers to access innovation**. Taking into account local know-how in housing and sanitary hygiene, etc., has enabled the generation of innovation in order to meet communities' socio-economic and cultural realities. This has greatly facilitated their access and use. This experience, although quite specific, leads to the following question: *what roles should public structures play in terms of strengthening local skills for better participation in the innovation process?*

This technological success can be explained by the combination of several factors:

- The existence of exogenous technological innovations responding to demand and which incorporated communities' endogenous knowledge and know-how;
- The existence and capacity to capitalise on endogenous network of relay farmers providing close advice and support to producers;
- The efficiency of trader networks.

This experience raises the following questions:

(a) *How can public-sector extension institutions be effectively used to help develop close private sector agricultural advice and support networks based on farmer expertise in order to improve producer access to agricultural innovation?*

(b) *How can circulation of this innovation be promoted in other West African countries? How can a synergy between endogenous and exogenous innovation processes be created to allow better access to agricultural innovations by small family farms? What are the implications for research and extension institutions?*

4.2 Increased importance of the role of innovation as a factor to improve the livelihoods of the most vulnerable producers

4.2.1 Producer categories usually evolving in uncertain environments

The majority of Sahelian farms in West Africa is constituted by the most vulnerable categories of producer (producers forced to produce first and foremost to satisfy household consumption needs). Over 70% of farmers work within this farming system. Their principal vulnerability factors are: rainfall uncertainty linked to climate change and variability in rainfall distribution, outbreaks of pests and crop destroyers (e.g. the desert locust outbreak in West and North Africa in 2003-2004). In addition to these major risks, the strong deterioration of natural resources, in particular the depletion of the soil, must be mentioned. On the social level, these producer categories usually live in environments where basic social needs (health, education, drinking water supply, etc.) are lacking terribly. They also farm small land surfaces, often less than 5 ha and rarely above 10 ha. These farms are characterised by mixed cropping; diversification firstly aims to minimise risks and then capitalise on investment opportunities.

Access for these producer categories to exogenous innovations is usually limited by low availability of financial capital needed to purchase agricultural inputs required for the application of technology. A few studies[31] indicate, for example, that, in livestock farming in the central plateau of Burkina Faso, agricultural inputs are usually paid for in cash. This considerably restricts access to innovation for a large number of producers. This situation shows the poor development of upstream private services to enable producers to access agricultural inputs.

4.2.2 Agricultural policies that do not encourage innovation for the most vulnerable producers

The analysis of the situation over the past few years, especially in Burkina Faso and Mali, reveals that agricultural policies have done little to promote innovation for this category of producers. Usually considered to be marginal or with low potential or risky agricultural situations, the areas concerned by this category of producers have not received the agricultural investment needed, apart from the action of a few NGOs. For the most part, agricultural investments have been made in certain cash crops or so-called high potential zones such as in hydro-agricultural developments like, for example, the Office du Niger in Mali and the Sourou valleys in Burkina Faso.

Another agricultural policy or programme factor that does little to encourage innovation for the most vulnerable producers is the inability to view agricultural development as a *whole*, i.e. from the organisation of production to the processing and sale of agricultural products. The downstream stage of production, in particular the creation of connection opportunities between these categories of producers and local, national or regional markets, has often been neglected. As a consequence, these agricultural policy options have not fostered the development of private sector services (supply of

[31] Zoundi S.J., Nianogo A.J., Sawadogo L., 2003. Stratégies paysannes en matière de complémentation des ruminants au sein des systèmes mixtes agriculture-élevage du plateau central et du nord du Burkina. *Journal des sciences*, 3 (1): 22-34.

agricultural inputs, financing of production, processing and sales of products, etc.) to support agriculture. This lack of supporting services has failed to produce the incentive to invest in innovation.

4.2.3 Towards policies that are more conducive to better access to innovation: examples of a few ongoing initiatives in some countries

The analysis of the situation highlights the importance of the role played by financing opportunities in opening access for producers to agricultural innovation. The problem revolves around access to competitive decentralised financial systems by vulnerable social classes. Changes are happening in some countries where this issue is broadly taken into account by policy makers and in strategic plans. In Mali, for example, programmes or projects, such as the Fonds de développement du Sahel (Sahelian Area Development Fund - FODESA) supported by the IFAD, fall within the Malian government's strategy to solve the question of financing farms, in particular for small producers. It is also the case of the Programme national de gestion des terroirs villageois (PNGT) supported by the World Bank, the Programme de développement rural durable (PDRD) supported by the IFAD and a large number of local development projects in Burkina Faso. In most cases, these new "Community-Driven Development" (CDD) approaches are supported by development partners like the World Bank and the IFAD. Policies initiated by Burkina Faso to promote cooperatives (see Annex 9) fall within this framework to strengthen producers' organisational capacities.

However, do the relevance and efficiency of such policies, programmes and projects not argue in favour of greater synergy with those actors creating market opportunities with a view to creating better returns on the capital invested? Does this incoherence in agricultural policies justify the low concentration of decentralised financial means in areas where this type of agriculture dominates as opposed to high production cash crop areas? Does the upstream abundance of private services in the Office du Niger zone in Mali, for example, not illustrate this situation?

Box 4 illustrates the perception of Sahelian producers affected by this issue. Many NGOs and private actors are increasingly concerned, as is the case of the "Technoserve" NGO in Ghana, which focuses on connecting producers with the market. On the basis of experience and case study analyses, the major challenge for policy-makers is to find a way to transform these low potential agricultural and high risk areas into attractive zones for private services both upstream and downstream of production. *How can links between producers and markets be improved by creating a more favourable environment for the development of private services (credit, in particular) that support sustainable production and agricultural innovation?*

Box 4. Access to innovation for the most vulnerable producers: producer's perceptions in the villages of Boulkon and Sarma in the province of Passoré, in Burkina Faso

Producers and the production environment

The villages of Boulkon and Sarma are located in the central plateau, an area known for the considerable depletion of its natural resources, and where most production aims to satisfy households' needs. The production system is mixed: mainly small livestock (ruminants) and poultry. Large ruminants are also mainly used as means of traction or, in rare cases, for reproduction purposes. Agriculture is mainly focused on traditional cereals (millet and sorghum) together with leguminous plants (black-eyed peas). There are few cash crop opportunities apart from groundnut, which is grown on a larger scale in Boulkon, as well as a few rare cases of beef farming and sale of cereals.

In terms of farmer action, Boulkon and Sarma have several producer organisations[32] structured around different productions: cereals (such as millet), oleaginous plants (groundnut), livestock, etc. Boulkon includes 13 village associations with an average of 37 members per group. Sarma has 5 village groups with an average 40 members per group.

…/…

[32] These are only producer organisations officially recognised by Act n°014/AN/99 dated 15 April 1999.

…

Farmers' demands in terms of innovation

Farmers' demands for innovation in these two villages are driven by their production environment which is strongly influenced by the uncertainty of rainfall, with droughts occurring at least once every three years, crop pests and depletion of the soil.

This demand thus mainly focuses on: the restoration of soil fertility, short-cycle, drought-resistant and productive varieties and the management of ruminants during the dry season. As far as the restoration of the soil's productive capacity is concerned, both villages have received aid through a special water and soil conservation and agro-forestry programme in the central plateau (CES/AGF) implemented since 1989 with the financial support of the IFAD and the BOAD. This involved applying various water and soil conservation techniques such as dry stone sills and half-moons[33] to farmed land.

Innovation process

The innovation process combines exogenous and endogenous innovations. Endogenous innovations not only take on board the creation of local farmer innovations but also the adaptation of exogenous innovations through research and extension (R&E).

Several technical recommendations have been made by R&E to manage soil fertility (for example, soil preparation techniques before sowing or the use of chemical fertilisers). But due to difficult access to external agricultural inputs, producers often resort to endogenous innovations like the use of brush straw, dead shea (*Vitellaria paradoxa*) leaves or leaves from other woody plants such as *Guiera senegalensis*. As far as animals' diet is concerned, difficult access to agro-industrial sub-products has also led local farmers to implement substitution innovations, with production and storage of fodder within the farm, the use of milling residue, like cereal germ. In the animal health sector, traditional therapies are also used to care for poultry and small ruminants. Generally speaking, integration of the innovation process involves low-cost innovations that are accessible as and when.

Producers' perceptions of access conditions to innovations produced by research

Access to agricultural inputs needed to implement exogenous innovations in the villages of Boulkon and Sarma largely relies on the use of cash. In a few rare cases, producer associations have access to credits granted by NGOs like the ADKR – Association for the Development of the Kaya region. According to Boulkon and Sarma producers, access conditions to innovations produced by research depend on the *possibilities of diversifying and creating income-producing agricultural or extra-agricultural opportunities*. They also underline the importance of *securing the production environment*, especially to save water for production, and the necessity of having a sufficiently lucrative and motivating price for cereals.

Producers' perceptions of conditions of access to innovations generated by research highlights the need for policy makers to address the following points.

(i) The necessity to facilitate a gradual and progressive link to markets for the most vulnerable producers and the creation of opportunities that give them sufficient liquidity to access innovation. On this level, the question is whether a new agricultural development concept that takes into account this producer category is possible, firstly by integrating other related cash-producing activities and, secondly, by creating opportunities for a stronger connection of these producers to markets, i.e. by also giving priority to the downstream stage (processing, sales, links with agribusiness).

(ii) The commitment of public authorities to stabilising the production environment. The aim here is to mitigate major risk and vulnerability factors for farms such as drought, in order to provide an investment that is more conducive to agricultural innovation.

[33] Dry-stone sills: anti-erosion systems consisting of lines of stones designed to prevent streaming and hold back enough water and nutriments in plots of farmed land for the plants; half-moons: half-moon shaped systems that collect runoff water to keep back nutriments for the benefit of the plants.

The major lessons drawn from these experiences are as follows.

(i) There are possibilities to capitalise on agricultural innovation to maximise regional opportunities concerning certain products like rice. This has been demonstrated by proven innovations such as NERICA varieties or GIPD. However, major questions concerning the following points still remain:

- ✓ *How can more appropriate regional policies be promoted, guaranteeing better protection of strategic products such as rice, manioc, cotton and palm oil with a view to creating incentives for producers to invest in innovation?*
- ✓ *How can the issue of domestic taxes on agricultural inputs (VAT in particular) be reviewed within the various countries in order to promote access by producers to agricultural innovation?*

(ii) The "*poulet bicyclette*" experience shows the relevance of the synergy between endogenous and exogenous innovation processes in improving producers' access to agricultural innovations. Likewise, informal relay farmers (VVV) have proven to be very effective in providing close support and advice. Also, *how can such close support and advice networks be developed in order to promote farmer expertise as a means of improving access to agricultural innovation?*

(iii) Access to innovation by the most vulnerable producers remains closely linked to these producers' connection opportunities to the markets. The experience of private collection and marketing networks revolving around "*poulets bicyclette*" shows the importance of market opportunities, whether local, national or regional, in encouraging innovation amongst small farmers.

(iv) The analysis of these experiences also shows that innovation, whether exogenous or endogenous, can be a factor for change in the production system and can influence the movement of populations and social models.

Box 5: Two innovations in the central plateau of Burkina Faso have contributed to the slowing down of the population movement towards the country's western regions.

Two innovations in the central plateau of Burkina Faso have led to major changes in the production system and rural population momentum:

- The "***zaï***"[34] technique, a means of restoring soil fertility, has allowed producers to farm once rather infertile and uncultivated land.
- The introduction of improved varieties of short-cycle black-eyed peas and storage techniques has encouraged producers to concentrate all their production on black-eyed peas on a large scale. This is the reason for the real boom in black-eyed pea production in areas where this product has been called "white gold". The adoption of these innovations mainly by the most vulnerable populations has been encouraged by the existence of markets in coastal countries but also by their low financial resources requirement.

*The synergy between endogenous and exogenous innovations has allowed recovery of deteriorated land using the "**zaï**" technique and the regional market opportunity provided by coastal countries has restored hope to rural communities. It has also helped slow down the rural exodus towards the country's western regions.*

[34] For more details, see Zoundi S.J. (2003*), Innovation technologique dans le processus de changement structurel de l'agriculture familiale en Afrique de l'Ouest : quel rôle pour la recherche et la vulgarisation ?* Sahel and West Africa Club/OECD, Paris. Document available on the Website: www.sahel-club.org/fr/agri/index.htm.

Experiences presented in Box 5 prompt the following questions:

(a) How can the role of innovation be promoted in the creation of market opportunities and connection opportunities for family economy producers to markets in view of the development of social models in the rural environment?

(b) Which innovation opportunities can innovation offer in terms of adapting communities to environmental and socio-economic upheavals and to the regulation of population movements?

V. PRIVATE SECTOR, AGRIBUSINESS, PRODUCER ORGANISATIONS AND NON-GOVERNMENTAL ORGANISATIONS IN THE PROMOTION OF AGRICULTURAL INNOVATION AND THE FAMILY ECONOMY

5.1 Political reforms encouraging the emergence of the private sector

The implementation of structural adjustment policies in the early 1990s and economic liberalisation acted as major triggers to the dramatic appearance of private sector actors in providing various services in the agricultural sector. The Office du Niger in Mali could be used as an illustration of this positive momentum perceived in all countries. The restructuring of the rice sub-sector in 1994 led to a forceful entry of private service providers (see Annex 4). By providing services in the upstream and downstream stages of production, these private sector actors play a key role in facilitating producers' access to production factors and other resources needed to apply agricultural innovations.

They therefore act on two levels:

(i) Control of adaptation and advisory-support mechanisms. In Francophone countries, this is provided by many producer organisations and NGOs. Producers develop their own research-action and advisory-support mechanisms and thus ensure consistency between demand and the service provided and better control of the conditions determining the use of agricultural innovations. There are several examples in West Africa, like the National Federation of Naam Groups (FNGN) in Burkina Faso or the Federation of Farmers of Fouta Djallon (FPFD) in Guinea. Whether provided by POs or private actors, the approach to providing accessible and close advice and support is an essential factor that favours access to and use of agricultural innovations by producers.

(ii) Control of the upstream and downstream stages of production by POs and private sector actors. Producer organisations are strongly involved in supplying agricultural services in the upstream and downstream stages of production. This is especially the case of the Cooperative of Supply and Management of Agricultural Inputs (CAGIA) set up by the Sub-Prefecture Producers' Union (USPP) in Benin, of the "Cereal Inputs Management" operation by the National Union of Cotton Producers of Burkina (UNPC-B) and the Horticulturalists' Association of Ghana (HAG). POs in Francophone countries tend to be more strongly involved in the service offer than in Anglophone countries. In the latter, agribusiness is more developed, as in Ghana and Nigeria where private agricultural companies work closely with small farmers. Agribusiness strongly contributes to the development of the family economy. It supplies new, more effective seed varieties, inputs (fertilisers, pesticides) and agricultural services and gives small farms access to agricultural innovations, thus improving their revenue and livelihoods.

5.2 The role of the private sector in providing access to agricultural innovation

The analysis of experiences in the various countries indicates the importance of the role played by private service actors in the upstream and downstream stages of production in terms of improving producers' access to agricultural innovation.

In the case of the Office du Niger (ON) in Mali, for example, several actors involved in the financing of activities, such as the Federation of Mutualist Rural Banks of the Delta (FCRMD) (Annex 4), gave at least 80% of ON producers access to agricultural inputs needed for the application of technology packages, which produced additional yields of almost 2 tonnes per hectare. Furthermore, services provided to market rice, like the organisation of rice exchanges managed by the "Jɛ Ka Fere" (Annex 6), enabled producers to sell rice at a lucrative price, thus providing incentive for investment in agricultural innovation.

In Anglophone countries, examples demonstrate the role played by private agribusinesses to help small farms access agricultural innovation. For example, the Gambia Horticulturalist Entreprise (GHE) is a large agricultural company that works with small farmers through producer organisations to produce the quality and quantity needed for exports. This involves a contractual partnership between agribusiness and family farm producers which allows the latter to access innovation thanks to:

(i) The supply of services needed for production by agribusiness companies (fertiliser, seeds, credit, etc.);

(ii) Markets guaranteed by agribusiness companies to the products of family farms involved in this partnership.

These successful partnership-based experiences also reveal strong State involvement acting as a catalyst for this movement. In the case of the HAG experience, the State played a decisive role in promoting innovations to the benefit of family farmers by setting up a fund, the Export Development and Investment Fund (EDIF), aimed at supporting non-traditional product exports.

5.2.1 Agribusiness/family farming partnership and access to agricultural innovation: the experience of the Horticulturalists' Association of Ghana (HAG)

Context

The Horticulturalists' Association of Ghana (HAG) was founded in 1985 with the principal aim of producing and transforming fresh fruit and vegetables like pineapples, mangoes, bananas and papaya. This association includes 44 member companies. The association is a member of other organisations such as the Apex Farmers Organisation of Ghana (APFOG) and the Federation of Associations of Ghanaian Exporters (FAGE). It has close links with the Ghana Export Promotion Council (GEPC).

Pineapple is the principal product exported by the HAG. With production reaching 120,000 tonnes per annum, pineapple is one of the most important non-traditional exports in Ghana and amounts to almost half of all horticultural exports (36 million dollars).

Why the need for a partnership?

HAG members' farms vary in surface area from half a hectare to 300 hectares. Practically all pineapple production by these producers is exported to Europe and other regions. Because of this, *compliance with quality and quantity standards* is an important issue. To meet these quantity and quality targets, large farms draw up contracts with small farms. These agreements may be verbal, based on mutual trust, or written in a formal, legal document. Their aim is to allow large farms to fulfil their commitments with respect to regular procurement in quantity and quality of exported products. Finally, the Horticultural Association of Ghana includes 30 agribusiness actors who work with over 600 small farms.

Win-win partnerships

All parties are winners in these partnerships. Agribusiness actors offer a range of services to small farms which allow them to increase pineapple production and improve their revenue and livelihoods. These services include the supply of agricultural inputs, improved pineapple plant material, training in the application of chemical products and the granting of credits when necessary. Access to credit by small farmers is key as pineapple is a capital-intensive crop. Investments needed to farm one hectare of pineapples can be as high as $4,000. Without considerable outside support, very few small farms would be able to invest such financial resources. Access to credit is therefore fundamental for the adoption of innovation involved in pineapple production.

All large farms include processing (washing, sorting, calibrating) and packaging hangars to ensure pineapple is better prepared for exportation. Small farms lacking the resources for such investments can use these hangars which agribusiness actors make available to them. Pineapple packaging can vary according to the variety. Agribusiness actors play a decisive role in training and exchanging information with producers.

The State also plays a key role in promoting pineapple-related innovations. In the framework of the campaign for the promotion of non-traditional product exports, the government has set up a special fund designed to support exports in general: the Export Development and Investment Fund (EDIF). It has enabled HAG members to access enhanced MD-2 pineapple seed to confront international competition, especially Latin American horticultural products. MD-2 varieties are preferred to "smooth cayenne", "champaca" and "sugar love" on the international market due to their higher sugar content and lower acidity.

Since 2001, Ghanaian companies have started to look into the production of MD-2 planting stock. The results are encouraging. Up to October 2004, the Ghanaian company, Bomart Farms had sold almost one million M2-2 seedlings. It sells them at $ 0.36 per unit[35] whereas import costs exceed $0.70 per unit. The private sector has thus played a key role in developing the pineapple seed sector, proving the success of innovation.

Conclusions: factors that encourage agricultural innovation

The major factors encouraging innovation to promote the family economy are:

(i) Guaranteed markets for products (mainly pineapple in the case of the HAG) by agribusiness actors;

(ii) Upstream and downstream services to small farms: credit, training, plant material, product packaging facilities before export (washing, processing, packaging, etc.).

Within this framework, the Horticulturists' Association of Ghana help to:

- ✓ Network small family farms and agribusiness actors;
- ✓ Guarantee the supply of certified agricultural inputs adapted to the production of pineapple and other horticultural products;
- ✓ Negotiate a fair price between exporters and producers;
- ✓ Act as the intermediary between political decision-makers and producers on horticultural development related issues. By request of the HAG, the State has found resources through the EDIF to import MD-2 pineapple seeds so that producers may meet the requirements of the international market;
- ✓ Provide information and training on best farming practices;
- ✓ Provide information to producers on EUREP-GAP European norms and standards;
- ✓ Grant or simplify access to loans to members needing them;
- ✓ Train and inform producers on horticultural demand and market's requirements;
- ✓ Favour the adoption of other innovations in cropping practices such as "plastic mulching". This practice helps to reduce water stress but also labour needed for hoeing. It leads to an average yield increase of almost 20%.

[35] Production costs are estimated at $ 0.30 per unit.

This partnership between family farms and agribusiness is an example of synergies between the different actors to promote innovation and the family economy. The role of the State as a catalyst is also highlighted.

The following section provides an example highlighting the value of family economy and agribusiness partnerships in the promotion of agricultural innovation linked to palm oil.

5.2.2 Cooperation between agribusiness and family farms: Nigerian palm oil[36]

The Okomu Oil Palm Company Plc was established in 1977 by the Nigerian Federal Government with the aim of producing and marketing palm oil. It owns over 8,000,000 hectares of oil palm plantations. It was completely privatised in 1990 and is now listed on the stock market.

Since 2003, as part of its partnership project, the Okumu Oil Palm Company Plc has set up a partnership with family farms. This partnership has given family farms the resources needed to develop and invest in palm oil production. The company undertakes to supply varieties of high-yielding oil palms and provide small farms with technical and financial support (through loans). These loans are paid off after the sale of fresh palm fruit. The company works with local banks to negotiate lines of credit for producers. It puts up the guarantee so that banks may grant loans to family farms. It also trains producers in accounting techniques: book-keeping and receipts and expenses. Moreover, the company undertakes to buy these fresh palm fruit at the market price. However, producers are free to sell their produce to any other companies that offer them a better price.

In terms of agricultural innovation, this partnership allows small farms to:

- ✓ Acquire new high-yielding varieties;
- ✓ Access the resources needed to fulfil their projects;
- ✓ Increase the surface of oil palm crops on their farms, increase their revenue and improve their livelihoods;
- ✓ Access markets;
- ✓ Acquire farm management techniques (e.g. book-keeping, etc.).

Through this approach, the company reduces its oil palm plantation extension costs and guarantees better profitability. A pilot project has already been set up on 200 ha. This partnership creates a win-win situation.

5.2.3 Producer/trader or processor partnership or transformation actors and access to innovation

Relations between producers and actors involved in processing are practically non-existent in the various countries examined and particularly in West Africa's Sahelian zone where the development of the processing sector is at an embryonic stage.

Over the last decade, collaborative R&D projects on millet (Rocafremi-WCAMRN – The West and Central African Millet Research Network) and sorghum (Rocars -WCASRN– The West and Central African Sorghum Research Network) have developed partnership initiatives between producers and actors involved in processing in West and Central Africa. The success of these experiences provided a basis for the implementation of a demand-led regional Millet-Sorghum Initiative (IMS), with the financial support of the IFAD, the SG2000 NGO and the French Ministry of Agriculture (Annex 8).

This initiative is dedicated to five West and Central African countries (Burkina Faso, Mali, Niger, Senegal and Chad) and designed to put producers and actors involved in processing in contact with each other. Incentive for producers to innovate comes from the fact that contracting producers and

[36] Case study presented by Mr Fatai AFOLABI of Okomu Oil Palm Company Plc. at the information and discussion workshop with partners held on 15th and 16th June 2004 in Ouagadougou, Burkina Faso.

actors involved in processing guarantees a lucrative market for their product (prices are negotiated upon the contract signature and a quality premium is granted). In Burkina Faso, for example, technology packages enhanced by producers included improved varieties (IKMP1 and IKMP5 for millet and Framida for sorghum). Technology packages also comprised measurements, processing of seeds before sowing, mineral fertilisation, appropriate crop management techniques, etc.

However, these major advantages associated with contracting should not hide the fact that these partnerships are nevertheless rare. The same applies to the processing sector in the West African Sahelian countries. This situation prompts the following key question.

> *Which strategies and policies should be promoted to ensure the development of the agricultural product processing sector as a means of encouraging production and investment in agricultural innovation?*

5.3 The role of NGOs in promoting the connection of producers to the market

A few cases indicate the essential role played by NGOs in promoting the connection of small producers to markets. The "Technoserve" NGO in Ghana is a good example. Its strategy is based on:

- Carrying out market surveys,
- Connecting producers to the market,
- Training actors in business development. It also supports agricultural innovation by simplifying access to certain essential services (credit, processing) to producers.

Yet one of the best illustrations at regional level is the action by the NGO Afrique Verte working in three West African Sahel countries: Burkina Faso, Mali and Niger. This NGO aims to promote capacity-building among producer organisations by creating market opportunities for cereal products and putting cereal producers in contact with buyers (Annex 7). Through tools such as cereal exchanges and banks, the Afrique Verte initiative gave producers access to national and regional markets. In this way, producers – mostly subsistence farmers – were able to take advantage of opportunities to sell off their surplus. Connecting producers and actors involved in processing also meant that the quality of product could also be improved. These two factors created conditions favourable to the adoption of new technologies for producers, and the resulting widespread use of new cereal varieties confirms this observation.

5.4 Lessons

Over and above the relevant cases experienced in the region, it is observed that, in the Sahel in particular, private services located in the upstream and downstream stages of production only develop around areas of attraction where market opportunities exist, as is the case with the ON, the cotton sub-sector and fruit and horticultural production areas. This situation raises the following question: *how can all producer areas and categories be guaranteed fair access to these private production support services?*

A fair number of initiatives have been set up to empower producers in the supply of agricultural inputs, with mixed results. There are growing concerns as to the real capacity of producers to take on this function that puts them directly in contact with private operators, a situation dominated by the search for maximum profits and, sometimes, by corruption.

The feeling expressed by certain actors is that the States have not provided the necessary resources nor the commitment required to prepare producers to take on such functions. They even talk about the "failure of States" to take responsibility in this area. The remaining central question is therefore:

What political strategies and actions should be implemented at country-level in order to substantially improve producers' capacity-building and, therefore, to provide appropriate procurement and marketing management? What support should States provide in order to support and stimulate this empowerment momentum?

In many countries, therefore, the development of the agriculture-related private sector is still at the embryonic stage and mainly revolves around trader speculation or areas with strong economic potential.

The agri-food processing sector has appeared as a key incentive factor for production and the adoption of agricultural innovation. But the few documented initiatives remain marginal and their development remains low in several West African countries. The same applies to the development of partnerships between actors involved in processing and producers, with the State sometimes playing a catalyst role.

Strict analysis of each element in the "value chain" and the application of "market-driven" approaches are needed to identify bottlenecks or constraints at each stage in the chain. The IITA has used this analysis for manioc and the "Syngenta" foundation has enhanced this approach in its work in West Africa (see Box 6 below).

Box 6: Value chain and "market-driven approaches" in agricultural innovation

Market-driven approaches encourage innovation insofar as they are based on the existence of a market as a prerequisite to production (the market generated by urban population growth, for example). This market is often linked to the development of processing activities or exports.

The analysis of the value chain[37] completes these approaches by providing a framework with which to identify gaps in the value chain in order to develop innovative solutions. This analysis framework comprises five key points:

(i) The existence of a market and access possibilities to it;
(ii) Availability of appropriate technology and varieties adapted to the production system;
(iii) Training and coordination concerning the technology to be promoted;
(iv) Information on the existence and availability of technology;
(v) Processing and marketing of agricultural products.

The significance of this value chain analysis is demonstrated by manioc distribution in West Africa. The growth in urban demand together with actions at each level of the value chain – availability of new seed varieties developed by the IITA, distribution of these varieties supported by State intervention, development of processing equipment by local craftsmen – greatly contributed to the adoption and circulation of manioc innovation in Nigeria, Ghana and other coastal countries in the mid 1980s. The apparent success of this innovation process is explained by:

- ✓ The development of the Ghanaian and Nigerian urban market due to strong urban population expansion;
- ✓ The processing of manioc into different products fit for human consumption (gari and various cooking uses) and animal consumption, and into other industrial products;
- ✓ The availability of a processing industry using local equipment made by local craftsmen and adapted to producers in terms of capacity and usage time; the use of processing equipment allowed a 50% reduction in labour costs for processing; the use of high-yielding and disease-resistant plant stock. These new varieties allowed a yield increase in excess of 40% without the use of fertilisers.

In this innovation process, the State played a decisive role. In Nigeria, for example, new varieties, called TMS (*Tropical Manioc Selection*), developed by the IITA in 1977, were not adopted by producers until 1984. The State played a dual upstream role:

- ✓ By cutting subsidies on food product exports like rice in 1984, thus resulting in the growth of demand, the domestic market and production;
- ✓ By setting up a free multiplication and distribution policy aimed at producers for these new TMS varieties.

Free access to innovation was thereby promoted by these measures which lifted access restrictions to new varieties and to the domestic market.

Similar experiences have been observed in the Gambia but this time promoted by an NGO in partnership with a PO. The National Women Farmers' Association (NAWFA) and the CRS NGO have helped to promote innovations by granting loans and agricultural inputs needed for the production, processing and marketing of sesame. They also have facilitated producers' access to innovation through training and various agricultural services. These producers have thus overcome access restrictions to innovation such as the procurement of agricultural inputs, access to credit, to local, regional and global markets, to information and training on new available technology.

Analysis of each value chain link thus shows that access restrictions to agricultural inputs (seeds, loans, fertilisers) as well to markets can effectively prevent the spread of innovation.

Source: *K. Hussein, J. S. Zoundi, L. Hitimana, The Transformation of West African Agriculture: Towards new partnerships for agricultural innovation, Sahel and West Africa Club, October 2004. (www.oecd.org/sah/agritransfromation).*

[37] The "value chain" analysis was introduced in 1986 by Michael Porter and involves breaking down an activity into key operational stages and identifying the advantage sources of each of them.

Other examples of an analysis relating to the horticultural product production and marketing chain highlight the significance of using value chain approaches in Ghana and the Gambia, as indicated by the SPEG (Sea-freight Pineapple Exporters of Ghana) and GIG (Gambia Is Good) initiatives and SMILE (Small Holder Irrigation for Livelihoods Enhancement) in the Gambia. Quality as well as sanitary and phytosanitary norms and standards have been diagnosed as a missing link in pineapple exporting in Ghana. To fill in this gap, a new centralised structure, the SPEG, has been set up to provide information on pineapple varieties that are popular on the international market. New varieties of pineapple (MD-2) have thus been introduced in Ghana via producer organisations. Furthermore, SPEG has introduced a EUREPGAP[38] (Euro Retailer Produce Working Group – Good Agriculture Practice) quality certification request to position itself on a precise market segment that complies with European standards. This approach induces four concrete results: (i) reduced costs by the grouping of exports, (ii) introduction of new varieties that are more appreciated on the market, (iii) improved quality of products meeting market requirements, and (iv) a strong increase in pineapple production and exports (see Annex 12). This structure has improved access to information and strengthened the OP-agribusiness-producers-State partnership. The GIG and SMILE initiatives set up by the "Concern Universal" NGO work upstream (irrigation technology) and downstream (packaging and organisation of the sale of horticultural products to hotels and restaurants) to meet the quality and quantity requirements of hotels and restaurants (see Annex 13) in the Gambia and at regional level.

[38] EUREPGAP was set up in 1997 to give consumers a guarantee on food products concerning the use of chemical pesticides and GM crops following the mad cow crisis.

VI. CONCLUSION AND FUTURE PERSPECTIVES

6.1 Towards new partnerships for agricultural innovation within the family economy

All cases identified by regional field level actors have highlighted the importance of partnerships at all levels (producers, POs, NGOs, agricultural services, private sector, and political decision-makers) to promote access and use of agricultural innovations, especially for the most vulnerable actors in the family economy.

During the SWAC workshop for information sharing and strategic thinking on agricultural innovation in Ouagadougou in 2004, several categories of actor (regional and national institutions, agribusiness, POs and NGOs) showed their interest in and commitment to forging new partnerships in order to promote access to agricultural innovation. These partners included the ROPPA, the WAEMU, the CILSS, CORAF, Sasakawa Global 2000, WARDA, UNDP, IITA, the International Labour Organisation, the SAFGRAD, INTERFACE, the Syngenta foundation, the CESAO, RECAO, the AISSA network and agribusiness and PO actors in the various countries. The Sahel and West Africa Club Secretariat confirmed its willingness to support these regional initiatives.

The discussion workshop provided an opportunity to set up informal networks of institutions and organisations working on the identification of alternatives to enhance agricultural innovation with a view to strengthening development of the local economy in the medium- and long-term. This was illustrated by the informal group formed by Sasakawa Global 2000, the Syngenta foundation, GEFRAD, IIED, AMEDD, INERA to study a partnership promoting innovation over the next five years (2006-2010) in a few West African countries.

These are concrete initiatives to create "*new partnerships for agricultural innovation*" that bring together public and agribusiness actors thanks to improved access to innovation within the family economy. These different networks should act as frameworks to ensure better synergy of actions by regional actors around agricultural innovation. Their objectives are therefore:

(i) To institutionalise best practices in agricultural innovation: identifying innovations, capitalising on existing innovation and circulating information;

(ii) To promote discussions on political issues, such as land tenure issues and access to resources, that could have an impact on improved access to agricultural innovation;

(iii) To lead facilitating actions for political decision-making, particularly concerning reforms within research and extension institutions and the financing of agriculture.

6.2 Future perspectives

The conclusions drawn from consultations in the context of this initiative have prompted some essential questions that the different categories of regional actors need to address. Among the various proposals for follow-up to be implemented in a short timeframe, two major activities have been selected:

(i) Accompanying the "*new partnerships for agricultural innovation*" networking process via the facilitation of exchanges, support in capitalising on results and circulation of promising experiences at regional level;

(ii) Exchange of information with regional actors concerned by the various questions posed by the initiative, with a view to identifying actions they need to undertake in order to facilitate policy-making on access to innovation at the national and regional levels.

6.3 Remaining questions

Strategic thinking with regional actors also led to the identification of three strategic questions that regional actors could explore further.

1. How can the necessary contribution of agricultural innovation to improving livelihoods, productivity, competitiveness, the transformation of farming systems and models of society in West Africa be strengthened in a context of rapid demographic growth and economic reform?

2. How can agricultural services be adapted to support actors in the family economy working in agriculture (producers, actors involved in processing and agribusiness) while providing solutions to the challenge of quality norms and standards demanded by international trade rules?

3. What is the role of innovation in the ECOWAS regional agricultural policy and the NEPAD strategy for agricultural development? How can regional strategies, developed in consultation across all actors, be developed concerning the regulation and monitoring of the introduction of biotechnology? In particular, how can access to biotechnology by family farms be facilitated?

ANNEXES

Annex 1: Note on The Sahel and West Africa Club /OECD

The Club du Sahel was established in 1976 by Member countries of the Organisation for Economic Cooperation and Development (OECD), in collaboration with African leaders of Sahelian countries, in response to the drought that had devastated the region and the ensuing food crisis.

In 2001, taking into account the interdependence and complementarity of the Sahel and other countries of West Africa, the Sahel Club's Strategy and Policy Group decided to expand the Club's geographic coverage to encompass the whole of West Africa. The Club then became the Sahel and West Africa Club. Its activities cover West Africa, composed of 17 countries including of which 15 are Economic Community of West African States (ECOWAS) Member countries, to which are added Mauritania, Chad and Cameroon, which represent an area of 7,800,000 sq. km. and a population of 290 million inhabitants, i.e. 43% of the total population of Sub-Saharan Africa.

The Club works in close partnership with ECOWAS, its main partner in the region as a whole, and with other West African organisations, such as the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) and the West African Economic and Monetary Union (WAEMU).

Attached to the OECD, the Club's Secretariat is financed through voluntary contributions from a large number of OECD countries. The Club is led by a Secretariat composed of a small technical team based in Paris. It benefits from the support of a network of partners from inside and outside the region.

The SWAC Secretariat concentrates its efforts on four areas of interest for the region itself and the international community: medium- and long-term development perspectives; agricultural transformation and sustainable development; local development and the process of regional integration; governance, conflict dynamics, peace and security (see the SWAC Secretariat's website: http://www.oecd.org/sah for more details concerning the SWAC Secretariat's mission, its work plan and its outputs).

As a facilitator, moderator, leader of open constructive exchanges, the Club plays a bridging role, an interface between West African actors and OECD Member countries. The Club Secretariat's main objectives are to:

- Help identify strategic questions related to medium- and long-term development in West Africa;
- Contribute to mobilising and strengthening African capacities within a network approach;
- Support initiatives and efforts by West Africans to promote medium- and long-term development in the region;
- Facilitate exchanges between regional actors and OECD Member countries;
- Promote constructive debates that lead to innovative decisions within and outside the region aimed at building a better future for the region.

The Club has adopted a methodology based on an **iterative, consultative and participatory process**. The process involves three types of partners (West African partners, partners from outside the region and SPG members) and that combines field work, consultations with the various actors, comparison of experiences, analysis and research, exchanges and discussions.

The approach adopted is:

- **Temporal, spatial and regional** and is essential to understanding the complex phenomena of development, cross-border exchanges and strategies of actors in the field, within the framework of a multidisciplinary approach;
- **Field-based** targeted to obtaining a more thorough knowledge of local realities and the concerns and visions of different groups of West African actors;
- **Scientific and multidisciplinary** drawing on human, economic, social, political and legal sciences;
- **Network-based** including actors from the South and the North;
- **Based on partnerships** with West Africans and those who are interested in the region.

For further information on the Club, its mandate, its activities and its products, go to: http://www.oecd.org/sah.

Annex 2: The innovation process in the cotton sub-sector: CMDT, Mali

1. Introduction

In Mali, just like everywhere else in Africa, cotton-farming areas are considered to be favourable environments which satisfy most conditions of access and use of agricultural innovations: an innovation need driven by the international market (fibre characteristics and quality); close supervision; upstream services (procurement of agricultural inputs) and operational and efficient downstream services, usually provided by cotton companies in partnership with producer organisations. In most cases, the cotton sub-sector is also present in high food production areas (cereals in particular) owing to the support provided by what is often called the "cotton-based system": simplified access to agricultural inputs for this type of speculation, support in the development of post-harvest activities linked to this production, support in selling off cereals, etc.

In short, cotton-producing sectors used to be considered as "agricultural revolution" areas, where most conditions required for the improvement of livelihoods of rural communities were satisfied.

But in recent years, the cotton sub-sector has undergone considerable changes, such as restructuring operations that have increasingly involved the private sector.

2. An environment once favourable to producers' access to agricultural innovations

2.1 An innovation process completely driven by demand

Discussions are organised every year between the cotton company (CMDT), the Office de la Haute Vallée du Niger (OHVN) and the research institute (IER). In these meetings, the cotton company expresses the concerns of the sector (production constraints, producer expectations, international market issues, etc.). Likewise, during annual technical research committee meetings (forums bringing together researchers, producers, and extension agents), research results are shared with producers and usually result in the formulation of producers' expectations and concerns via farmers' organisations. All of these concerns capitalised by the cotton company are used as the basis to draw up an annual protocol or programme-contract between the CMDT and the IER, wholly financed by the cotton industry (via the CMDT). This contractual system sets clear objectives. The partnership is thus institutionalised through the introduction of a committee that follows up the recommendations made by the IER-CMDT-OHVN meetings. This committee permanently monitors activities in the field, thus allowing readjustments any time during the agricultural campaign. The funds allocated by this contractual system have amounted to around 300 million CFA Francs over the past two agricultural campaigns (2002-2003 and 2003-2004).

Discussion and identification forums revolving around R&D needs are also organised through farmer platforms such as Regional Commissions of Beneficiaries (CRU). The concerns emerging from these forums also help to support projects and programmes such as the PASAOP, Swiss Inter-cooperation, etc.

2.2 Close support and advice

As in most cotton-producing countries, the organisation set up by the cotton company in Mali guaranteed accessible support and advice. Around 1,000 CMDT agents were employed in this agricultural advisory-support mechanism, with a ratio of 1 agent for around 250-300 farms. This advisory-support mechanism worked with a "cotton system" perspective, extending production techniques concerning all speculation belonging to the system and taking into account issues linked to producer organisation.

2.3. Efficient services in the upstream and downstream stages of production

The cotton company took full charge of the upstream procurement of production factors (agricultural inputs, equipment, etc.), access to credit for other activities (livestock farming, lucrative activities for women, etc.) transportation of agricultural inputs to production sites, etc. All the production factors required for the application of recommended techniques were provided.

Downstream, the cotton company also took charge of the collection, processing and marketing of cotton. These upstream and downstream services were reinforced by considerable investment in the construction and maintenance of a major road network to allow easier procurement of production factors and the collection of products.

This range of upstream and downstream conditions removed any problems relating to access and use of research recommendations.

3. A "community development" approach guaranteeing a general improvement in rural communities' living conditions

The "cotton system" was a whole, and it took into account other speculations and activities contributing to the improvement of rural communities' livelihoods. Besides education issues, the CMDT system also focused on other activities contributing to the improvement of revenue and food safety, such as:

(i) Support to producer organisations for cereal collection and marketing;

(ii) Promotion of beef production (using culled draught oxen), "Tabaski ram" ovine farming, production of young bulls to replace draught oxen;

(iii) The promotion of women's income-generating activities (processing activities in particular).

In all these sectors, the CMDT provided technical support such as supervision and also facilitated access to necessary credit.

Education, development of country paths, hydraulic infrastructure, development of woodland and pastoral areas (support to communities in the drafting of local agreements in this area), etc. were added to these lucrative activities. The action of the CMDT resembled more what could be called "community development".

This integrated approach, revolving around an export branch (cotton), combines a horizontal approach (development of basic socio-economic infrastructure) and a vertical approach designed to improve the productivity, collection, processing and marketing of cotton.

This integrated approach has, to a great extent, been at the root of social and economic progress in cotton-producing sectors.

4. The new context and questions arising

4.1 Current reforms

The cotton sub-sector in Mali, as in other countries, is currently being restructured. The Malian government has drafted a Development Policy Paper on the Cotton Sub-Sector (LPDSC) which was adopted by the government on 6 June 2001. Its timetable was amended, revised and adopted (activities staggered until 2006) by the government on 3 October 2003.

The objectives of the cotton sub-sector reform are:

(i) To control and reduce production costs in order to make fibre cost price compatible with falling price trends on the global fibre market;
(ii) To improve yields by enhancing producer supervision capacity and implementation of soil fertility restoration techniques and compliance with various technical options by producers;
(iii) To motivate farmers' organisations by creating cotton producer associations i.e. smaller circles than village associations organised into districts or according to affinity in order to inject new life into associative accountability:
(iv) To strengthen participation of the private sector, producers and decentralised authorities in the attainment of public service mission objectives in the sector;
(v) To increase the sector's contribution to the national economy;
(vi) To contribute to the fight against poverty by improving the population's livelihoods;
(vii) To succeed in setting prices in the sector based on free negotiations between agents.

This restructuring thus revolves around the following strategic areas:

(i) Refocusing of the CMDT on activities linked to the cotton system:
  + Refocusing of the CMDT on public service missions;
  + Disengagement of the CMDT from the supervisory role;
  + Gradual disengagement of the CMDT from the procurement of agricultural inputs and equipment;
  + Continued disengagement of the CMDT from the transportation function;
  + Rationalised use of human resources;
(ii) Better participation of producers in cotton branch management:
  + Opening of CMDT capital to producers and workers;
  + Enhanced control by producers of the supply of services they need (rural advice, procurement of agricultural inputs, equipment, transport);
(iii) Liberalisation of the cotton and oleaginous sectors:
  + Privatisation of the CMDT and the HUICOMA

In practical terms, a cotton sub-sector restructuring mission (MRSC) was set up within the Prime Minister's staff to work on the implementation of various reforms, with 5 major objectives:

(i) Ensuring the funding and smooth running of the 2003/2004 campaign;
(ii) Ensuring smooth running of the CMDT during the transitory period;
(iii) Privatising the CMDT and the HUICOMA;
(iv) Ensuring essential support functions with a view to liberalising the sector in the long-term;
(v) Strengthening producer capacities for an increased role in the sector;

Some reforms have already begun on the ground. The refocusing of the CMDT on public service missions has drastically reduced personnel which affected 595 agents in total. In terms of agricultural advice, of the original 1,000 agents, hardly half of them are now left (the ratio has gone from 1 agent for 250-300 farms to currently 1 agent for 450-500 farms).

As for agricultural support and advice, the National Department for Support to the Rural Sector (DNAMR) has been assigned to test the system of contracting agricultural support and advice, which is the recommended option in the restructuring plan.

4.2 Remaining issues and questions

Current restructuring of the cotton sub-sector in Mali occurs at a time when the cotton farmers' organisations supposed to participate in the process do not yet exist. Their creation is an integral part of the restructuring plan (objective 5). In this context, it is legitimate to question whether they will be able to take on the functions expected of them.

Obviously, if these organisations had been in place and had had real capacities, they could have actively participated in the planned reforms, which would have allowed producers to contribute more effectively to the decision-making process relating to the future of their sector.

As far as agricultural support and advice are concerned, contracting is an effective system that gives greater responsibility to producers, as all service providers (public or private) are accountable. But the implementation of such a system requires the prior existence of sufficiently organised producer organisations to express credible requests and that are capable of managing a real contracting process. Unfortunately, this system is being set up at the same time as the activities designed to organise and structure cotton farmers' associations. This will undoubtedly raise issues concerning the real efficiency of the agricultural support and advice contracting process.

Other major issues remain: commitment and effective responsibility of the various private buyers for consequential investment in agricultural support and advice. The starting point of this branch is production. Each buyer should therefore have responsibility for the success of this first link without which the implementation of other segments (collection, processing and marketing) would be jeopardised.

By adopting a new "community-driven development" approach and certainly to respond to the aspirations of rural populations, the CMDT has also replaced the State in the implementation of certain functions. This could suggest a certain disengagement of the State from missions that in principle are its prerogative. With restructuring, it remains to be seen whether the State can effectively fill the gap in the area, by developing and setting up concrete horizontal projects (basic socio-economic infrastructures, developments, etc.) that undoubtedly act as a launch pad for the cotton-producing sectors. In the meantime, it remains a relevant question.

Annex 3: Policies on youth integration in agriculture: Burkina Faso

1. Background

1.1 Brief historical overview

Burkina Faso's decision-makers have always been concerned about its youth, given their proportion in the country's population (49% of the rural population is under 15 years of age).

In this regard, various measures have been taken to set up a vocational training system, its main historical landmarks being as follows:

(i) The Rural Education scheme, set up in 1963 for rural youth who do not go to school and who, given their age (14-18 years old), are unlikely to do so in future.

(ii) The Young Farmers' Training system (FJA), set up in 1974, replaced the Rural Education scheme. This system offers a three-year training programme in Training Centres for Young Farmers (CFJA). Upon completion, the youth join Young Farmers' Groups (GJA), where they receive practical training before signing on for a two-year advanced course in the five Centres for Rural Promotion (CPR).

(iii) On leaving the CPRs, the youth receive agricultural equipment to help set them up. There are seven CPRs today: Goundi in Sanguié province, Kodougou in Kossi province, Kongoussi in Bam, Djomga in Séno, Niéna Dionkélé in Kénédougou, Bissiri in Bazèga and PK 60 in Gourma province.

(iv) The agricultural vocational training system for trainers: the Multi-Purpose Agricultural Centre (CAP) in Matourkou; the National College for Water and Forests (ENEF) in Dindéresso; the National College for Livestock Production and Animal Health (ENESA) in Ouagadougou; the Rural Development Institute (IDR) in Bobo-Dioulasso; the two Centres for Training Agricultural Trainers (CFFA) in Kamboincé and Farako-Bâ; and private agricultural vocational training centres (Nanoro, Kienfangué, Diapaga, etc.).

All these training facilities focus either directly or indirectly on young farmers.

1.2 A range of policies promoting youth integration in agricultural occupations

The key legislations adopted in favour of the youth are as follows:

(i) The legal recognition of the National Union of Young Farmers' of Burkina (UNJPA-B) by Order No. 00028 dated 23/06/1997. The Union brought together 600 grassroots farmers' organisations and was governed by the 10th May 1990 ZATU 035 Act. To comply with the 014/99/AN Act, the Union changed its name to the Faso National Federation of Young Agricultural Professionals (FNJPA), following an extraordinary general assembly on 21-23 May 2003.

(ii) The creation of a Permanent Secretariat to Support Young Farmers (SP/AJPA) through Order 99-000016/AGRI/SG/SP-AJPA of 14/06/1999. The Secretariat was assigned the following responsibilities: (a) to survey existing measures and programmes in support of farming activities undertaken by the youth and to analyse their impact; (b) to propose policies to support young farmers; (c) within the framework of development projects and facilities, to monitor the implementation of elements related to assistance for young farmers; (d) to advocate internal and external consultations on issues related to support for young farmers; (e) to effectively help mobilise resources to assist young farmers; and (f) to collaborate with all institutions and facilities working on offering aid and support to young farmers.

2. Towards a national strategy to promote the settlement of the youth in their home region (SNFJT)

2.1 Concept

The national strategy to promote the settlement of the youth in their home region is a tool for the coordination and harmonisation of measures taken in favour of rural youth. The concept is based on the "maintenance or stabilisation of young people in the 15-35 age group in rural areas". The SNFJT takes different youth categories into account, including: (a) young men and women in gender-wise or mixed groups; (b) young unemployed graduates; (c) literate or illiterate youth; (d) young returnees; and (e) youth in city suburbs who need to be integrated in the rural areas they came from.

2.2 SNFJT's main activities

SNFJT's main activities are: (a) Training/information/communication, (b) Organisation, (c) Assistance in procuring equipment through preferential loan arrangements, (d) Assistance in building basic socio-economic infrastructures, (e) Marketing and supply support, (f) Natural resource management, (g) Development of cultural, sporting, leisure and other activities for the youth.

2.3 Initiatives to support the settlement of youth in their home region

With the support offered by projects, development programmes and NGO activities, several initiatives have emerged aimed at helping youth settle in their home region, including the following:

(i) **Production Brigades** *(Brigades de production)*. This initiative, introduced in 1994 and implemented by the Ministry of Agriculture, had a three-fold objective: to increase agricultural production, to reduce unemployment among young men and to improve their living conditions. One thousand young persons were settled in four sites (Ougarou and PK 60 in Gourma, Kadro in Nahouri and Kouri in Kossi) – 250 in each. Following a 2-year agricultural training programme and after receiving equipment or funds, these young people were supposed to settle down in villages of their choice. But the initiative did not prove as successful as it was hoped, due to its "top down" design.

(ii) **The 1000 Girls operation** *(Opération 1000 jeunes filles)*. This initiative was launched in 1994 and implemented by the Ministry for Social Action. Its objectives were the same as those of the Production Brigades and aimed at training 1,000 young women per annum in tailoring, dyeing, weaving, knitting, food processing and preservation, and family life education, agriculture and animal husbandry.

(iii) **Operation "Zanu"**. Initiated in 1995 and implemented by the Ministry of Elementary Education, it aimed at "raising the general level of knowledge at the grassroots in order to increase productivity and to ensure the harmonious development of local communities", through a community programme, using literacy as an incentive.

(iv) **UNDP Project No. BKF/97/001: Grassroots Community Poverty Reduction Initiatives Support Project Support** (PAICB/LCP). It focused primarily on the poorest regions, covering 19 provinces. Generally speaking, all rural grassroots communities benefited from this programme, including youth organisations working on developing social and/or income generating micro-projects.

(v) **HOPE 87 Programme for the support of youth initiatives** *(Programme d'appui aux initiatives des jeunes de HOPE 87)*. Implemented by an Austrian NGO, the programme was involved in two types of activities aimed at assisting economic and vocational training programmes in the field. It primarily targeted unemployed youth under 30 years of age, generally for individual and "innovative" projects. The programme was placed under the Ministry of Agriculture and is directly implemented on the ground by Centre for Rural Promotion officials.

(vi) **Education IV Project**. Still ongoing, funded by the ADB (executed by Centres for Rural Promotion for training and equipping young people).

(vii) **Fund for the Integration of Youth (FIJ)**. Allocated funds by the Conference of Youth and Sport of Francophone Countries (CONFEJES), the FIJ targets the 16-30 year old age group. It was initiated in 1994 and became operational in 1997.

(viii) **Project for settling youth in their home region** *(Projet de Fixation des jeunes dans leurs terroirs)*. In order to address the issue of domestic and international migration of the youth, which can have harmful results, the government has promoted and supported schemes to encourage young people to remain in their rural home region since 1995.

(ix) The **"Direct Support for Private Sector Operators" sub-component (ADOP)** initiated by the Danish Agricultural Development Sector Programme Support in Burkina Faso (PADDAB), and implemented by the African Studies and Advisory Association (SAEC) since March 2001. The programme's objective is to reduce unemployment among the youth. Its strategy is based on the following points: (a) a "young entrepreneur's career path" in order to help young people to define their projects more clearly, which sometimes takes several months (training to be undertaken before any funding can be received); (b) project implementation through mixed financing (loan and subsidies); (c) establishment of contacts between young promoters and professionals capable of making the operation sustainable.

(x) The BKF/98/0006 pilot project on **"Support for settling youth in their home region"** *(Appui à la fixation des jeunes dans leurs terroirs)* with UNDP funding. Its primary goals are: (i) to increase food security, (ii) to reduce poverty and the rural youth exodus, and (iii) to improve the efficiency of youth support services.

3. Some achievements: an environment that facilitates access to agricultural innovations

Among the country's achievements is the fact that over 300,000 young people from rural areas are now capable of taking up, implementing and spreading innovations (extension and research). These young people are leaders in producers' organisations.

Another achievement is the Regional Union of Young Farmers' Professional Organisations from the East (UROPAJE), an umbrella organisation of 4 provincial unions with over 40 grassroots producers' organisations of more than 1,000 members. It organises training programmes on the use of agricultural innovations for its members: improved seeds' production and water and soil conservation techniques, through partnerships with research organisations (INERA) and extension services. The organisation also works towards technology adaptation in partnership with INERA in several areas, including the adaptation of bio-pesticides (neem, chilli pepper, onions) for cowpeas (niébé), sorghum and sesame crops. It is also planning to build a Website in the near future, with a database on innovative experiences in partnerships between producers and research agencies for agricultural innovation, linked to the INERA Website.

Thanks to UNDP's assistance to the Programme to promote the settlement of youth in their home region (PAFJT) and the decentralisation of financial systems, approximately CFA F 302 million were raised over 2 years and used for young people with a specific project concept: 77 producers' organisations, i.e. 1,017 members, including 270 young women, as well as 291 individual young producers.

In the light of the pilot project's achievements, a national strategy for the settlement of young persons in their home region was adopted in the last quarter of 2004, along with an action plan for its implementation. The national strategy is in line with the national youth policy, which was also adopted during the same period.

Annex 4: Innovation processes in the rice sector: the case of the "Office du Niger" in Mali

1. Background

Established in 1932, the status of the *Office du Niger* (ON) gradually evolved into that of a Public Establishment of an Industrial and Commercial nature (EPIC). Its new status virtually gave it the position of a contractor for developing and managing the Delta area on behalf of the State of Mali. With approximately 1 million ha of potentially irrigable land in the Delta, approximately 74,000 ha have currently been developed. Mostly irrigated crops are produced here, essentially rice. Market gardening has been added to the main irrigated crops, and with its rapid expansion, it too has moved from being rain-fed to being irrigated. The ON includes three main categories of producers: (i) large-scale farms (more than 15 ha in a non-redeveloped area, and an additional 10 ha in a redeveloped area, more than 5 male workers); (ii) medium-scale farms (7-15 ha in a non-redeveloped area, 4-10 ha in a redeveloped area, 3 male workers) and (iii) small farms (less than 7 ha in a non-redeveloped area, less than 4 ha in a redeveloped area, less than 3 male workers).

The most striking development in recent years would be the restructuring of the ON in 1994, the guiding principles being: (i) the ON's withdrawal from all activities of a commercial nature through the handing-over or liquidation of activities that failed to meet profitability requirements, locally or in the long term (ii) the creation of a new operational structure funded by the resources and asset base of the current ON, with the responsibility of undertaking the rehabilitation and maintenance of facilities and water management, and providing rural advisory services, (iii) the vital task of water management is funded, on the one hand, by revenue from the charges levied, of which at least 50% had to be assigned to network maintenance work and, on the other hand, a budget allocation that had to be made for the maintenance for primary infrastructure; rural advisory work was essentially funded by a State budget allocation. The restructuring led to significant institutional measures, including: (i) the liberalisation of paddy marketing and the removal of economic policing, (ii) securing land access through the creation of an Agricultural Production Permit (PEA), a residential lease for the area's farmers and non-agricultural populations and land parity committees, and maintenance funds for secondary water piping systems (Stewardship Decree No. 96/88P-RM of 01.07.96, supplemented by Order no. 96-1695/MDRE of 30.10.96), (iii) the signing of a tripartite programme contract between the State, the ON and Farmers. The direct consequence of all this was the closing down of rice fields formerly managed by the ON and the emergence of private sector farming (private operator and producer organisations) in the sub-sector, the re-sizing of the support and advice mechanism (the supervisory network shrunk from 1 agent per village to 1 agent for 8 villages; the supervisory staff reduced from 300 to 60 agents).

From the socio-economic viewpoint, the most important feature is the population explosion in the *Office du Niger* area. Indeed, the population increased from 159,739 inhabitants in 1995 to 312,815 inhabitants in 2003. Unfortunately, the development of new areas did not keep pace with the rise in population. This resulted in the fall of the average size of farms per family from 10.93 ha in 1974 to 2.5 ha in 2003. This is a clear example of the problems faced with developed land in the ON, with direct consequences on the social breakdown of families.

On the other hand, on a technical level, the average paddy yield per hectare showed a marked increase, from 2.071 t/ha in 1974 to an average production of 6.1 t/ha in 2003. The significant increase was achieved through intensification, based on the use of appropriate technology packages.

2. Socio-economic factors behind technical progress

Development of appropriate technology packages

The intensification of paddy production was based on a specific technology package in direct partnership with research facilities (IER rice programme, Niono Station). The package included:

(i) The variety (productivity, non-photosensitivity, disease resistance, etc.): two predominant varieties – Kogoni 91-1 (67%), followed by BG 90-2 (8%). A three-year seed renewal programme has been set up.

(ii) Supporting technologies: cropping systems (transplantation, maintenance of border strips, etc.), including the introduction of light agricultural mechanisation (daba shovel, leveller-bar, batten bar, plough, etc.), soil fertility management (mineral and organic manure mix).

Support and advice better adapted to producer demands

Despite the substantial staff reduction, the support and advice mechanism reviewed its method of intervention by working more on the basis of actual needs and in close interaction with producers organised around Town Associations (AV). This led to the intensification of tests and demonstrations on new technologies, visits and sharing of experiences.

This was supported by research and development, with the IER's help, the Research-Development Unit and Observatory of change project (URDOC). In particular, this helped in adapting certain technologies and also in developing farm management consultancy services (CdG – *conseil de gestion aux exploitations*), thereby improving producers' decision-making and production unit management capacities.

Access opportunities to diversified services in the upstream stage of production

Access to factors of production has been extensively facilitated by diversified financing institutions, including regular banks (BNDA or National Agricultural Development Bank), but particularly by microfinance institutions (decentralised financial system) (CAREC - Rural Credit and Savings Bank, FCRMD – Federation of Mutualist Rural Banks of the Delta, etc.). These institutions intervene by providing access to inputs (seeds, pesticides, fertilisers, etc.) and small machines. Access to small machines has also been promoted by the development of private production units, such as the Blacksmith's cooperative at the Office du Niger (CAFON).

All these facilities have led to a greater use of new varieties that demand a large number of support technologies.

Existence of services in the downstream stage of production

The closure of ON's paddy fields following the restructuring process led to the mushrooming of village shellers, managed by producers' organisations or private operators. The same holds true for threshing units. On 30 June 2002, there were a total of 591 threshing units and 749 shellers in the Office du Niger area. A private operator also had its own rice mills. Alongside this pool of processing infrastructure, several private advisory-support initiatives were implemented for the organisation of producers in rice collection, processing and marketing. Thus, several organisations were created, such as the farmers' organisation "Jɛ Ka Fere" (Let's market together), with the support of the NGO Afrique verte and the Provision of Services Centre (CPS).

This upstream support has enabled appropriate distribution and sale of the rice produced, which helps producers honour their commitments to financial institutions, by paying off their loans in cash.

The major advantage of these private services compared to public services is the quality of service provision. The diversity of services in the sector creates a certain competition. Moreover, processing units are now being modernised in order to provide better quality rice to meet consumer demands.

3. Role played by innovation

In the sector of production, one of the main roles played by innovation is in improving productivity with corresponding increases in yield, of the order of at least 2 tonnes per hectare. From the social viewpoint, some families have become independent thanks to the access to new facilities, while in the past, they had to wait for other families to complete their work before being able to use the facilities (which led to delays in completing agricultural tasks, thereby affecting production levels).

In the processing sector, the introduction of post-harvest technologies (new facilities, storage and processing techniques, etc.) has essentially improved milling yields and rice quality.

4. Key lessons drawn

- ✓ The success stories in the use of technology packages are largely due to upstream and downstream support services.
- ✓ Although some measures have been undertaken, the development of private support and advice services remains fairly limited. In spite of the type of crops grown (rice and market gardening products), the producers' commitment to help fund agricultural advisory services remains a problem. The plan to set up a service provision centre was meant to fulfil this role, but the issue still remains unresolved.
- ✓ As for the competitiveness of rice at the regional level, innovation should solve some practical issues, such as (i) the question of productivity and an improvement in the cost/output ratio, (ii) milled rice quality (post-harvest technologies: milled rice yield, rice quality), in response to an increasingly demanding regional market (such as Ivorian consumers), and (iii) the organisation of local and regional rice markets. At the same time, innovation should be supported by appropriate policies that provide solutions to the following issues: (i) protection of regional markets from subsidised rice imports (practice of dumping), (ii) taxes on agricultural inputs, (iii) decentralised financing systems for family farms, (iv) private investment incentives (support and advice, private operators engaged in production, etc.).

Annex 5: Innovation and the private sector's role in the upstream stage of production – the case of FCRMD

Analytical grid on the importance of the role played by POs and private actors	
1. Name of institution, nature and organisation	FCRMD - Federation of Mutualist Rural Banks of the Delta ("Yɛre Deme Kesu" - Helping Yourself) The origin of FCRMD goes back to 1983 and the creation of the Agricultural Input Fund (FIA) within the framework of production assistance projects carried out by the Office. In the 1990s, the FIA developed into a Village Development Fund (VDF) with the emergence of Town Associations (AV), which led to the birth of the FCRMD in 1995 (registration in 1996) along with the restructuring of the Office du Niger. FCRMD is a farmers' microfinance organisation. It has a decentralised network of 61 grassroots savings and loan funds grouped around 5 unions. It has 17,000 members and a registered capital of CFA F 137 million. The savings raised stand at CFA F 785 million, but the credit outstanding (capacity) is CFA F 2 billion per annum. FCRMD has three management bodies (Board of Directors, Credit Committee, Governing Board), composed entirely of producers.
2.. Sectors of activity	Production support (80%): Funding inputs (fertilisers, seeds, pesticides, etc.) and other factors of production (small equipment) (seasonal credit). Support to women's income-generating activities (10%): petty trade. Support to the post-harvest sector (10%): processing equipment (medium-term credit).
3. Links with the agricultural sector and producers (e.g.: processing/adding value, facilitating distribution and sale, facilitating access to inputs, etc.)	With its activities, the FCRMD helps facilitate access to inputs and small production equipment. It also helps in rice processing or adding value by enabling producers to purchase rice threshing and shelling mills.
4. How does the organisation facilitate or contribute to improving access to innovation?	The implementation of technology packages requires inputs (fertilisers, seeds, pesticides, etc.) and other factors of production (small soil cultivation machines, processing equipment, etc.). Credit provided by the FCRMD allows producers to purchase the various inputs required to use technology packages.
5. What are the key aspects of the institution's intervention that are the best incentives for innovation?	The FCRMD takes an interest in activities both in the upstream and downstream stages of production. Downstream intervention ensures that produce is distributed and sold by creating market demand; producers are encouraged to raise productivity levels and therefore promote innovation. As for upstream activities, the FCRMD launched a collective tender invitation system that considerably reduces input costs. This also paved the way for other opportunities to maximise profits by using technology packages.
6. What are the negative aspects limiting access to innovation?	The FCRMD cannot by itself meet producers' demands, which could limit their access to the technology packages advocated within the framework of agricultural intensification. Other financial institutions such as the National Agricultural Development Bank (BNDA), the Rural Credit and Savings Bank (CAREC), the "Gninsiguisso" (provident funds) meet the shortfall.
7. Concrete elements of the organisation's impact in terms of improving access to innovation.	Thanks to the FCRMD's efforts, 80% of producers in the Office du Niger now have access to seasonal credit and can now purchase the inputs required to use technologies. The difference in yields brought about by the use of technology packages in production is at least 2 tonnes.

Analytical grid on the importance of the role played by POs and private actors	
8. What are the institution's comparative advantages relative to the public sector?	The FCRMD is a producers' microfinance institution. Producers themselves grant and recover loans. Thus, there is a greater sense of responsibility among actors and beneficiaries as compared to the public sector. For instance, this has enabled it to set up endogenous repayment mechanisms (reimbursements in kind during the harvesting season), which public institutions would hesitate to do. This sense of responsibility has translated into an average loan reimbursement rate of 98%. For seasonal credit, it is practically 100%.
9. Major lessons in terms of sustainability, replication, etc.	+ The risk of family break-ups due to the disparity between population growth and the development pace of new farmlands could have a negative impact on production over time. Initiatives are underway to encourage producers to participate in developing new farmlands, but there is still a very strong trend towards social break-ups despite an increase in productivity due to greater access to innovations. + However, the system's sustainability resides in the increasing sense of accountability among producers.

Annex 6: Role of producer organisations in the downstream stage of production: The case of "Jɛ Ka Fere"

Analytical grid on the importance of the role played by POs and private actors	
1. Name of institution, nature and organisation	"Jɛ Ka Fere" (let's market together) is a farmers' association founded in 1997 with the support of the NGO Afrique verte. This farmers' organisation brings together 20 village associations or 'tons'.
2.. Sectors of activity	Rice processing and marketing.
3. Links with the agricultural sector and producers (e.g.: processing/adding value, facilitating distribution and sale, facilitating access to inputs, etc.)	While marketing rice, "Jɛ Ka Fere" soon had to deal with the quality issue. To tackle it, the group took part in high performance rice milling equipment tests along with the Agro-Enterprise Centre (CAE), which proved fairly conclusive. The organisation then drew up a capacity-building project for quality rice production. The search for financial partners was facilitated by the NGO Afrique Verte. The project received funding from the African Development Fund (ADF) amounting to approximately 129 million dollars. This enabled it to purchase efficient rice milling equipment. With the support of the NGO Afrique Verte, "Jɛ Ka Fere" has been organising a rice exchange" every year (December-January), during which "Jɛ Ka Fere" can negotiate directly with traders. The negotiations are facilitated by Afrique Verte. At the conclusion of the negotiations, deals are finalised and contracts signed between "Jɛ Ka Fere" and traders. The organisation is supported by qualified technicians in management, negotiations, legal advice and the Provision of Services Centre (CPS). When the contracts have been finalised, "Jɛ Ka Fere" distributes the quantities required for collection among its grassroots organisations.
4. How does the organisation facilitate or contribute to improving access to innovation?	The rice exchange allows "Jɛ Ka Fere" to offer incentive purchase prices to producers. The price negotiated is generally around CFA F 220 per kg. Such compensation for their investment encourages producers to increase productivity and therefore innovate. During the test period for the new "étoile du Delta" rice promotion equipment, the organisation was able to ask for record prices as high as CFA F 350 per kg.
5. What are the key aspects of the institution's intervention that are the best incentives for innovation?	The main factors inciting innovation are the facilitation of product distribution and sale and the possibility of getting remunerative prices.
6. What are the negative aspects limiting access to innovation?	The action of "Jɛ Ka Fere" action seems very limited. Its major shortcoming is its inability to mobilise large traders who can handle larger quantities of rice. The remaining quantity of rice is distributed and sold through less lucrative channels.
7. Concrete elements of the organisation's impact in terms of improving access to innovation.	The guarantee of remunerative prices (CFA F 200-220 per kg) is a very important element. The average volume of rice sold through this mechanism is 600-700 tonnes per annum. Similarly, new processing equipment purchases offer an even greater opportunity to make rice more competitive and its prices more gratifying.
8. What are the institution's comparative advantages relative to the public sector?	Producers represented by "Jɛ Ka Fere" themselves negotiate prices for producers. Furthermore, producers are fully responsible for marketing. The NGO Afrique Verte only plays the role of a facilitator. The establishment of direct relations between producers and traders makes negotiations more transparent.
9. Major lessons in terms of sustainability, replication, etc.	+ "Jɛ Ka Fere" does not currently have adequate working capital of its own. Most of the funds required for rice collection (payment in cash) come exclusively from traders. + Likewise, about CFA F 20 of the negotiated price is earmarked for covering packaging (transportation) charges and very little if anything is allocated for the autonomous functioning of "Jɛ Ka Fere". Other funding sources include membership fees and commissions on sales or threshing machine charges, but these amounts are not enough to build a substantial working capital. This state of affairs has raised the issue of the operation's sustainability. In time, we may hope that the organisation will purchase new equipment that will enable it to become truly autonomous.

Analytical grid on the importance of the role played by POs and private actors: the case of the NGO Afrique Verte

1. Name of institution, nature and organisation	Afrique Verte, an NGO. Afrique Verte is a French NGO created in 1990 by 5 French NGOs (*Frères des Hommes, Peuples solidaires, Terres des Hommes, Comité catholique contre la faim et pour le développement* and *Association française des volontaires du progrès*). In the aftermath of drought and food security problems in the Sahelian region, most countries tended to supply food aid as the sole solution. In response to this policy, Afrique Verte lobbied extensively to make taxpayers understand the relevance of providing support for a marketing system to be organised by bringing surplus and undersupplied areas together. Afrique Verte works in three Sahelian countries: Burkina Faso, Mali and Niger.
2. Sectors of activity	Support for grain marketing by connecting supply with demand. Afrique Verte directly supports producers' organisations.
3. Links with the agriculture sector and with producers *(e.g.: processing/adding value, facilitating distribution and sale, facilitating access to inputs, etc.*)	Afrique Verte works in the agricultural sector. It creates market opportunities for grain products by connecting supply with demand. Its actions occur in the downstream stage of production.
4. How does the organisation facilitate or contribute to improving access to innovation?	Marketing has generally been a problem for most grain products (barring rice). That is one of the reasons why producers are not motivated enough to improve productivity and, therefore, make use of innovations. This is generally the case in Sahelian countries. By providing market opportunities for grain products, Afrique Verte creates favourable conditions for investments in productivity improvement.
5. What are the key aspects of the institution's intervention that are the best incentives for innovation?	The key aspects that most encourage innovation are the following: * Capacity-building of professional producer organisations through training on grain marketing, management and negotiating techniques with trade partners * Facilitating farmers' organisations' eligibility for institutional credit by standing surety for savings and loan funds. Thus, Afrique Verte enables women's associations and consumer cooperatives to obtain loans for marketing grains * Putting grain sector actors (producers-buyers) in direct contact with each other by coordinating and organising grain exchanges.

6. Concrete elements of the organisation's impact in terms of improving access to innovation.	**Extensive activities in various agro-ecological areas in the Sahel** 1. In the Senegal River valley (from Kayes in Mali to the mouth of the Senegal in Saint-Louis): Revitalisation of cross-border grain trade between Mali, Senegal and Mauritania 2. In Mali: Support in the structuring of professional producer organisations in the sphere of marketing. Emergence of federations establishing trade relations and supplying processing units in urban areas, coordination and organisation of grain exchanges. 3. In Burkina Faso: Support to a network of about 100 farmers' organisations active in grain marketing. Development of 6 regional information centres providing up-to-date information to POs and partners on the crop year and market situation. 4. In Niger: Support to a network of about 43 cooperatives. Stimulation of trade between over 60 cooperatives on market issues. Support to women's groups in urban areas (grain marketing, processing, etc.) **Development of several tools for the promotion of cereals product marketing** 1. Grain banks: Tools for instilling a sense of responsibility within communities for grain product collection and marketing. 2. Coordination and organisation of grain exchanges: * National exchanges * Regional exchanges: First exchange in January 2001 in Kayes, Mali, with Malian, Senegalese and Mauritanian operators; second exchange in May 2001 in Ouagadougou, Burkina Faso, with operators from Burkina, Mali and Niger. In 2001, more than 12,000 tonnes of grains provided by Sahelians to supply other deficient areas.
7. What are the institution's comparative advantages relative to the public sector?	* An approach aimed at instilling a sense of responsibility among local grain sector actors. Helps farmers' organisations in organising themselves and getting training on post-production phases. * Large-scale regional action without bureaucratic red tape and with smaller teams: priority allocation of funds for field level activities (70% of funds, including 10% for credit support; 15% for development education and 15% for administrative expenses).
8. Major lessons in terms of sustainability, replication, etc.	* Taking into account the WAEMU's sub-regional integration process. Afrique Verte's ambition to promote cross-border trade. * A vision for promoting the autonomy of national teams and giving them legal recognition as Sahelian NGOs. * A new ambition – grains processing. Strengthening support to women's associations active in grain processing, especially in urban areas.

Annex 8: Agro-industrial processing and innovation: the case of the Millet-Sorghum Initiative

Analytical grid of case studies of a regional project funded by the IFAD, MEA AND SG2000

1. Title	Initiative for Millet-Sorghum Development in West and Central Africa: "Managing downstream activities"
2. Brief description of the context: producers concerned and enterprise types.	This initiative is based on the strategic importance of two crops (millet and sorghum) in the dry savannah and Sahelian zones. Although millet-sorghum cropping is the most dominant in these areas that are inhabited by the poorest farmers (along with legumes, generally), it has been acknowledged that very little attention has been paid to such enterprises and that they are considered "orphan crops". This initiative is the outcome of joint action by several institutions and regional networks: Coraf/Wecard, Icrisat, Intsormil, Cirad, Rocafremi and Rocars. The initiative covers five West and Central African countries (Burkina Faso, Mali, Niger, Senegal and Chad) and has been implemented by the African NGO Global 2000.
3. Purpose	The initiative's purpose is to set in motion a development process led by the millet-sorghum market, which is the mainstay of agriculture in West and Central Africa's semi-arid zones. The main objective is to promote private operators in the agribusiness sector and encourage agro-industry sectors to invest in millet and sorghum production and development. The initiative essentially aims at restoring hope among the poorest producers in West and Central Africa's semi-arid zones. This can be done by improving food security through increased revenues in rural areas and by encouraging farmers to move towards more sustainable agricultural production systems.
4. Links with technology access and use	One of the activities on which the Millet-Sorghum Initiative is based is the mobilisation of actors. Among others, this leads to the building of strong partnerships between producers and actors involved in millet and sorghum processing, by helping to promote demand for innovations in the production of these two crops and processing. Such partnerships enable producers to solve the thorny issue of agro-product distribution and sale and helps processing actors find solutions to raw material quality issues.
5. Downstream services encouraging or stimulating technology use: *actors intervening in the supply of such services, organisations supplying such services.*	Downstream services encouraging innovation in the production sector promote direct contacts between two categories of actors in particular: producers and processors (trust-based culture). The Millet-Sorghum Initiative defines direct contacts between these two categories of actors through a "contracting activity" that follows the following steps: * Signing of agreements between producers and processors for the supply of a quality product, defined at an appropriate time. These contracts provide for bringing selected varieties under cultivation, to meet the need for specific processed products based on consumer demand. * These agreements generally result in producers cultivating a given variety of millet or sorghum, selected by research (productivity, processing capacity, sensory characteristics, etc.) and in demand by processors, along with other supporting technologies (cropping techniques, fertility and pest management, preservation techniques, low impurity rate, etc.).

* The agreements also give producers guaranteed prices, which include the market price plus a "quality bonus". Thus, these prices act as incentives and motivate producers to implement the innovations needed to meet contractual provisions. Apart from these prices, their produce is guaranteed to be picked up.

* Other facilities are provided to producers in implementing such contracts, such as ease of access to inputs, with the possibility of reimbursing input costs in kind (part of their production). The produce is paid for in cash.

6. Some results

In 2002, contracting activities took place in four countries (Burkina Faso, Mali, Niger and Senegal).

In Niger:
Two contracts were signed between the Forum of private seed producers' groups (CGPPS - *Collectif des groupements de producteurs privés de semences*), "***Bunkasa Iri"*** in Kouroungoussaou (Maradi), consisting of four producers' organisations (*Sae-saboua, Maiki, Sabon-machi* and *Chadakori*) and two processing units in Niamey (the "***ALHERI"*** women's processing group and the *Société de transformation alimentaire* or "***STA"***, a private processing company).

The operation related to two millet varieties (HKP: 70 t and ZATIB: 30 t). A total of 22.80 tonnes of produce meeting the standards described in the contracts could actually be delivered against the overall demand for 100 tonnes. Parallel sales due to direct State intervention for constituting safety stocks seriously disrupted product collection and, consequently, producers were unable to meet the contract fully. Although the operation actually involved 89 producers on the whole with a total sown area of 150 hectares, only 25.5 tonnes of unprocessed products could be collected from POs.

In Senegal:
Contracting involved GIE TCL (11 processing companies) and the GIE Dramé Escale Production Federation. It was a millet contract. The actors who participated directly in the operation were: producers, extension workers (Ancar) and NGOs (Ewa).

The operation enabled the use of the Souna III millet variety and support technologies such as cropping techniques, fertility and pest management.
Thanks to the contracting system, 40 tonnes of millet were supplied at market prices, along with a quality bonus of CFA F 20 per kg of produce.

Types of equipment being tested in member countries:
Thanks to the initiative, 7 types of equipment adapted to the needs of the region's processors were tested. These were multifunctional threshers, stone removers, continuous shredding machines, scalpers, alpine mills, rollers/granulators and rotary gas dryers.

7. Role of innovation in maximising different services provided: *what is the contribution of innovation to added value (productivity, product quality, cost/quality ratio)?*

Innovation actually contributed to acceptable productivity levels.

In Burkina Faso, for instance, the following technology packages were developed:

For millet:
* Improved varieties (IKMP 1 and IKMP 5)
* Treatment with Apron Star (1 bag/4 kg of seeds)
* Fertilisation with NPK fertilisers (100 kg/ha)

For sorghum:
* Improved variety (Framida)
* Treatment with Calthio (1 sachet /10 kg of seeds)
* Fertilisation with NPK fertilisers (100 kg/ha)

The use of technology packages helped achieve average productivity levels of 886 kg/ha of millet (as against 500 kg/ha with traditional cropping) and 1560 kg/ha of sorghum (as against 700 kg with traditional cultivation).

Apart from productivity, innovation also aims to guarantee a given level of processing quality.

In the case of Niger, for instance, the objective of innovation (variety, cropping pattern, post-harvest techniques, etc.) was to guarantee a product with the following qualities: moisture: <10%; grain size >2 mm: 89%; pebbles/sand: 0%; debris/misc. impurities: <1%.

8. Lessons*: Lessons learned in terms of replication, sustainability, etc.*

* Creation of opportunities to focus more on enterprises of regional importance (on a basis of 80-90% of production systems), but which have been neglected so far. Regional or international consideration is given because the demand for processed products (biscuits, couscous, etc.) is high at regional and international levels[39].

* Opportunities offered in terms of technology use by producers in enterprises that were generally neglected by research and agricultural development policies in the past. Crop varieties remain the goal of technology packages required in the system (in response to specific processing needs: milling yield, nutritional and sensory quality of processed products, etc.), to which a wide range of support technologies is added: cropping techniques, soil fertility, pest management and post-harvest technologies (threshing, product processing and preservation, low impurity levels).

* But the lack of professionalism among actors (producers and processors) is sometimes a handicap, leading to issues of non-compliance with contractual commitments, access to funding, etc.

* This type of operation calls for actual and effective support services: credit, negotiation/contracting services, etc.

[39] Market studies on processed products were conducted in the countries involved and revealed a real demand at regional and international levels. In Senegal, for instance, the studies showed a wide range of exported millet products, such as “thiéré” (couscous), “arraw” (granulated millet meal) or “thiacry” (more or less granulated millet meal).

9. Conclusions / recommendations

* Promotion of more consistent agricultural development policies that take into consideration approaches based on the establishment of links between production and the marketplace.

* Development of consistent policies (favourable tax system, conditions favouring access to energy, etc.) that encourage the emergence of a strong private sector, especially in the agro-industrial processing sector. Currently, this sector is still in an embryonic stage in the region.

* Enhancing the professionalism of all actors involved (producers' organisations and processors) for the development of beneficial partnerships.

Annex 9: The policy to promote cooperatives in Burkina Faso

Objective and background

In 1998, the government of Burkina Faso adopted a National Policy to Promote Cooperatives by Decree no. 98-466/PRES/PM/AGRI dated 2 December. The policy was translated concretely into Act no. 014/AN 99 of 15 April 1999, which regulates cooperative societies and groups in Burkina Faso.

Overall strategy

The operation's overall strategy is based on the following aspects:

(i) Definition of and respect for an institutional framework as well as a clear, well-adapted legislation.

(ii) The public service roles in charge of providing support to producers will have to be gradually transferred to POs and other partners (NGOs, projects, etc.) displaying the required expertise.

(iii) The State should effectively refocus on its regal duties (formulating and monitoring the application of laws and regulatory texts associated with POs, redirecting the main thrust of its development policies, consultancy and support for actors, control over the execution of various projects and services, follow-up and implementation of plans and programmes, programme impact assessments, registration and approval of POs, mediation regulating relations between POs of a cooperative nature and other organisational forms).

(iv) The creation of a dialogue among all actors concerned by the State.

Strategic directions

The main actions envisaged are as follows:

(i) Organisational capacity-building through the formulation of a legal framework furthering the emergence of dynamic Professional Agricultural Organisations (OPA – Organisations Professionnelles Agricoles) and support for restructuring the OPA and to organise the entire farming profession.

(ii) Contributing to increasing decision-making powers at the grassroots level through information/training/awareness about their responsibilities and their status in their organisation's life.

(iii) Furthering women and youth participation in the cooperative's life cycle by: (a) designing an approach for integrating women and youth in gender-based cooperatives, (b) allocating necessary resources for promoting cooperatives based on the specific needs of women and youth, (c) supporting these target groups' organisational initiatives: case of projects aimed at settling youth in their home regions.

(iv) Strengthening and/or setting up consultation and collaboration frameworks.

(v) Promoting applied research on the cooperative movement.

(vi) Encouraging the transfer of skills (new project execution strategy for POs).

(vii) Contributing to increasing financial resources by encouraging the development of economically profitable activities, raising awareness about the significance of issued capital and building a support fund for the cooperative movement.

(viii) Enhancing POs' production and marketing expertise.

This environment mainly encouraged the emergence of POs with adequate capacities that enabled them to participate in the innovation process began to see the light of day. The main positive effect on the facilitation of innovation was the fact that some POs were able to provide the necessary services to their members in terms of access to inputs, product collection and marketing, and partnerships with research and dissemination institutions. However, despite a few success stories in the area of access to innovation, it was generally felt that most producers' organisations did not have the capacities needed to provide better agricultural support and consultation services. The implementation of policies revealed a clear divergence between the State's withdrawal and the capacity-building of actors who were supposed to take over.

Annex 10: Process used for taking account of producers' demand: the case of the Regional Commissions of Beneficiaries (CRU) of research in Mali.

Background

Regional (CRU) and national commissions (CNU) of beneficiaries were set up by the Malian Rural Economic Institute (IER) in response to concerns about an efficient method to involve of producers in the technology generation process.

CRUs and CNUs include producers and processors selected from their grassroots organisations (associations, cooperatives) in the agriculture, livestock farming, fishing, agroforestry and fish farming sectors, among others. They are affiliated to the National Centre for Agricultural Research (CNRA), an organisation involved in setting the main guidelines for the National agricultural research system. As far as its operation is concerned, the CNRA has three commissions (a scientific commission, a financial commission and a users' commission).

Organisation of CRUs and CNUs

The **Regional Commission of Beneficiaries** consists of representatives from farmers' organisations elected from among sixty POs considered to represent the region and which constitute together a **college.** One representative per PO provides the interface between the CRU and other grassroots farmers. The college plays the role of an assembly that examines and approves the CRU's programme and activity report as well as all proposals aimed at strengthening the beneficiaries' autonomy.

The CRU's responsibilities are as follows: (i) Drafting and presenting a platform to the college; (ii) Submitting the platform to the IER's regional Centre for Agricultural Research for the formulation of research projects; (iii) Creating and presenting an activity report; (iv) Participating in the monitoring and assessment of research projects; (v) Negotiating research contracts with specialised researchers.

In addition, CRUs have established partnerships with the research community (participation in research project monitoring and assessment, participation in activities organised by research bodies such as open houses, project visits, regional technical committees, etc.).

Within the framework of capacity-building for research beneficiaries, the CNRA funds the organisation of meetings between CRUs and colleges, as well as their participation in research meetings and training. These training sessions endeavour to expand the range of research contacts at the level of beneficiaries, because the quality of their contribution to the research process depends on the training and information level they will achieve.

The **National Commission of Beneficiaries** consists of CRU chairmen from the regions of Kayes, Koulikoro, Sikasso, Ségou, Mopti, Gao, the representative of the Permanent Assembly of Mali's Chambers of Agriculture (APCAM) and Professional Agricultural Organisations (OPA).

How social demand is identified and converted into a research project

The process for the formulation and inclusion of demand follows the following major steps:

- Identification of grassroots level needs and constraints (producers, processors, etc.) by the POs of the concerned college
- Referral of constraints to the CRU level by the college
- Analysis and summary of constraints, and formulation of a platform by the CRU
- Debates on research constraints (with CRUs) in the preparatory committee
- Sharing of results to farmers' organisations by the CRU members

- Development of research subjects by researchers
- Presentation of research subjects within the regional technical committee that brings together researchers and their partners (extension workers, NGOs, CRUs, technical services, etc.)
- Presentation and discussion of the scientific quality of subjects in the Programme Committee
- Presentation of projects to the CNRA Scientific Commission
- Research implementation
- Sharing of research results to beneficiaries
- Dissemination of results so they can be implemented at the grassroots level
- New research requirements (restarting the cycle).

This process allows CRUs to act as an interface between the research community and farmers.

Partnerships

CRUs work in partnership with research bodies (participation in research project monitoring and assessment, participation in certain activities organised by research units, such as open houses, research centres visits by regional technical committees).

Likewise, CRUs also work in partnership with Swiss cooperation organisations through Swiss Inter-coopération and the Syngenta Foundation. For instance, the partnership with Inter-coopération has taken the form of institutional and operational capacity-building in the Sikasso and Ségou CRUs, along with the funding of other activities such as the implementation of research projects ensuing from the CRU platform, the implementation of a farming monitoring system and the forthcoming implementation of an information system.

The results already achieved indicate that the support given by the Swiss Development Coopération and the Syngenta Foundation to the Sikasso and Ségou CRUs needs to be extended to other regions in Mali. Indeed, this kind of partnership between a PO/CRU and research bodies could set an example for other countries, thereby increasing the effectiveness of agricultural services in a sustainable manner.

Positive aspects in favour of such processes

For the main research institute (IER), the key reasons for intensifying producers' participation in the technology generation and adaptation process are the following:

- Research facility decentralisation for greater proximity to users: At present, the IER has 6 agricultural centres (Sotuba, Kayes, Sikasso, Niono, Mopti, Gao), 9 stations and 13 sub-stations.
- The presence of research teams open to participatory approaches and working in partnership with users: these research teams are involved in several partnership-based regional initiatives (e.g.: Research, Extension and Producers' Organizations Partnership Network – REPO-Net[40], Plant gene resources' conservation project, etc.).

There are also several global opportunities, including:

- The National Committee for Agricultural Research, which plays the role of a facilitator between all research service providers and interfaces between them and beneficiaries.

[40] *Further information on the REPO-Net is available in the January 2003 No. 47 Agricultural Research and Extension Network newsletter issue (AgREN): www.odi.org.uk/agren/papers/newsletter47.pdf*

- The existence of decentralised structures for exchange, dialogue and planning activities, such as the Regional Committee for Agricultural Research and Extension (CRRVA).
- The development of new funding approaches for the provision of agricultural services to producers. These new mechanisms favour the grant of public funds to users who pay public or private service-providers for different services. Such mechanisms further empower producers and ensure the accountability of each service provider vis-à-vis the producers. This is essentially the outcome of the discussions held by the Neuchâtel Group, during which several development agencies defined a common vision for financing agriculture advice and development support (for more details on the outcome of this initiative, please see the following Websites: www.neuchatelinitiative.net and www.lbl.ch/int).

Some shortcomings or limiting factors

In terms of research, the fact that research projects generally remain incomplete is a major shortcoming. In most cases, no economic, social and environmental impact assessment is carried out, which does not help users to reach appropriate decisions as to whether they should use the new technologies proposed. Thanks to a partnership between the Sahel Institute and American Universities, efforts have been made at regional level for training trainers on impact assessment issues in research institutions. However, a great deal remains to be done within research institutions such as the IER in Mali.

Recently, the IER used the CAMES system to initiate a method for assessing and promoting its researchers. This system revealed that the only motivational element is the use of technical papers (data sheets) aimed at users, which is still insufficient.

Annex 11: Strengthening partnerships as the key factor of agricultural innovation: the "no-till" case in Ghana

Background

In the 1990s, the Kumasi Crop Research Institute (CRI), Sasakawa Global 2000 and the Monsanto Company pioneered the "no till" or "zero tillage" technology with mulching. With this technology, harvest residue is left behind to cover the ground and retain fertility. Seeds are planted without tilling the soil and residues are never burnt. This technology used to be popular in Ghana, but it had been forgotten.

Zero tillage promotes the sustainable development of the soil's physical and chemical characteristics, while allowing for weeds and pests to be better controlled, thanks to sustained biological activity in the soil. However, a significant rise in weeds, diseases and pests can easily neutralise these benefits. Consequently, bearing these constraints in mind, a three-point technology package was proposed:

- The use of improved and enhanced maize seeds.
- The use of pesticides to kill weeds without burning or burying them in the soil. An increase in organic matter and better maintenance of the soil's organic structure is possible with this practice. It also helps cut down labour requirements, especially for tilling or weeding.
- The use of chemical fertilisers to supplement crop residue with minerals.

While the use "no-till" technology may be widened without necessarily linking it to the use of improved seed varieties, actors concluded that incorporating improved high-yielding maize varieties in the technology package would be advisable.

In fact, before this technology was introduced, land could only be farmed for up to three years because of a decrease in soil fertility. As a result, producers had to clear new fields after 3 years, while the depleted fields had to be left to lie fallow for 5 to 10 years in order to allow the soil to regain fertility. But thanks to the introduction of the "no-till" technology, fields can be farmed indefinitely and the soil retains the bulk of its characteristics. However, the resulting intensification in cropping calls for an additional input of chemical fertilisers.

The strengthening of the partnership between actors has been a key factor in the dissemination and adoption of the "no-till" technology.

In Ghana, more than 200,000 farms of 50,000 ha on average use this technology. At present, agricultural departments in neighbouring countries like Nigeria are keen to learn more about this technology.

Three main factors led to the widespread dissemination of the "no-till" innovation:

- ***Training of producers by extension workers*** just before the start of the crop year. The main topics are (i) the "no-till" concept; (ii) the chemical product mix and the appropriate period for the use of herbicides and pesticides; (iii) application techniques for these products; (iv) possible use of crop residue as well as rotation techniques. The training is interactive and producers with expertise in this technology are allowed to demonstrate their knowledge.

- ***Emergence of a private input distribution network***, consisting mainly of young persons under 40 years old. The growth in agricultural inputs' markets in villages has enabled a wider use of the "no-till" technology. In fact, the use of inputs such as herbicides, pesticides and chemical fertilisers is part and parcel of the technology package. Two main input marketing cycles are operating simultaneously – the conventional official traders' cycle and an informal input

marketing system run by extension and research workers. Far from competing with each other, these two systems complement each other as they offer their services to different producer categories. While some producers buy inputs in cash, others manage to get micro-credits from suppliers or rural banks. One of the aspects highlighted by the "no-till" technology impact study is the fact that most agricultural inputs (herbicides, pesticides and chemical fertilisers) suppliers are young people under 40 years old with a relatively higher level of education compared to other producers (*Ekboir, J., K. Boa, and A.A. Dankyi. 2002. Impact on No-Till technologies in Ghana. Mexixo D.F.: CIMMYT*).

- ***The partnership between the public sector, private sector and multinational companies*** to promote the no-till technology was a major factor in innovation generation and dissemination. In the early 1990s, researchers from the CRI and the Ghana Grains Development Project (GGDP) had conducted research on this cropping system without any interaction with input selling companies. In the mid-1990s, the NGO SG2000, the multinational company Monsanto, the Kumasi CRI and the extension division of the Ministry of Food and Agriculture (MOFA) joined forces to promote "no-tilling" in forest and transitional zones (Ghana's southern and central regions). In 1993, Monsanto worked with the CRI to assess the effect of herbicides on maize and bean fields. The results showed that the use of herbicides led to higher yields and lower labour requirements. In fact, rural banks have begun to take an interest in the promotion of this technology by offering micro-credits to farmers to help them buy inputs.

This technology has had a three-fold impact:

- ***A cutback in labour requirements***. There has been an estimated one-third decrease in labour requirements compared to producers who are not using this technology. Indeed, with the "no-till" technology, clearing, tilling, planting and weed control no longer require any labour. Producers thus use this freed-up manpower to other activities, while maintaining the same production level. However, higher yields have meant a slight increase in the labour force for applying chemicals and for harvesting. But the increased labour requirements (translating into higher costs) with the adoption of this technology package are much lower than the savings ensuing from reduced labour requirements for tilling, planting and weed control.

- ***A reduction in the average distance covered*** to carry out specific tasks. With the cropping systems prevailing before the adoption of the "no-till" technology, producers had to cover 10 km on average to carry out various tasks in their fields. They only have to cover an average of 6.7 km now. This change has led to an improvement in their quality of life, as producers now have more time for other activities, whether social or economic.

- ***An increase in producers' incomes.*** The new technology has led to an estimated 48% rise in maize yields. It also helps cut down yield losses due to drought as it reduces moisture stress.

The adoption of the "no-till" technology developed within a cooperative framework between different actors: research (CRI), extension services, the NGO SG2000, private input distribution networks, Monsanto (a multinational company manufacturing and marketing chemical products used in agriculture) and microfinance institutions. The specific contributions of each actor helped disseminate this technology among producers. Consultations among the actors concerned helped define the technology package more appropriately, as it now includes several new elements such as improved seed varieties, fertilisers and herbicides. This example also demonstrates that the youth (less than 40 years of age) played a significant role in marketing inputs, which are one of the "no-till" technology package's components.

Annex 12: Innovations in the sector of pineapple production through the organisation of exports: the case of SPEG

Objectives

SPEG (Sea-freight Pineapple Exporters of Ghana) is a company which brings together most Ghanaian pineapple exporters. It is a professional organisation with a Secretariat and operational staff based in Accra and in the port of Tema. Policy strategies are set by an executive committee made up of six individuals and one chairman. Daily management is carried out by professionals who are supervised by a manager and a director of operations, who are both based at the port of Tema.

The company's key objectives are as follows:

(i) To establish contact between pineapple exporters and producers using sea-freight;

(ii) To help pineapple exporters buy and identify raw materials and to organise the export of pineapple;

(iii) To ensure the quality of exported product through processing and packaging audits, carried out where products are grown and packed;

(iv) To encourage an exchange of information and collaboration on marketing and production, at both local and international levels.

Role played by the downstream stage of production in promoting innovation

To meet its objectives, SPEG is in charge of coordinating all its exporting members' cargos that are meant for export. The company deals with all administrative processes or any other formalities required prior to exporting pineapple. These processes are sometimes complex, therefore genuine expertise is required in order to facilitate the access to export markets. As a consequence, SPEG provides particularly valuable support to exporters who, at times, do not have accurate knowledge of the procedures and formalities necessary for the export of agricultural produce.

The company is also in charge of carrying out checks and follow-ups on all produce collection operations prior to exportation and it is responsible for the monitoring and follow-up of each stage, from the loading port to the various destination ports.

In our example, the innovation factor involves handling pineapple export procedures as well as managing and disseminating information to producers/exporters and exporters. Indeed, the fact that exporters have been brought together within SPEG means that export-related costs can be reduced. The company also allows for the centralisation of information and, consequently, provides a better quality of information on markets and products. This openness to markets has enabled several pineapple producers to implement improved pineapple technologies (new MD-2 pineapple varieties, new growing practices such as plastic-mulching, which involves covering soils with biodegradable plastics). In this particular example, organisational innovation leads to the adoption of technical innovations by providing a solution to a link that is missing in the value chain. The results of such innovations are an increase in pineapple yields, a rise in public revenue and improved livelihoods for producers.

The other innovating factor worth highlighting is the willingness to comply with EUREPGAP[41] (Euro Retailer Produce Working Group – Good Agriculture Practice) European export standards. Indeed, HAG and SPEG both applied for EUREPGAP certification.

[41] EurepGAP was set up in 1997 to give consumers a guarantee on food products concerning the use of chemical pesticides and GM crops following the mad cow crisis.

The results of innovations in the sector of pineapple production can be measured through this commodity's yield and export growth. Indeed, until 1995, pineapple exports were mainly transported in refrigerated containers. As of 1995, the creation of SPEG by a group of exporters allowed exported goods to be transported on refrigerated ships. Since then, SPEG membership has soared and there has also been a strong increase in pineapple exports. Between 1995 and 2002, SPEG membership almost tripled, from 15 to 42 member companies. Yields increased 10-fold over the same period, from 3,000 tonnes in 1995 to 45,000 tonnes in 2003.

The organisation of pineapple exports has contributed greatly to agricultural innovation by creating conditions that are favourable to production. Having gained access to pineapple export markets, pineapple producers have been able to adopt new varieties such as the MD-2, since they would be sure of finding a market for their production. This shows that agricultural innovation is impossible if changes are not implemented downstream. By organising pineapple export markets and by controlling the quality of exported goods, SPEG has become a catalyst in the adoption of pineapple-related innovations by producers and agribusiness.

Annex13: Access to agricultural innovation and compliance with horticulture standards: the case of the GIG and SMILE Initiatives led by the NGO "Concern Universal" in the Gambia

Background, objectives

The objective of the **"Gambia is Good" (GIG)** project, led by the British NGO Concern Universal, is to promote and facilitate the sales of Gambian horticultural produce at the national level. A market survey conducted in 2001 by the Tourist Office, in collaboration with other partners, revealed that the hotel and restaurant market for fresh produce amounted to almost 12 million Dalasi per year (almost one million US dollars). Large quantities of carrots, potatoes and onions are regularly imported in order to meet the hotel industry's demand. Major supply issues on the domestic market which hotels and restaurants in the Gambia have faced include the regularity of supply, the reliability of quantities ordered as well as the quality of the produce.

Paradoxically, these supply difficulties apply to products which local producers are able to supply: potatoes, carrots, tomatoes, onions, etc. However, hotels and restaurants have to import those foodstuffs in order to ensure the quality and regularity of their supply. Moreover, production costs at local level are lower than the price of imported goods.

The aim of the GIG project is to develop the local market for this fresh produce by establishing contracts with hotels and restaurants in Banjul. In order to improve producers' livelihoods and to develop entrepreneurship and good business practice within rural populations, the GIG project is planning to support the most vulnerable producers in the marketing and packaging stages of fresh horticultural produce. Packaging material for fresh produce would be purchased by the NGO in order to guarantee good quality from the harvest location right through to the urban markets on which it will be sold.

To support this objective, the project is complemented by another project called **Smallholder Irrigation for Livelihood Enhancement (SMILE)**, initiated by the same NGO, but funded differently. Unlike the GIG project, which deals with the downstream stage, the activities included in the SMILE project are targeted towards the upstream level of production. The SMILE project aims at promoting irrigation technologies which are appropriate for and accessible to small farms. Access to irrigation would be a decisive benefit in the supply of those off-season products which generally the Gambia and the Sahel unfortunately lack. The SMILE project also endeavours to promote technologies already identified as success stories in other Third World countries. The key elements are as follows:

- Promotion and marketing of technologies which are appropriate for small farms, such as promotional activities and advertising campaigns on horticultural products, fruits and vegetables;
- Research into the equipment required to ensure quality and compliance with norms and standards based on the local micro-industry and centralised and reliable quality control coupled with a good pricing policy;
- Promotion of cheaper irrigation technologies (such as pedal pumps);
- Coaching of producers in the areas of training and information, as well as establishing contacts between producers and the market. In the next stage, demand should stimulate the private sector; producer organisations (POs) would then be encouraged to take over this role in order to supply production- and sales-related services for quality agricultural products which comply with the market's norms and demands. The manufacture and sale of irrigation equipment could also be taken care of by local blacksmiths. Some successful examples are well known in Senegal and these could inspire Gambian artisans. Training programmes supplied by Senegalese artisans have already been envisaged within the framework of this project.

Irrigation technologies are particularly important since they enhance the value of off-season crops. West Africa imports vast quantities of vegetables during the off-season. Fairly large quantities of onions are imported from the Netherlands. This NGO thus promotes innovation via the adoption of irrigation technologies, which allows imports to be decreased during shortage periods and improves the Gambian producers' livelihoods.

As indicated above, the SMILE project works at the upstream level of production by helping small farms produce horticultural commodities required by the national market, through the promotion of appropriate technologies. The GIG project works downstream by helping small farms sell and market horticultural products to hotels and restaurants in particular.

This approach, based on creating favourable conditions for innovation both at the upstream and downstream levels is key, because both levels are always interlinked. Moreover, the projects are based on existing demand, i.e. the hotels and restaurants' need to buy fresh produce. In such a context, small farms are able to adopt irrigation technologies and obtain seeds which meet the market's quality and quantity standards. Consequently, not only do these projects help encourage innovation, but they also improve the producer's income and living conditions. The producer's management capability would also be developed.

This experience shows that local markets are sometimes neglected when, in fact, they offer considerable untapped potential. Access to agricultural innovation is not possible if national and regional potential is not exploited. What has been observed in the Gambia also applies to most West African countries. This experience may therefore inspire other countries to investigate often under-exploited local and regional potential. In West Africa, two rather under-exploited issues are cheap irrigation technologies (such as pedal pumps), which allow off-season crop growing, and the development of marketing-enhancing infrastructures.

In order to follow up such an approach, however, a key question remains to be asked: it is often observed that activities carried out within the scope of an initiative stop as soon as the project ends. What concrete actions could be taken to overcome this problem? What actions, at a political level, could ensure that the private sector continues with the project activities? These questions should be permanently borne in mind when defining and executing projects.

Annex 14: Summary of the feedback from the Electronic Survey (December 2003 – March 2004)

This note summarises the feedback collected during the electronic consultation carried out by the SWAC Secretariat from December 2003 to March 2004 with various actors in West Africa. The aims of this consultation were (i) to refine our approach to issues relating to access to agricultural innovation; (ii) to learn lessons from experiences in the sector of agricultural innovation and from the opinions of regional actors in terms of access to innovation; (iii) to identify a small yet diversified group of resource people or practitioners with regional expertise that could be involved in this initiative. An Information Note on this initiative and a questionnaire were sent electronically to over 50 resource people, inside and outside the region, who have expertise in the agricultural sector and agricultural innovation processes within West Africa. We collected 15 comments, which can be viewed at the following address: *http://www.sahel-club.org/forum/theme/theme.php?1*

1. How can access to agricultural innovation be strengthened for various producer categories?

Access to agricultural innovation by the various categories of producers may be strengthened in the following ways:

- Strengthening innovations which are appropriate for women, such as small-scale agricultural processing units in towns and on their periphery;
- Improving the producers' technical and organisational skills in order to boost their own dynamism and to promote local initiatives;
- Involving and making producers responsible and accountable for the decision-making process as regards the living conditions of rural populations;
- Improving and diversifying means of communication such as rural radios, training, etc.;
- Promoting participatory approaches;
- Promoting simple and cheap innovations accessible to a wide majority of the rural population;
- By way of seminars, encouraging the discussion of experiences of innovations among producers;
- Implementing coaching initiatives for technological innovations such as access to credit, literacy, training fields, agricultural equipment (plough, cultivator or tractor depending on the type of soil and the producers' skills);
- Organising training sessions on all available technologies for producers, as was already successfully arranged for supervisory staff in the cotton production sector;
- Securing land rights to improve some types of innovation such as soil fertility;
- Supporting young people who leave their families to set up their own farm in order to avoid the strong nuclearisation of farms in some regions. More specifically, the following is worth stressing:
    - Young people are in favour of innovation and willing to take innovation-related risks when social and economic conditions are favourable;
    - Migrants are particularly in favour of innovations when economic conditions make this possible;
    - Producer organisations (POs) are often dominated by richer family farms. Less wealthy farm-holders must be encouraged to find a way to get involved in decision-making;
    - Agricultural innovation must fulfil producers' needs, and external means of support should only play a moderating role.

2. How can the role played by innovation be increased, in terms of improving the producers' livelihoods and optimising their resources at regional level?

The role of innovation in improving producer livelihoods and optimising their resources at regional level may be enhanced in the following ways:

- Encouraging regional projects and programmes such as PRONAF (Projet Niébé pour l'Afrique),
- Identifying successful case studies regarding agricultural innovation at the regional level;
- Promoting regional specialisation in order to draw comparative advantages, e.g. onions, sugarcane, sesame, gum arabic in Niger, coffee and cocoa in Côte d'Ivoire, cotton in Burkina Faso, Mali and Chad;
- Promoting the regional market and complying with standards (colour, calibre, size of bags, etc.);
- Involving regional organisations (the WAEMU, ECOWAS, NEPAD) in decision-making.

It should also be noted that:

- **Cereals, maize and groundnut** should be added to the list of products with strong regional potential.
- It would be useful: (i) to include Mali in case studies. Since the Compagnie malienne pour le développement des textiles (CMDT – Malian Company for Textile Development) has ceased trading, it would be particularly interesting to see how other actors have taken over innovation and promotion activities; (ii) to add IFDC-Afrique (African division based in Lomé) to the list of key actors that should be consulted in view of its activities in the areas of extension, agri-food processing, stimulating regional markets where agricultural inputs are sold, and stimulating competition among retailers specialised in agricultural inputs in the private sector.

3. How can the role played by services provided in the upstream and downstream stages of production be strengthened in order to improve access to agricultural innovation?

- The adoption of innovating technologies depending on the ability to raise capital and the degree of risk tolerance;
- What is fundamental is the provision of subsidies and not their validity. It is impossible to subsidise the 50 to 80% of the population of West Africa that engages in farming, therefore the key question should be **"what products should be subsidised and for how long?"** The role played by the services provided during the upstream and downstream stages of production in terms of improving access to agricultural innovation can be enhanced in the following ways:
- Ensuring private sector economic actors know the regional and global markets better. For example: what are the best times to export goods?
- Organising the grain market with an integrated networking approach geared towards regional and global markets;
- Decentralising seed structures in order to improve the availability of inputs at the beginning of each crop year;
- Promoting regional exchanges in order to avoid surplus production in a country while neighbouring countries are experiencing shortages.

Annex 15: List of People Met and Institutions visited during country visits (Burkina Faso, The Gambia, Ghana and Mali

Burkina Faso

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