

**CONCEPT NOTE**  
**SUPPORT FOR THE DISSEMINATION OF IMPROVED**  
**RICE TECHNOLOGIES**

**Introduction**

The framework for agriculture development as captured in the Ghana Shared Growth and Development Agenda (GSGDA) aims at modernization of agriculture through mechanization and application of science and technology as means of achieving food security and industrialization.

Policy strategies over the years, as captured in the Food and Agriculture Sector Development Policy (FASDEP I), Ghana Poverty Reduction Strategy (GPRS I & II), Medium Term Agriculture Development Plan (MTADP), Accelerated Agricultural Growth and Development Strategy (AAGDS) and other Ministry and Food and Agriculture (MoFA) policy documents, have sought to promote rice production to address food security and poverty reduction. FASDEP II (2008 – 2010), which is one of the latest sector development policy guideline,

lists rice as one of the commodities for increased food security and import substitution. Specific measures, among others, to reach this level of production are increased mechanization, increased cultivation of inland valleys and efficient utilization of existing irrigation systems. In addition, varietal improvement and increased seed production and utilization are to be pursued vigorously. The first objective of FASDEP II which emphasizes food security and emergency preparedness prioritizes rice as one of the commodities to be promoted.

In recent years, rice production in Ghana has been expanding at a rate of 20% per annum primarily through increased in size of cultivated areas. Much of the expansion has been in the rainfed systems, particularly in two ecosystems (the upland and rainfed lowland) that make up 84% of rice land in Ghana. In 2010 total output of rice was 294,962 metric tons (SRID).

Annual per capita rice consumption during 1999-2001 was 17.5 kg on the average. This had alarmingly increased to 22.6 kg during 2002-2004. Within the same period, per capita rice consumption increased to around 8.9% per annum, higher than

the population growth of 2.5% per annum. It is projected that per capita rice consumption will increase to 41.1 kg in 2010 and 63.0 kg in 2015 (JICA, 2008, METASIP, 2009).

To increase rice production and processing to cope with increasing per capita consumption, the need for appropriate technological backstopping cannot be over emphasized. In this regards technology development and appropriate dissemination strategies and approaches become pertinent.

## **Justification**

There is a chronic shortage of researchers, technicians and extension agents for the dissemination of improved rice technologies.

As a result, there is lack of proper land development in major rice producing ecologies among rice producers. This in conjunction with lack of improved seeds has caused yield stagnation especially in the rain-fed ecologies in Ghana for many years.

In addition, post-harvest handling and processing technologies are rudimentary among processors.

All of the above mentioned factors culminate in the production of poor quality rice which makes locally produced rice uncompetitive.

It is envisaged that a comprehensive approach to rice sector development that would resolve the systemic lack of framework for dissemination of improved technologies could go a long way to solve the endemic problems in the rice sub-sector.

Science and Technology Applied in food and agriculture development is one of the policy objectives of Ghana's agricultural sector development strategy. In this document high priority is given to "applied research" with more research initiatives being redirected towards supporting on-farm and off-farm innovations for improved production systems, higher productivity and small/large scale industrialization/processing.

In order to provide support for on-farm dissemination of rice technologies that reach the target farmers the following strategic goals identified in the National Rice Development Strategy (NRDS) have to be pursued:

- strengthening the capacity of the national research institutions and public universities for the development of new technologies,
- development/adoption of management tools for productivity increase,
- strengthening technology dissemination structures and strategies especially the adoption of participatory approaches and
- building capacity on improved mechanized services adaptable to the sector

### **Potential Intervention Zones and Target Groups**

In Ghana rice is produced in all 10 regions even though the bulk of domestic rice comes from the three northern regions (70%) and the Volta Region (10%). Rice production takes place in three main ecologies: Rain-fed Upland, Rain-fed lowland and Irrigated fields. Therefore, the intervention on research and

technology dissemination would target the CSIR, the Public Universities, FBOs, and the Regional and District Agriculture Development Units as well as National Directorates of Agriculture. It is envisaged that capacity development will focus on the development and dissemination of technologies on rain-fed rice cultivation as this contributes about 84% of the total rice output in the country.

## **Main Objectives of the Project**

### **Global Objective for the development of the Project/Program**

The main objective of the project is to strengthen research and technology dissemination strategies to backstop the rice sector.

### **Specific Objectives**

The specific objectives of the project are:

- (1) to strengthen the capacity of national research institutions and public universities through training and adequate budgetary to enhance technology development
- (2) to refine existing rice based technologies and develop new ones adaptable to the rice ecological zones of Ghana

- (3) to foster collaboration among and between national institutions and public universities with their regional and international counterparts
- (4) to build capacity of existing gene banks at Institute of Plant Genetic Research (IPGR) to handle rice genetic accession in Ghana
- (5) to strengthen existing technology dissemination structures (eg. Research-Extension-Farmer-Linkages and the use of e-Extension services) to enhance technology adoption
- (6) to promote participatory technology dissemination approaches along the rice value chain
- (7) to facilitate the formation of cohesive and sustainable FBOs
- (8) to facilitate access to farm credit to enhance adoption of recommended technologies

## **Components, Outputs and Activities**

### **1 Capacity Development**

#### ***1.1 The capacity of national research institutions and public universities strengthened***

##### **Activities**

- Conduct resource mapping/SWOT analysis of research institution
- Establish special fund for research and development
- Develop and implement HR plan for national rice program
- Provide improved research facility and infrastructure for rice research and development
- Researchers publicize findings on rice research annually

#### ***1.2 The capacity of existing gene banks at IPGR is built***

##### **Activities**

- Collaborate with AfricaRice in the conservation of rice genetic accessions
- Establish a national Gene Bank for rice genetic accessions

- Undertake germplasm collection from rice producing zones nationwide
- Characterized collected germplasm materials and document
- Treat collected materials with appropriate preservatives for storage
- Undertake routine tests on conserved materials at determined intervals (bi-annual, tri-annual etc)

### ***1.3 Existing technology dissemination structures strengthened***

#### **Activities**

- Conduct resource mapping/SWOT analysis of decentralized structures of MoFA
- Define and implement human resource development programme
- Provide logistics and equipment to facilitate technology dissemination (eg. office and field equipment)
- Advocate for the establishment of Extension Development Fund

- Promote Public Private Partnership in Extension delivery for the rice sector
- Develop appropriate extension tools for technology dissemination
- Establish rice learning and demonstration centers

## **2 Research and Development**

### ***2.1 Existing rice based technologies refined and new ones developed***

#### **Activities**

- Identify and map out existing rice based technologies
- Assess their impacts and develop strategies for adoption
- Survey, characterize soils and prioritize potential inland valleys for development
- Develop/adapt strategies for effective soil fertility and water management for rainfed lowland and upland rice
  - Develop site specific fertilizer recommendations for the different rice systems

- Formulate specific rice fertilizers for the different rice production systems
- Develop/adapt effective and appropriate ISFM techniques for the different rice ecologies
- Develop/adapt effective and appropriate water management practices for the different rice ecologies
- Evaluate different farm machineries for their adaptation
- Link up with local artisans and equipment service centres for the improvement or reproduction of prototypes
- Organize training and tour sessions for local fabricators
- Develop/Adapt management tools for productivity increase
  - Use of the nutrient omission trial approach for the determination of limiting nutrients
  - Use of soil testing kits
  - Use of water and agro-climatic resource management tools
- Adapt participatory approaches in priority rice ecologies
  - PLAR-ISFM and PLAR-IRM
  - Farmer field school

- Build capacity on improved mechanized services adaptable to the rice sector
  - Assess capacity and develop needs
  - Develop capacity building packages/programmes for the establishment and management of mechanize services
  - Implement capacity building programmes
  - Government engage private sector in Public-Private-Partnership (PPP) arrangement to establish and operationalize mechanization service centres
  - Set up suitable locations for service centres
  - Train personnel to manage and operate machineries
- Weed management research in the different rice ecologies
  - Research in to weed management regimes for rice-based systems in the three agro-ecologies
  - Publicize findings on the recommendations
  - Train AEAs and farmers on the weed management regimes for adoption
- Development and conservation of varieties and accessions
- Harvest and post harvest research

- Research to establish the appropriate time of harvest of rice in the three agro-ecologies
- Establish right moisture contents appropriate for harvesting rice in the savannah transition and forest zones
- Undertake research in milling characteristics of various rice varieties
- Research in to parboiling qualities of rice being promoted
- Conduct research in to the utilization of rice and its by-products
- Research in to the use of rice stalks and stubbles for soil fertility management
- Publicize findings on the use of rice residues on fertilities of different soils being use for rice cultivation
- Research in to the use of rice husks and brans for mushroom production
- Train mushroom producers in the use of rice by-products as substances for production

### **3 Community Mobilization**

#### ***3.1 Participatory technologies dissemination approaches along the rice value chain promoted***

##### **Activities**

- interest groups along the value chain are mobilized
- the formation of cohesive FBOs is facilitated for easy access to credit towards rice value chain activities
- Develop and provide appropriate participatory extension tools (Approaches (PLAR-IRM, FFS, PVS), videos, audiovisuals, radio, brochures, manuals, flyers, demos, OFAT etc, ICT)

### **4 Institutional coordination**

#### ***4.1 Rice dissemination system effectively coordinated***

##### **Activities**

- Establish a rice research and coordinating unit
- Equip the unit

- Operationalize the coordinating unit
  - Identify and map out partner organizations and other stakeholders
  - Source for operational budgetary support
  - Publish rice technologies and relevant information on rice
  - Facilitate linkages between relevant institutions (local and international)
  - Organize regular stakeholder fora, fairs, seminars etc for experientially sharing
  - Advocacy and institutional lobbying for support
  - Organize bi-annual national rice conference

## **5 Access to Credit**

### ***5.1 Access to credit is facilitated***

#### **Activities**

- Review existing credit systems
- Identify existing and functioning FBOs
- Assess their credit requirements

- Facilitate linkage between the FBOs and the financial institutions

## **Cost and Financing (Details Attached)**

### **Summary Table**

<b>No.</b>	<b>Components</b>	<b>Budget (GHC)</b>	<b>Remarks</b>
1.	Capacity Development		
2.	Research and Development		
3.	Community Mobilization		
4.	Institutional Collaboration and Coordination		
5.	Access to Credit		
<b>6.</b>	<b>TOTAL</b>		

### **Implementation Strategies of the project**

Project shall be implemented by the Ministry of Food and Agriculture (MoFA) hence activities would be mainstreamed within the Ministry's decentralized operations. MoFA shall develop Project Implementation Manual (PIM) after consultative meetings with key stakeholders. Regional sensitization

workshops will be held after a formal project launch at the national level.

Efforts shall be made to foster Public Private Partnerships (PPP) to enhance success and sustainability of the project. In this regard identifiable NGOs, CSO, and other private operatives involved in rice technology development and dissemination shall be brought on board for effective linkage and synergy building. Efforts shall be made to map out operations of these organizations and areas of complementarity and gaps identified for programming.

## **Project Organization and Management**

The Ministry of Food and Agriculture shall set up a National Project Coordinating Unit (NPCU) headed by the Project Coordinator with relevant project support staff. The team shall be responsible for overall management and coordination of the project.

To enhance field operations, ten regional coordinating units and 170 district coordinating centres shall be established. These shall be headed by the respective Regional and District Directors of Agriculture as a strategy of mainstreaming project operations.

A National Project Steering Committee shall be constituted to provide policy direction for project implementation. Regional Technical Committees also assist to oversee and guide Regional and District implementation

### **Monitoring and Evaluation**

A monitoring and evaluation unit shall be established within the NPCU. This unit shall be responsible for the definition of the appropriate M&E systems that will identify indicators that adequately reflect project output and activities as well as the overall goal.

### **Risks**

The following are potential risks to the project implementation.

- Political commitment which borders on change in Government and policies: agricultural policies and programmes are defined by ruling government. A change in government which does not identify rice as a priority crop will jeopardize implementation. Stable government with consistent policies and programmes which has rice as a

priority crop in its agriculture development agenda (as the case is now) will enhance the success of this project.

- Commitment of various institutions. Success of this programme shall be enhanced if key stakeholders and partners demonstrate absolute commitment to the rice course. By this, they do not only commit time and resources but avail themselves for stakeholders' discussions on the rice sector.
- Budgetary support. Implementation of the project is contingent on adequate budgetary support. The commitment of government and other stakeholders in this regard cannot be over emphasizes.
- Natural disasters. The impact of climate change (eg. Floods, drought etc) cannot be overlooked
- Social instability. Social disturbances like inter and intra tribal disputes and conflicts can disrupt smooth project implementation.