Public Disclosure Authorized

Public Disclosure Authorized

E1553
v 1

The World Bank

West and Central African Council for Agricultural Research and Development (WECARD)

WEST AFRICA AGRICULTURAL PRODUCTIVITY PROGRAM (WAAPP)
PROJECT
(Burkina Faso, Ghana, Mali, Senegal)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK PLAN (ESMFP)

REPORT

January 2007

Mbaye Mbengue FAYE
Consultant in Environmental and Social Assessment
fayeconseil@sentoo.sn
Phone : Cell : (221) 549 76 68 – home : 832 44 31 - Office : 867 34 88
PB : 12 860 Dakar-Colobane

TABLE of CONTENTS

TABLE Of CONTENTS **3**

ABBREVIATIONS AND ACRONYMS **5**

EXECUTIVE SUMMARY **6**

HISTORY AND CONTEXT **9**

1. INTRODUCTION **10**
1.1. Context of the study 10
1.2. Objectif du Plan Cadre de Gestion Environnementale et Sociale (ESMFP) 10
1.3. Methodology 11
1.4. Report structuring 11

2. PROJECT DESCRIPTION **12**
2.1. Programme Objectives and Phases 12
2.2. Project components 14

3. BIOPHYSICAL AND SOCIOECONOMIC FRAMEWORK IN TARGETED COUNTRIES **16**
3.1. Burkina Faso biophysical and socioeconomic profile 16
3.2. Ghana biophysical and socio-economic profile 18
3.3. Mali biophysical and socio-economic profile 20
3.4. Senegal biophysical and socio-economic profile 23
3.5. Major constraints related to agricultural production in targeted countries 25

4. WAAPP ENVIRONMENTAl AND SOCIAL IMPACTS **26**
4.1. Positive environmental impacts 26
4.2. Positive social impacts 31
4.3. Adverse environmental impacts 34
4.4. Negative social impacts 36
4.5. Negative impacts synthesis during implementation of agricultural research results 37

5. POLITICAL AND LEGAL ENVIRONMENTAL FRAMEWORK **38**
5.1. Environmental policy documents in WAAPP's targeted countries 38
5.2. Statutory framework 39
5.2.1. Environmental assessment legislation in Burkina Faso 39
5.2.2. Environmental assessment legislation in Ghana 41
5.2.3. Environmental assessment legislation in Mali 43
5.2.4. Environmental assessment legislation in Senegal 47

6. WORLD BANK ENVIRONMENTAL AND SOCIAL SAFEGUARD POLICIES **49**
6.1. Safeguard policies analysis 49
6.2. Concordances between op 4.0 and national legislations of the 4 targeted countries 52

7. INSTITUTIONAL FRAMEWORK OF WAAPP ENVIRONMENTAL MANAGEMENT **53**
7.1. Les arrangements institutionnels et de mise en œuvre du PPAAO 53
7.2. Environmental capacities of actors involved in WAAPP 54
7.2.1. At sub regional level: WECARD/WECARD and Regional Bodies 54

7.2.2. Environmental Assessment Institutional Framework in Burkina Faso 55
7.2.3. Environmental Assessment Institutional Framework in Ghana 57
7.2.4. Environmental Assessment Institutional Framework in Mali 59
7.2.5. Environmental Assessment Institutional Framework in Senegal 61
7.3. Other Institutional actors involved in WAAPP environmental management 64

8. SCREENING PROCESS OF WAAPP ACTIVITIES 65
8.1. The environment screening process: 65
8.1.1. Research topics environmental screening 65
8.1.2. Environmental screening for the dissemination of research results 67
8.2. Screening process implementation liabilities 72

9. ENVIRONMENTAL AND SOCIAL MANAGEMENT P LAN (ESMP) 73
9.1. Environmental management in agricultural productivity sector 73
9.2. Recommendations for the environmental management of WAAPP 75
9.2.1. Environmental Focal Points (EFP) 77
9.2.2. Country monitoring indicators (by EFP/NARS and EFP/APP) 80
9.2.3. Environmental Mesures and Schedule 82
9.3. Environmental measures coasts to be included in WAAPP 84
9.4. Institutions liable of the implementation and monitoring 85
9.4.1. Coordination, supervision and monitoring 85
9.4.2. Environmental measures implementation 85
9.5. Conclusion et prospects 87

10. PUBLIC CONSULTATION PROCESS 89

11. TECHNICAL ANNEXES 93
Annex 11.1. : Environmental and Social screening form (Burkina, Mali et Senegal) 93
Annex 11.2. : Ghana environmental and Social screening form 97
Annex 11.2 : Environmental and Social monitoring list 99
Annex 11. 4: Mitigation measures list 100
Annexe 11.5 : Résumé des politiques de sauvegardes de la Banque Mondiale 108

12. GENERAL ANNEXES 110
12.1. Persons met 110
12.2. Bibliography 112
12.3. Terms of References 114

ABBREVIATIONS AND ACRONYMS

AAP	The Africa Action Plan
AAPP	Africa Agricultural Productivity Program
AgSSIP	Agricultural Services Sector Investment Programme (Ghana)
AU	African Union
CAADP	Comprehensive Africa Agriculture Development Program
CAS	Country Assistance Strategy
CGIAR	Consultative Group on International Agricultural Research
COE	Center of Excellence
COS	Centers of specialization
CSIR	Council for Scientific and Industrial Research (Ghana)
DEE	Direction des Evaluations Environnementales (Burkina)
DEEC (Sénégal)	Direction de l'Environnement et des Etablissements Classés
DNACPN	Direction Nationale de l'Assainissement, du Contrôle des Pollutions et des Nuisances (Mali)
DGACV	Direction Générale de l'Amélioration du Cadre de Vie (Burkina)
EIA	Environment Impact Assessment
EIS	Environment Impact Study
ECOWAS	Economic Community of West Africa
EPA	Environmental Protection Agency (Ghana)
ESMF	Environmental and Social Management Framework
ESMFP	Environmental and Social management Framework Plan
FAAP	Framework for Africa Agricultural Productivity
FARA	Forum for Agricultural Research in Africa
FAO	Organisation des Nations Unies pour l'Alimentation et l'Agriculture
HACCP	Hazard Analysis Control Critical Point
ICRISAT	International Crop Research Institut for Arid and Semi Arid Tropics
ICRAF	Centre International de Recherche en Agroforesterie
IER	Institut d'Economie Rurale (Mali)
IITA	International Institute for Tropical Agriculture
ILRI	International Livestock Research Institute
INERA	Institut de l'Environnement et des Recherches Agricoles (Burkina)
IRD	Institut de Recherche pour le Développement
ISRA	Institut Sénégalais des Recherches Agricoles (Sénégal
ITA	Institut de Technologies Alimentaires (Sénégal)
MAPP	Multi-Country Agricultural Productivity Program
MDGs	Millennium Development Goals
MOFA	Ministry of Food and Agriculture (Ghana)
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organizations
OP	Organisation of Producers
PAFASP	Programme d'Appui aux Filières Agro-Sylvo-Pastorales (Burkina)
PASAOP	Programme d'Appui aux Services Agricoles et aux Organisations Paysannes
PSAOP	Programme des Services Agricoles et d'Appui aux Organisations de Producteurs

PPM	Pest Management Plan
RAIS	Regional Agricultural Information System
RCOE	Regional Center of Excellence
TGD	Technology Generation and Dissemination
UEMOA	West Africa Economic and Monetary Union
WAAPP	West Africa Agricultural Productivity Program
WECARD/CORAF	West and Central African Council for Agricultural Research and Development

EXECUTIVE SUMMARY

The proposed West Africa Productivity Program (WAAPP), funded by the World bank, is the first phase of a 15-year programme consisting in three phases, each lasting five years. The APL follows a horizontal approach, starting with IDA credit to three countries in phase I (Ghana, Mali, and Senegal) and expanding its geographic focus in each phase so as to have covered all candidate ECOWAS countries at program's end. The WAAPP development objective is to contribute to increased agricultural productivity and competitiveness in West Africa in selected priority areas. Through the WAAPP, the Bank will contribute to the broad objective of NEPAD's Comprehensive Africa Agriculture Program (CAADP) of achieving significant growth in agricultural gross domestic product (GDP) to reach the Millennium Development Goals (MDGs) by 2015.

The WAAPP comprises 4 components: Enabling Conditions for Regional Cooperation in TDG; Centers of excellence; Technology Generation; Project Coordination, Management.

The project's support areas are mainly focussed on productivity, production and income increase in small farms, through technological evolution, while responding equitably to the needs identified by rural stakeholders with particular care paid to poor populations' specific needs, such as women and rural youth.

Like any other World Bank financed projects, community development projects, mainly in the agricultural sector, need to comply with the ten Bank's Safeguard Policies as well as with the BP 17.50 on Public Disclosure, which requires that all environmental safeguard documents be made available in-country and at the Info shop before disclosure and approval. Safeguard policy requirements are relevant to agricultural activities because of the risks, and WAAPP opportunities of financing or supplying the sub-projects implementation with adverse environmental or social impacts. Even in cases where certain individual sub-projects have little or no adverse impacts, they may collectively lead to significant cumulative impacts (e.g. the impact of many techniques or technologies related to the improvement of soil cultures; small-scale activities involving irrigation or pesticides use; pastoral's activities, etc.).

The WAAPP Environmental and Social Management Framework Plan (ESMFP) will allow to guide the environmental and social management of project activities that might be funded by the project, and ensure they are compliant with both national legislation in the 4 countries and World bank Safeguard Policies.

The WAPP will be implemented at the regional level by WECARD and at the national levels by the national Agricultural Research National Systems (INERA in Burkina ; CSIR in Ghana ; IER in Mali and ISRA in Senegal) and Agricultural Productivity Programmes

(PAFASP in Burkina Faso, AgSSIP in Ghana, PASAOP in Mali and PSAOP 2 in Senegal) and related to rural activities, mainly in agriculture and breeding field. The ESMFP will have wide national, sub-regional and local scope. And provides, in its first chapters, the environmental and social conditions in the 4 countries and gives an assessment of the environmental and social impacts, both beneficial and adverse that WAAPP may entail, when implemented in whatever agro ecological area that may be concerned. ***The PCGES capitalizes the whole environmental measures recommended in the environmental and social assessments carried out within the framework of agricultural programmes (PAFASP in Burkina; AgSSIP in Ghana; PASAOP in Mali and PASOP in Senegal), with a special focus on WECARDs' capacities building in environmental management.***

The ESMFP includes an analysis of national institutional, legal and environmental framework within which the WAAPP will be implemented. It also includes an analysis of the relevance and likely implementation of all World Bank Safeguard Policies, indicating that WAAPP is directly concerned by two policies: 4.01 - Environmental assessment; 4.09 - Pest Management.

Sub-projects screening process constitutes a major component of WAAPP's ESMFP. This process underlines the environmental norms and standards that will be applied in WAAPP sub-projects and the environmental assessment procedures that may be needed, with special emphasis given to measures addressing the requirements of the Safeguard Policies. The ESMFP will allow the National Agricultural Research Systems, the local framing structures and farmers' Organisations, but also the technical departments in charge of agricultural and breeding issues, and also the rural communities, to monitor in a large and progressive manner, the further environmental and social impacts, based on monitoring check-lists, and to develop mitigation or compensation measures, on the basis of clear, precise and operational indicators.

The ESMFP comprises key management elements including the main categories of WAAPP sub-projects, their potential impacts and mitigation measures, the implementation of mitigation measures, including institutional monitoring, and budget.

The ESMF further provides guidance on environmental monitoring and includes institutional constraints analysis to screening implementation and conducting potential environmental assessments and other environmental management measures if necessary; it also provides recommendations in environmental capacity building.

The costs of implementing the WAAPP's ESMFP are estimated to be as follows:

Measures for implementing the ESMFP	**Costs (FCFA)**	**Approximate US$ equivalent**
Capitalization handbook development for agricultural good practices	20 000 000	40 000
Environmental data base harmonization and installation	40 000 000	80 000
The Environment Focal Points (EFP) levelling (EFP/WECARD ; EFP/SNRA and EFP/PPA)	12 000 000	24 000
WECARD coordination and supervision	24 000 000	80 000

TOTAL	**96 000 000**	**190 000 US$**

To ensure the effective implementation of the ESMFP, it is recommended to include the chapters on screening, capacity building, environmental and social action plan and budget in the Project Implementation Manual.

HistorY and context

The Economic Community of West African States (ECOWAS) is home to 250 million people in 15 countries. All member states are low-income countries with low UN Human Development Indices; many are among the world poorest. Agriculture is a dominant force in the region, accounting for 35 percent of GDP, over 15 percent of exports, and 65 percent of employment. Still, poverty is highest in the rural areas, which host 60 percent of the population that depends on agriculture for its livelihood. Food insecurity is a major concern overall and a chronic situation in the north or Sahel. Overall, Africa's intra-regional agricultural trade is limited and its share of total world agricultural trade is miniscule, as it fell from 8 percent in 1965 to 3 percent in 1996 (FAO, 2000).

For the African Union, Africa (particularly Sub-Saharan Africa) will meet the Millennium Development Goals (MDGs) only when rural development, agriculture and the livelihood constraints of the rural poor are brought to the top of the development agenda. The African Union's New Partnerships for Africa's Development (NEPAD) has called for three percent annual agricultural productivity growth and six percent growth in agricultural GDP to reach the MDGs by 2015. NEPAD has designed the Comprehensive Africa Agriculture Development Program (CAADP) to that effect. In turn, the regional economic communities have developed policies to implement CAADP: ECOWAS, with its Agricultural Policy (ECOWAP) and WAEMU (West Africa Economic and Monetary Union), with its Common Agricultural Policy. CAADP's Pillar IV, which covers agricultural research, technology dissemination and adoption (henceforth, technology generation and dissemination--TGD), plays a central role, as it significantly impacts on the other three pillars: land and water management; rural infrastructure and trade-related capacities for improved access to markets; and increasing food supply and reducing hunger. At the request of NEPAD, the Forum for African Agricultural Research (FARA) has developed the Framework for African Agricultural Productivity (FAAP) to provide the guiding principles for implementing CAADP Pillar IV.

Agricultural productivity has been declining in Sub-Saharan Africa in recent past, while significantly increasing in other regions (table 1). Average cereal yields in the world (2,676 kg/ha) was over twice that in Africa (1,069 kg/ha) for the period 1994-2003. Low productivity has seriously eroded the competitiveness of African agricultural products on world and domestic markets, as food imports keep increasing.

Yet, it is not that potential returns on investment in agricultural technology generation and dissemination are not as high in Africa (37 percent on average) as elsewhere; rather, it is that its funding in Africa has been lower than elsewhere. Spending on agricultural research and extension in Africa has declined in proportion to total government spending, with funding of regional research activities representing less than two percent of overall total spending—the same as private funding. It is also that linkages between research systems, extension services, farmers, and agribusinesses are weak in Africa. Even when technologies are generated, dissemination and adoption mechanisms are inefficient or lacking. In many cases, farmers do not learn about the innovations; in others, farmers are adopting less than 10 percent of the proposed technologies because these do not suit their circumstances. It is also noticed that the lack of harmonized regulations on technology use

(e.g., no homologation on pesticides, different standards in the approval of plant and animal genetic materials, and no harmonized intellectual property rights) acts as a barrier to the dissemination of technologies across borders.

1. INTRODUCTION

1.1. Context of the study

The Africa Action Plan (AAP), designed by the Bank in 2005 as the centrepiece of its strategy to help Africa reach the MDGs, emphasizes three broad areas, one of which is *strengthening the drivers of growth*. The proposed West Africa Agricultural Productivity Program (WAAPP) will be an implementing instrument for achieving two principal objectives of that WAAPP's focus area, namely: *Supporting regional integration* and *Making agriculture more productive and sustainable*. As a pilot regional program of the newly-established Regional Integration Department within the Africa Region, the WAAPP reflects the Bank's commitment to Africa's regional integration in agriculture. It will be one of IDA's key contributions to the implementation of broadly supported agricultural strategies Africa-wide. The WAAPP provides a regional framework on the basis of which ECOWAS countries will collaborate to implement national and regional agricultural strategies in the area of TGD.

The study which will be undertaken is a sub-regional one and will initially concern the following countries: Burkina Faso, Ghana, Mali and Senegal.

The WAAPP will finance research and diffusion for agricultural technologies which's implementation may negatively impact the environment. The environmental stake (which also constitutes a double challenge) is to integrate environmental and social concerns (i) in agricultural research programs and activities (ii) before technology research implementation and dissemination.

The results of agricultural research will bring benefit to local populations but they could generate adverse effects on the environmental, if adequate measures are not taken. In order to minimize these unfavourable effects, it was necessary to develop this Plan Tallies of Environmental and Social Management Framework Plan (ESMFP).

1.2. Objectif du Plan Cadre de Gestion Environnementale et Sociale (ESMFP)

The ESMFP's objective is to define a process of environmental and social screening and selection, which will help the structures in charge of project implementation to identify assess and mitigate potential environmental and social impacts linked with WAAPP at its planning stage. As such, it will serve as guideline in developing environmental and social

impacts studies (ESIS) specific to sub-projects, and the number, the sites and environmental and social aspects which remain unknown. The ESMFP's environmental and social studies procedure will be integrated to sub-projects approval and funding procedure, and will concord with the legislation of the four targeted countries (Burkina Faso, Ghana, Mali, Senegal).During the ESMFP implementation, it will be taken into account: the World Bank safeguards policy and national legislation of four targeted countries.

The ESMFP also determines institutional dispositions to be set during the implementation, and follow up of the program's activities including capacities building. It should be noted that research activities will concern the bettering of agricultural production systems. So ESMFP will allow persons who are charged of the project implementation, to identify, assess and propose its potential environmental and social impact mitigation measures, at the very planning stage.

1.3. Methodology

Our methodology is based on a systemic approach concept, in consultation with all actors and stakeholders involved in ESMFP, mainly the services of agriculture ministries, livestock ministry, research institutions, rural organisations, but also ministries of environment.

The study is a participative method which helped us collect progressively the opinions and arguments of all stakeholders. Our work plan is based on the following three axes:

- Analysis of projects documents and other strategic planning documents at national or local level; the ESMFP has gathered numerous environmental studies realized in the 4 countries, mainly those related to agriculture projects (PAFASP in Burkina; PSAOP in Senegal; PASAOP in Mali and AgSSIP in Ghana)
- Meeting with institutional stakeholders involved in the project: ministry of environment and natural resources; Ministry of agriculture and rural development; agricultural research centres; agricultural development programmes; organizations of farmers; etc.
- Information analysis in environmental and agricultural sectors.

The collected information helped in the environmental study which includes: initial environmental analysis, impacts identification, screening process of sub-projects, Environmental and Social Management Plan which include implementation arrangements, training needs and monitoring.

1.4. Report structuring

This present environmental and strategic assessment report comprises the following chapters:

- Preamble : Context and importance of WAAPP
- Chapter 1 : Introduction (objective of the study and methodology);
- Chapter 2 : WAAPP description and components;

- Chapter 3 : Biophysical and socio-economic environment in targeted countries;
- Chapter 4 : Environmental and social impacts of the project;
- Chapter 5 : Political and legal framework ;
- Chapter 6 : World Bank safeguards Policies
- Chapter 7 : WAAPP's environmental management institutional framework;
- Chapter 8 : Projects screening process;
- Chapter 9 : Environmental and Social Management Plan;
- Chapter 10 : Public consultation
- Chapter 11 : Technical annexes (environmental and social selection forms; environmental and social monitoring list; Mitigation measures list; Summary of Word Bank safeguards policies;)
- Chapter 12: General annexes (bibliography; list of consulted persons; Terms of reference of the study).

2. Project Description

The proposed project WAAPP is the first phase of a 15-years Adaptive Program Lending consisting of three phases, each lasting five years. This programme follows a horizontal approach, starting to four countries in phase I (Burkina Faso, Ghana, Mali, and Senegal) and expanding its geographic focus in each phase so as to have covered all candidate ECOWAS countries at program's end.

2.1. Programme Objectives and Phases

The development objective of the WAAPP is to contribute to increased agricultural productivity and competitiveness in West Africa in selected priority areas. At the end of the three-phase program, the following outcomes will have been achieved in the program target areas: (i) six percent increase in annual agricultural productivity growth and (ii) agricultural competitiveness.

Phase 1 (the proposed project) is an initiation phase, with three countries (Ghana, Mali and Senegal) supported by an IDA regional credit, that sets up the program's framework in terms of the mechanisms for sharing technology, establishing national centers of specialization that would evolve into regional centers of excellence, and funding of TGD. Phase 2 is an expansion phase that will see increased participation of ECOWAS countries to the program, the establishment of additional centers of specialization (COS), the evolution of COS into Regional Center of Excellence, and the generation of an increased

number of technologies at these COS and elsewhere with measurable impact. Phase 3 is a consolidation phase by which end all ECOWAS countries will have participated in the program and the program's objectives have been realized.

The triggers from moving from phase 1 to 2 would be as follows: (i) formalized mechanisms for technology and knowledge sharing at the regional level are in place; (ii) criteria for the establishment of RCOE are in place; (iii) the competitive agricultural research grant system is functioning satisfactorily. The triggers from phase 2 to 3 would be as follows: (i) the centers of specialization of phase I have evolved into accepted regional centers of excellence; (ii) WECARD and the RCOEs already created have a secured core funding.

The development objective of the project (first phase WAAPP) is to strengthen the mechanisms for sharing the development and dissemination of agricultural technologies at the regional level. The key project outcomes indicators are as follows: (i) Procedures for trade and exchange of technology across borders are finalized; (ii) Criteria for establishing RCOE are validated; and (iii) At least 75% of competitive grants sub-projects are implemented successfully, as assessed by an independent team of capable experts.

2.2. Project components

WAAPP comprises four (4) components :

Component 1: Enabling Conditions for Regional Cooperation in TDG
This component aims at strengthening (i) the mechanisms for disseminating, while protecting the eventual intellectual property rights in, technology information and products; (ii) capacities in the generation and use of innovative technologies; and (iii) producer-agribusiness partnerships to promote adoption of technology. To achieve these objectives, the WAAPP will assist and contribute to on-going regional efforts to:

- design and harmonize laws, regulations, and standards governing cross-border trade and distribution of technology products (genetic materials, pesticides, and processes);
- train suppliers (researchers, extension services) and users (producer organizations) of technology products; and
- develop public-private partnerships promoting the adoption of technology products.

Component 2: Centers of excellence
This component aims at establishing national centers of specialization (NCOS) that will evolve into regional centers of excellence (RCOE) in regional strategic areas. The WAAPP shares the proposition that sustainable regional centers of excellence will develop only when a host country commit itself to initiate the process through a national center of specialization. The WAAPP will support NCOS that satisfy criteria for RCOE, as developed by FARA, specifically the following key features: (i) alignment with regional priorities; (ii) openness to collaboration with other national as well as regional and international institutions; and (iii) commitment to share results with other countries. This will ensure that the NCOS develop a regional dimension that attracts support from other countries in the region. The WAAPP will work with the regional economic communities, other development partners and private agribusinesses to encourage countries to concentrate their resources in a few areas with great potential, instead of spreading them over many—without little prospect of success.

Centers of specialization will have a physical location serving as the focal point of a network of contributing institutions. The WAAPP will work to ensure that a COS not only receives the firm commitment of the host country, but also the endorsement of the other countries expected to benefit from its work.

Candidate centers of excellence may be in the following areas: (i) biotechnology and bio-safety (e.g., on cotton); (ii) traditional export tree crops; (iii) non-traditional fruits and vegetables; (iv) agro-processing; (v) animal production and processing; and (vi) sustainable land and water management (SLM). The project will work with development partners, CGIAR centers, and private agribusinesses to enhance the sustainability of such centers. It will put an emphasis on public-private partnerships, which are shown to offer great prospects in emerging areas of science and technology that are critical to increasing competitiveness of the agricultural sector.

The project will support consultant services, workshops and seminars, training, civil work (when rehabilitation of facilities is needed), equipment, and operating costs related to the

establishment of the national center of specialization. The national coordination units (of the national programs) will manage the procurement of goods and services related to this component. The sources of funds will come from IDA credit, complemented by grants and parallel financing from other partners. WECARD will coordinate the centers' work program in collaboration with the national coordination units. However, the project will call on the national coordination units to carry out the civil work for the rehabilitating of infrastructure.

Component 3: Technology Generation

This component will finance technology generation and dissemination in priority areas at the regional and local levels, through centres of specialization, regional research networks and national institutions. WECARD will develop a framework for assessing regional priorities in TGD based on quantitative analysis (e.g., contribution to the region's GDP) and other guiding principles of the Framework for Africa Agricultural Productivity (FAAP) developed by FARA. The priority areas (in plant and animal production systems; nutrition, food quality, and health; natural resources and the environment; engineering, products, and processes; and markets, trade, and policy) will be validated with the participation of key national and regional stakeholders, including producer organizations. Eligible activities will likely cover new agricultural technologies, as well as on-the-shelf agricultural technologies with potential quick impact.

The project will finance TGD through a regional and national window of a competitive agricultural grant system (CARGS) and (non-competitive) core funding. To further add value to national programs, the WAAPP will encourage partnerships across countries—both on the supply side (research, extension, universities) and the demand side (farmer organizations, private sector and civil society)—to work on problems on common regional interest.

WECARD will manage the regional window, and the national project coordination units will manage the national windows (through the relevant national implementation agencies) with WECARD's assistance and oversight. This is to ensure that, through the national window as well as the regional window, the WAAPP will implement activities that will benefit both the participating countries and the region.

Component 4: Project Coordination, Management, Monitoring and Assessement

This component will strengthen the project management and M&E capacities of WECARD, as well as the national coordination units to properly address their added mandates. In particular, the project will strengthen WECARD and the national coordination units' M&E systems to establish a baseline against which to assess growth in agricultural productivity and competitiveness for the target commodities. This component will support operating costs, equipments, vehicles, supplies, training, and workshops and seminars.

3. biophysical and socioeconomic FRAMEWORK IN targeted countries

3.1. Burkina Faso biophysical and socioeconomic profile

Burkina Faso is an inland sahel country located in west Africa. It stretches over 274200 km2; and is bordered by six countries: Mali, Niger, Benin, Togo, Ghana and Ivory Coast. The national territory is divided into thirteen administrative regions. The latters are subdivided into: provinces (45), departments (330) communities and villages. The population is estimated 12.000.000 inhabitants with a general growth rate of 2.4% yearly.

The population is dominantly young: 55 % are less than 15 years old. Nearly 90% of people live in rural zones and women are estimated 52%. The climate of Burkina Faso is sahelian and is characterized by a rainy and a dry season .The dry season is from November to may (with a fresh and dry period, from November to February, and a hot climate from March to May) , and the rainy one from June to October . The average temperature is 15 ℃ by night and 30°C the day ; but it sometimes reaches 38°C during dry seasons .

Burkina Faso is characterized by three climatic zones : a sahel zone (north) with an average annual rainfall of less than 600 mm , a short rainy season (4 moths , not more); a sudano - sahelian zone (centre) , with an average annual rainfall reaching 600 to 900 mm; its rainy season lasting around 5 months ; a Sudanese zone (south) with an average annual rainfall reading over 900 mm and its rainy season lasts nearly 6 months .

In spite of the tabled landscape and the weak rainfall all over the country, the hydrographical network is fairly important, mainly in the meridian part; nevertheless, permanent water streams are rare. Underground water resources in Burkina Faso are estimated 113.5 milliard of m3 but only 9.5 milliards m3 of recyclable reserves are exploitable. Aquifers are located in sedimentary zones in the country western and south-western part; and the refilling of water napkins also depend on annual rainfall. Generally, water surface and underground water are of an acceptable quality. However, it is noticed at certain areas, excessive quantities of floating solid particles, and some iron and phosphates. For example it is the case with Comoé, Mouhoun and Nakambe basins. All water streams in Burkina feed on three international rivers: the Niger, the Volta and the Comoé. One can identify 4 main national hydrographic basins: the Comoe, the Niger the Nakambé and Mouhoun basins

Burkina Faso is characterized by a soil variety : raw mineral soils (3%) soils with few evolution (26%) , vertisoils (6%) , brunt soils -6%) iso humic soils (1%) soils with iron and manganese sesquioxydes (38%) ferralitic soils (2%) sodic soils (5%) and hydromorphic soils (13%). In sudano –sahel regions, soils are deprived of their nutritive elements by water flows. In the Sudan zone, Sahara desert is stepping in the region thus drying up the vegetal savannah and has transformed its soft agricultural soil into a hard rock.

In Burkina Faso, forest units (classified and protected domains) were estimated 15.420.000 hectares. It comprises gallery forests, clear forests, savannah, etc. In these forest units, non-classified protected domain covers 11.565.000 hectares, corresponding to 75 % of the

whole forest units. Classified domains include national parks (390000 ha), animal reserves (2.545.500ha) and classifieds forest (880.000 ha). The major factors of forest resources degradation are: bush fires, abusive wood exploitation, over-pasturage, species natural mortality and anarchic agricultural activities.

Burkina Faso still enjoys rather abundant and diversified wildlife, living in reserves, classified forest and zones of dense vegetation. The country has got 27 wildlife areas covering 2.935.500 hectares .Burkina Faso breeds 128 mammal species, 477 bird species and 60 reptile species.

The agricultural sector in Burkina Faso supplies 40 % of the GDP , constitutes 80 % of total exportations and employs around 86% of active population. Agriculture is extensive and weakly mechanized using few fertilizers and is dominated by small familial exploitation. Since the apparition of drought, the country knows important cereal deficits causing them difficulties to reach food self-sufficiency even in rainy years. Survival farming represents 80 % of cultivated areas (millet, sorghum, maize, etc.). Cotton is the main commercial farming. Agriculture represents 60 % of exportation incomes. Stock farming is based on an extensive exploitation of natural resources (pasturage) with no important recourse to agricultural and industrial sub-products. Cattle and meat trading is the country's second income generator , after the cotton , and represents 25 % of global exportations , contributing thus , to at least more than 10 % of GDP.

Burkina Faso ranks among the least developed countries. On the basis of an absolute poverty step, estimated 82 672 fcfa in 2003, poor persons are estimated 46, 4%. The country's economy is mainly based on agriculture and stock farming. Prime products are on top of exportation ones, and nearly 90% of them are agricultural outputs.

The improvement of basic social sectors (basic education, health including reproduction health, drinking water, nutrition, hygiene and sanitation) has ever been the backbone of Burkina Faso's development strategy. The conditions of drinking water supplies are bettered. The proportion of households using forages as supplies was 40, 4% in 2003 (in both rural and urban areas) and rural zones alone use 48.8%. Problems of drinking water supplies are more acute in rural zone. In fact, in 2003, 5.3% rural homes still used rivers water, and stream water. Health indicators reveal a globally precarious situation. So the morbidity and morality rate is very high. According to 1996, general estimation of population and habitations, global mortality rate was 14.8% and child mortality was 105.3%. In 2002, nearly 250 000 persons were affected by HIV/AIDS and half of them were women.
At Burkina Faso, the land belongs to the state. But in reality, land affairs are managed by traditional chiefs who can grant or lend a land portion to someone who will in return share crops with them. Generally, women have no right to own land.

Constraints of the agricultural sector
One major constraint of production system in Burkina Faso is soil degradation causing a decrease in agricultural outputs. The use of chemical fertilizers, which is a common practice, due to the introduction of cotton production, cannot make up for this degradation, because of organic support deficiencies. Another constraint linked with cotton strong implantation, consists in creating a more or less tight dependence of producers to that speculation which secures them the greatest part of their cash incomes, with all the dysfunction system consequences. So it is noticed today that a large number of cotton

producers are in debt. Forest degradation, or vegetation reduction in savannas, as well as late bush fires, contribute the weakening of project agricultural zones. In certain areas, these tendencies are linked to cultivated surfaces extension (mainly the introduction of cotton farming) and the reduction (or elimination) of alternate land cultivation. Forest degradation and riverside farming (or beds of these rivers) cause the early drying of these water streams and points. Yam agriculture aggravates clearing and deforestation, and sandy water streams. Available bettered seeds are also a constraint to vegetal production development. As for livestock, deficiency of sanitation care is a major constraint for vaccination and animal healthcare. In important breeding zones, there are potential conflicts between farmers and breeders, about grass resources and water. There is a weak agriculture and livestock integration (so, little organic elements recycling from livestock activities), while agricultural systems could have taken advantage of it. Over pasture and tree-cutting linked with livestock activities aggravate deforestation. In all agro ecological zones, deforestation and late bush fires lead to landscape uniformity and reduce biodiversity in ecosystems submitted to human activities.

3.2. Ghana biophysical and socio-economic profile

Ghana is a coastal country open on the Gulf of Guinea and covering 238 537 km2. It is bordered in the West by Ivory Coast, North by Burkina Faso and the East by Togo. The highest point is the Mount Djebobo (876 m) which is located in Akwapim Togo Ranges on the Eastern limits of the country. The current ***population*** of Ghana is estimated to be about 18 million *(Population &Housing Census, 2000;* Projections indicate 27 million by 2010*),* of which nearly 67% live in the rural areas.

The ***climate*** in Ghana is tropical. Southern Ghana is humid whilst northern Ghana which falls partly in the Sahelian zone is relatively dry. During the harmattan season the northern savannah area becomes extremely dry with relative humidity as low as 25% or less in January. Average temperatures vary form about 240 C in the south to around 360 C in the north. In Ghana the mean annual rainfall varies from 2250 mm in the West Coastal area to about 750 mm in the eastern coastal area and 100 mm in the North.

The ***main river basins*** in Ghana that constitute the available surface water sources are the White Volta, Black Volta, Oti, Lower Volta, Pra, Ankobra, Tano, Bia, Coastal Drainage (mainly Ayensu and Densu) and Tordze Aka Basins. Aquifers underlie almost all areas in the country. Occurrence of ground water however is controlled principally by the local geology and other factors such as topography and climate. In northern Ghana aquifers have been located at between 10m and 60m depth with an average of 27m. In southern Ghana, due to thicker soil cover, boreholes are deeper, ranging between 25m and 80mn depth with an average of 42m.

The ***major soils*** in Ghana include: the Oxysols (Oxisols, Ferric, Plinthic Aerisols) These are developed under evergreen rain forest with rainfall above 1778mm. They are strongly leached soils with predominant kaolinitic clays and deficient humus content. The oxysols are strongly susceptible to erosion on exposure and to rapid nutrients depletion. These soils occur around the extreme southwestern corner of Ghana. The ochrosols are extremely important agriculturally. They are widely cultivated in both forest and savannah areas. Like many other soils, however, their niutrient-vegetation relationships are fragile and they are susceptible to water erosion.

The country can be ***classified into four well-defined agro-ecological zones***: coastal savanna, forest, forest-savanna transition and guinea savanna. ***The coastal savanna zone*** is low-lying and covers about 16,000km2 or about seven percent of the total area of Ghana. Rainfall ranges from 600mm to 1150mm per annum, with the lowest rainfall in the country experienced in the eastern part of the zone. The zone is mainly grass and scrub with soils rather poor on the whole. The most useful soils, agriculturally, are the friable savanna-ochrosols. Staples such as maize, cassava and vegetables are widely produced in this zone which also supports livestock, including cattle. ***The forest zone*** covers approximately 36 percent of the country 32000km2 remain under forest reserves, while the rest taken up by farmland and land undergoing rejuvenation under bush-fallow agriculture. The zone enjoys the highest rainfall in the country with annual rainfall ranging from 1150mm to over 2000mm. The soils are not inherently very fertile and are generally not suitable for continuous cultivation under mechanization. The zone supports the cocoa crop as well as starchy staples, notably cassava, plantain and cocoyam. The ***forest-savanna transitional zone*** cover regions north of the forest zone. Most parts of the zone are between 120m and 275m above sea level and rainfall average 1450mm per year. The forest vegetation has given way to derived savanna. The soils are fairly fertile and support a wide variety of crops. Maize, yam and tobacco are important crops with staples such as cassava and to a lesser extent plantains are widely cultivated. Large-scale commercial farming is widespread in the zone and has a high potential for improved agriculture.
The guinea savanna zone covers about 57 percent of Ghana. The zone has only one rainy season which starts in late April or early May reaching a peak in late August or early September and tail off in October. This is followed by a long, dry period in which no crops, including pasture, grow except under irrigation. The soils are generally poor. The better soils are found in the flood plains and along river banks. Rice is by far the most important cash crop in the zone and is produced in the valley bottoms. Cotton, another important cash crop is more important to small-scale farmers. Millet, sorghum and yam are principal food crops in the zone, but maize, groundnuts and vegetables are widely produced. Livestock production is an important activity in the zone with over 70 percent of the cattle (sheep, goats).

The major ***employment*** sectors in Ghana are agriculture, services and industrial sectors. About 40 percent of total income for all Ghanaians is derived from agriculture. The structure of Ghana's economy in 1994 showed that agriculture contributed 45.5%, services 38%, and industry 15.8%. Agriculture is the most important activity in terms of spatial extent and employment.

Agricultural production is made up of traditional export crops (cocoa and oil palm), traditional non-export subsistence crops (yam, plantain) and recently non-traditional export crops (fruits, vegetables and root crops). The rearing of livestock on free range is common throughout the country, however with concentrations in the drier or grassland areas of the country.

Rural community dwellers are exposed to a host of health problems related directly to inadequate water (quality and quantity) and lack of proper sanitary provisions. These problems are compounded by absence of basic health infrastructure and health education. Although educational facilities are generally available countrywide, about 59% of adults in rural areas are literate in English or a local Ghanaian language, compared with an urban adult average of 34%.

Constraints to sustainable agriculture

In Ghana, environmental constraints to agricultural development include drought, soil erosion and bushfires. Droughts of varying duration have affected Ghana in the past. The northern savanna areas face the most risk. Bushfires occur annually in the dry areas of the country and are mainly caused by human and cultural factors. The impact is widespread and severe during drought years. Line squalls occur during the start of the rains between March and May each year. Floods are localised and limited to low lying areas during wet periods.

The impact of soil erosion is not dramatic but widespread in all areas of the country with the increasing rate of deforestation. Soil erosion is widespread in Ghana to the extent that areas that are not degraded at present are being threatened. Soil erosion occurs in the form of sheet erosion through surface run-off.

Declining soil fertility is now a serious constraint to agricultural production. Ghanaian soils are developed on thoroughly weathered parent materials and have been leached for a long time. A larger part of the original nutrients from the parent rock have been lost.

The most widespread system of agricultural land use is the traditional bush fallow system of cultivation which involves slashing and burning of forest and grassland and rotation of the cultivated plots over a number of years. The system is sustainable under conditions of low population density and abundant land. Associated with the increase in population the demand for subsistence agricultural cultivation has increased along with the demand for cash crops and urbanization and infrastructural development. Land tenure vary in different parts of Ghana. Several factors affect the proper use of land and the assurance of maintenance and promotion of conversation use. With the frequency of droughts, water use is critical to agricultural production.

Introduced technologies in agriculture including the use of machinery for land preparation and harvesting as well as the use of chemicals for soil improvements or for control of weeds and pests pose a threat to biodiversity.

3.3. Mali biophysical and socio-economic profile

Mali is a continental country with an area of 1 241 248 km2. 2/3 of the countries are arid and half desert. The landscape is a little high and broken; it’s a country of plain and plateau. The average altitude is 500m. In Mali, there are eight administrative regions erected into territorial communities. In each region there are territorial communities (703 in total). The capital city, Bamako, is organised into districts with six townships.

The population of Mali is estimated to around 11.5 million inhabitants in 2005 with 50.5 % of women with a particular touch in Kayes region with the weakest rate of residing males. Contrarily, the Sikasso region has the highest rate of males (52 %). The demographic rate growth is 2.2 %. The population is highly rural, around 73 %. However, the urban population growth remains more important, 4.1 % of growth rate against 1.4 % in rural area.

Mali has a hot and dry seasons, with temperatures varying on the average between 35°C (May-June) and 22° C (December –January). The annual rainfall average varies from 100 to, 1.300mm according to the ecological areas. The rainy season lasts from May to October in the South, and from July to September in the North. As for the dry season, it lasts nine months in the North and five to six months in the south. The country is submitted to the influence of two principal winds: a dry wind, which blows during the dry season from the north-east to the south-west; a wet and dry wind, the monsoon, which blows from the south-west to the north-east.

The country is divided into four agro-climatic areas of different size: (i) the south Sudano-Guinean: between the latitudes 12 – 14; 75 000 km2 that is 6% of the national territory (it's the rainiest in the country with a rainfall between 1300mm and 1500mm a year; (ii) the northern area - Sudanese, with 1300mm and 700 mm a year. This area covers around 18 % of the Sudanese territory, with a vegetal cover much thicker: wooded savannah and forests); (iii) the Sahara area: between the latitudes 18 – 20; 632.000 km2 that is 51 % (100-200mm of rainfall a year with a weak vegetal cover mainly made up with spiny trees); (iv) the sahelian area: between latitudes 16 -18; 320.000 km2 that is 26 % (the precipitations vary from 200 to 700 mm a year and the vegetation is made of spiny trees and acacias), and involves the Niger interior delta. The Niger interior delta: (also called lakeside area or flooded area), is the best place for rice growing and fishing. It's a real internal sea located at Sahel middle. The delta, 300km long and 100 km large plays a regulating role in the regional climate.

The water surface resources in Mali are essentially divided between two principal rivers, some lakes and streams. The hydrographical regime is essentially made of the Senegal and Niger Rivers. The northern part of the country is watered by the river Senegal and its side streams, while the eastern part is watered by the Niger River and its tributaries. The Senegal River starts from Mali by the two joint rivers (Bafing, Bakoye) and the Niger (4200 km, 1780 of which in Mali). The water supply networks rely on rivers. So, from north to south, a quarter of the territory is located in the Sudano- Guinean area, 50% in the sahelian area and 25% in the Sahara desert. A total of 17 big lakes are located along Niger River inferior course in the northern parts of Mali. The underground water resources contribute from 80 to 90% to water provision for population.

There are ten soil groups in Mali, based on geomorphology, original materials, morphological and psycho-chemical properties. These soils cover the 583.000 km2 in the south of the Sahara desert, which represents 47% of the country global surface. Three soils types dominate agricultural lands in Mali. First, lightly ferralitic soils cover around 20.000 km2 of the Guinean area in the extreme south of the country. The moderated fertility of these soils is partially compensated by its depth. Then, the tropical ferruginous soils predominate in the Sudanese area and on the two third of the Sahelian area, covering a global surface of 173.000 km2. These fertile soils are moderately vulnerable to erosion. Lastly, the vertisols and hydromorphic lands cover the River Niger Delta and the alluvial valleys of the country.

The national forest domain main woody resources (estimated to 100 million hectares), concerns 32.4 million hectares, (around 26% of the country surface), 1.3 million hectares of which representing classified forests and 3.9 million hectares of protected areas (1.5

million hectares at Mopti and 1.75 at Gao), to which it's necessary to add the vegetal and agricultural units, estimated to 15.7 million hectares.

Mali has enormous fauna potentialities because of its biodiversity and the abundant vegetation in some agro- ecological areas. This fauna is composed of all types of African savannas big mammals and birds. Avifauna is particularly rich, with some 640 identified species, 15 of which are rare. The Niger interior delta (40.000 km2) is a very particular wetland. It includes three Ramsar sites of international importance: The Walado Debo, Lake Horo and the Séri plain, recognized as a World Heritage to be safeguarded. These sites cover 162.000 hectares and include around 350 species, 108 of which are migrants.

Mali economic activity is largely dominated by primary sector which employs 83.4% of the active labour force which's share in the GDP reached 51% in 2002. This sector has respectively created 14% and 39% of the national wealth. The secondary and third sectors respectively employ 4.1% and 12.5% of labour force. Mali is classified among the less developed countries with gross revenue estimated 150.000 F CFA per year and per inhabitant.

Concerning education and health, Mali subscribed to MOD realisation. The government made education a priority sector of socio- economic development. This political will is materialised by investment programme development and implementation in education sector. In health sector, this will is realised through the implementation of health development programmes.

With more than 2/3 of desert covered surface, the pressure related to agricultural exploitation, cattle breeding and habitat, is very strong in the rest of the country. This situation causes serious land problems mainly between farmers in Sikasso region. According to the land code, land, fauna and flora depend on the State which can delegate their management to decentralized rural entities. In urban area, management is done according to the land code, while in rural area, land is managed according to traditional rules. For more than a decade, Mali is facing poverty with 72 % of poor people 75 of which live in rural areas. This poverty varies from one region to another (89% of them are in Kidal, the poorest region).

Agricultural sector constraints

It is noted an unsuitability between production systems and production potentialities conservation. The fertility decrease is generalized: outputs stagnation/ decrease; increase of cultivated surfaces with clearing of marginalized grounds and forestry zones. The animal traction agriculture, when practised, causes trees elimination from agrarian systems and soil erosion. The rare arable lands (23,8 % of the total surface of the country) are subjected to serious agro pedological and climatic constraints (natural poverty in organic matter and biogenic salts). Generally, agricultural and animal productivities are weak. In many places, conjunction of demographic and animal pressure on a restrict space cause imbalance between natural resources use and conservation.

3.4. Senegal biophysical and socio-economic profile

Senegal is a flat country, of an area of 196.722 km2, essentially made of plains and plateaus. The relief opposes the basement regions (localised in the south-East and with altitudes beyond 500m) to the ones in the Senegalo-Mauritanian sedimentary basin whose altitudes rarely exceed 50m, except the Horst of Diass of more than 100m. The population is estimated to 10 217 000 inhabitants.

Concerning its latitudinal position, Senegal is in the tropical sahelian zone. The winds regime defines two well contrasted seasons: (i) a hot and rainy season marked by the monsoon from June to October; (ii) A dry season during which blow the continental tropical easterly predominating in the North-North West. Between Dakar and St-Louis the temperatures vary from 20 – 22°C in February to 30 – 32° C in September-October. In the interior, the continental aspect explains the strong thermal amplitude which can go up to 20 ° C. The rainfall strongly varies, with more than 1000mm a year in the south and less than 300mm in the north.

Senegal, not much favoured by the weather conditions, still detains relatively important water surface resources. The two big rivers, Senegal and Gambia Rivers, which cover most of the water surface, start in Fouta Djallon Mountains (in Guinea) which receive rains reaching 1900mm a year. Next to these two big rivers, Senegal counts other small streams such as Casamance, Kayanga, Ananbé, Saloum, Sine and other temporary basins on the coast. It also counts a certain number of lakes, streams and wetlands which, most of the time, are linked with the performing or degraded hydrographic network. The underground water reserves are estimated between 450 and 600 billion m3 of water. The annual refilling is estimated between 3 and 4 billion m3 of water. However, these figures don't reflect exploitation potentiality of these waters limited in quality (protrusion of the salted bevel, high rates of fluorides, nitrate, and iron).

In Senegal, there are many types of lands with very different characteristics and aptitudes. Their composition results from geological substratum diversity, geomorphology and weather conditions. They play an important role in agriculture sustainability and environment preservation. The soil formations in Senegal can be gathered in three big groups: lands derived from quaternary grounds; lands derived from secondary and tertiary grounds; lands formed on primary basement or on a volcano-sedimentary rock. Senegal doesn't have many good quality land resources. Considering the soil aptitude, lands classification shows that nearly half of country lands (47 %) are poor or unfit for agriculture in general and 36 % are rather poor and register limited factors which produce only weak yields.

In Senegal, forest repartition is generally patterned according to the rainfall gradient. So, there are the sahelian domain, the Sudanese and the Guinean ones. The sahelian domain is characterised by open vegetation dominated by acacias, and annual true grasses making more or less continuous carpet. The Sudanese domain is characterised by tree savannah vegetation type / wooded, with dry forests and a thick grassed carpet dominated by vivid species. The Guinean domain is characterised by a thick two-level semi dry forest floors

and a thick ground wood made of young growth, lianas and grass. Next to these vegetation areas, there are: gallery forests along water streams; mangroves in the estuaries; vegetation in lowlands ("niayes") which spread on the northern littoral. The classified domain comprises 213 forests, 20 of which are forestry-pasture reserves and 8 of the tourism sites. National parks (10 integral and special reserves), are places where biodiversity would be better kept because of their status of totally protected areas. The majority of the population uses wood or charcoal as energy source. Nevertheless, most of reachable resources have already been used and are generally over exploited. With the persistent drought effects, trees cutting and lands farming expansion contribute to forest products degradation.

To better value of natural resources, referring to weather, phyto-geographical conditions and land aptitudes, the Senegalese territory has been divided into six eco-geographical zones which are relatively homogenous entities: The river Senegal valley; the "Niayes"; the ground nut basin; the forestry pasture Zone; the Eastern Senegal Zone; Casamance.

Senegalese economy is mainly supported by agriculture and other sectors which highly contribute to growth and export earnings. In Senegal, the per capita incomes go soft to a constant deficit likely to relative part of agriculture which presently contributes, with bad performances, only to10 % of the GDP, while the sector employs 65% of the active population. This situation doesn't allow to improve the populations' living conditions and to reduce poverty in rural area. About one third of the population lives under poverty line and more than 58 % in rural area homes remain confronted to poverty problems.

Agriculture is altogether the heart of Senegalese economy and the most important sector of economic activities. It covers more of half the population, contributes for 10% to GDP and absorbs around 10 % of public investments programme. Agriculture occupies about one fifth of lands. The farming sector also plays an important role in the economy, given its contribution to food safety improvement, by supplying raw materials to agro-industry (ground nut, cotton…). It also constitutes one part of industrial, semi industrial and handicraft sectors (fertilizers, pesticides, farming equipment…). The cattle breeding has an important place in food self sufficiency research. After bad weather in January 2002 which affected some regions in the north of the country, killing a major portion of the cattle (nearly 5.1 %), important efforts were made to regenerate species (introduction of new races, artificial insemination, housing, improvement of the epidemiologic situation of the livestock, notably the struggle against some diseases such as cattle pest, equine, small ruminants plague, Newcastle disease, etc.). The pastoral system is dominated by nomads particularly in forest zone and river valley.

In Senegal, land tenure, essentially regulated by the National Domain, is characterised by a lack of property law on most of the lands, in spite of socio-economic evolution of national context marked by economic cost effectiveness of investments, participative approach and decentralization. Operationally, there is a real confusion about land rights, causing difficulties of access to land and conflicts.

Agricultural sector constraints

Senegalese agriculture is confronted to several constraints which weigh on its performances and contribution to the improvement of rural populations living conditions: lower rainfall; regular decrease of agricultural production; technologies using little capital (fertilizer), but strongly degrading land resources with heavy pressure; outputs and productions decrease. Soil exploitation system is intensive with agricultural techniques

having immediate outputs growth. In breeding sector, main constraints are: presence of diseases (enzootic type); pastoral ecosystems degradation (animal pressure, bush fires, agricultural face progress); insufficiency of water points and defective condition of hydraulic infrastructures; low genetic potential of local races (meat and milk production).

3.5. Major constraints related to agricultural production in targeted countries

Agricultural production constraints in targeted countries by WAAPP vary according to the cultural situation, geographical site and country development level. However, there are constraints to the agricultural productivity, common to all countries in the sub-region and needing capacity to evaluate and use farming research tools to eliminate and/or reduce such constraints: (i) weak potentialities of vegetal and animal production ; (ii) resources allergy to biotic (insects, viruses, diseases caused by mushrooms) and abiotics stress (acidity, saltiness, toxicity due to heavy metals etc.); (iii) inadequate use of agricultural products in agro-industry processing; (iv) high pressures on agricultural environment, particularly on genetic resources and soils.

Underdeveloped agriculture is source of long existing poverty, malnutrition and decreasing economic growth in the sub-region. The constraints to agricultural research, production, development and poverty reduction, include: weak development of human resources; lack of macro economic frameworks and appropriate sectorial policy; farmers' weak productivity; natural resources management challenges compared to urban population growth and food demand; inefficient marketing systems; lack access to credit and inadequate rural infrastructure. Other constraints include: lack of efficient institutions supporting initiatives to relaunch agriculture, rural development and poverty reduction; lack of beneficiary participation in projects conception and implementation; little attention paid to women's specific needs in products consumption and distribution; and lack of coordination between donors.

In spite of these challenges, the agricultural research has positive impact on the production of certain major food products in the region. The production statistics published by FAO show a constant growth on the cost effectiveness of most farming products since mid-1980 and beyond, after the launching of improved varieties by several national agricultural research systems (NARS), as well as the introduction of new approaches for plant protection.

4. WAAPP ENVIRONMENTAl and SOCIAL IMPACTS

4.1. Positive environmental impacts

WAAPP aims at contributing to sustainable agricultural technologies use on environment. The project will support ecologically sustainable and socially acceptable agricultural practices. It will not accept to fund research projects with important negative impacts at regional and national levels. It will encourage proposals including pest management and integrated land conservation, which favour profitability and sustainable use of chemical products in agriculture. For this purpose, it will examine all research proposals before their funding. WAAPP will also cooperate with all involved institutions to facilitate certification and harmonisation of pesticides use in the region.

WAAPP is governed by ECOWAS agricultural policy which's orientations aims at (i) deflecting the heavy tendencies of West African agriculture by overcoming productive investment and productivity improvement obstacles and (ii) creating a profitable commercial environment for the farmers in the region. The general objective of the agricultural policy of ECOWAS is to contribute in a sustainable way, to meeting the population's food needs, economic and social development and poverty reduction in the State members, as well as the inequalities between territories, regions and countries. More specifically, this policy aims at :

- Ensuring food safety for rural and urban population and sanitary quality of products, based on an approach which guaranty food security in the region;

- Reducing importation dependence by giving priority to food productions as well as their processing (to value and exploit complementarities and comparative advantages in the region, taking into account specificities and characteristics of rural areas or countries);

- Favouring the economic, commercial and equitable integration of agricultural exploitations in national, regional and international markets, improving agricultural population's incomes, mainly women's incomes;

- Developing human capacities, creating jobs and ensuring production incomes, upstream and downstream, and contributing to services development in rural area, notably in the health field, with a particular attention paid to struggle against pandemic diseases: HIV/AIDS, malaria etc., so as to improve living conditions of rural populations;

- Ensuring production systems intensification adapted to the different agro-ecologic contexts, in order to ensure production growth by appreciating and preserving natural resources and biodiversity;

- Contributing to reduce the vulnerability of West African economies and to limit the destabilising disparity and regional insecurity, particularly in the field of natural calamities, peace, safety and good governance;

- Contributing to supply West African agriculture with funding mechanisms proper to exploitations diversity, dies and investment needs multiplicity.

In this regard, WAAPP global impacts are positive because it contributes effectively to these above objectives.

Positive impacts of agricultural research activities and technologies

- Generally, agricultural researches adverse impacts on the environment (administration and research management, sustainable funding of a competitive research, support to priority research programmes, investment in scientific information systems, human resources development and research infrastructures) are not much significant. In fact, the development objectives of agricultural research activities are positive for they aim at sustainable intensification of agricultural systems to keep and improve natural resources. For this, the enhancing of research teams in environmental and social science will allow to include environmental aspects in technological packets to be developed.

- Research on production and agricultural technologies would cause positive impacts because it would consolidate experiences of previous programmes. These research activities will also help improve infrastructures and equipment, researchers' training, field trips, technical assistance, a better relation between research and agriculture, a better organisation of dissemination services in agricultural development programmes, etc. Besides, the private sector participation (service providing) will increase efficiency and make innovations more reachable for the larger agricultural community, mainly those in rural development. These activities will favour economic growth and ensure agricultural production food safety. The interventions will favour production increase by reducing degradation process and loss of land fertility, pollution, loss of biodiversity, etc.

- Under the WAAPP, development of minimal critical mass on knowledge and qualifications, to assess tools and appropriate biotechnology products, is positive for the environment. In fact, the national expertise will be developed to assess impacts on biodiversity sites.

- Research activities will also allow natural resources sustainable management by providing integrated approaches to solve the major problems concerning soils fertility and water management.

- Agro-pasture strategies mastering will allow local communities to be committed to more performing and sustainable pastoral resources management. Thus, the over grazing and degradation risks will be reduced.

- Land system assessment on agricultural performances and space management will allow the local communities, (on which depend land management), to proceed to

sustainable land resources allowance. This aspect is particularly important for irrigated agricultural environment in big streams valleys.

- Implementation of knowledge basic in environmental resources as well as on value increasing modes is the safest means to sustainable resources exploitation.

- Dissemination of irrigation and water distribution methods will help to better manage land and water resources by limiting their over exploitation and degradation.

- Periodical publication of universal referential on flow, products competitiveness, price evolution, dynamics in products supply and flow will have a very positive effect on agricultural production performing.

- Adoption of new varieties by producers will increase the land value and allow a better performance in agricultural exploitation management.

- The value increasing techniques development of agricultural sub products will lead to lands regeneration, water resources preservation and reduction of chemical fertilizers which have not always positive effects on the environment;

- The cattle housing techniques development and irrigated system management (in agricultural zones where irrigation predominates) will help reduce chemical products use with profitable effects for environment;

- The development of modern irrigation techniques of integrated struggle will help avoid risks related to chemical products, in so far as these techniques integrate biologic struggle;

- Research development on epidemiologic monitoring will reduce diseases prevalence, local affections related to environment;

- Research on optimisation method and techniques of mineral land fertilization will allow to keep agricultural lands fertility levels and will not handicap agricultural production;

- Recovery techniques development of salted lands, struggle against irrigated land degradation, soils improvement, water management and land conservation will lead to the increase of agricultural surfaces and local productivity;

- A Publication and very large diffusion of high risk areas on edaphic and hydric aspects in rural communities will improve resources management by producers;

- Recovery techniques research on deforestation, and wild fauna management will contribute to local biodiversity conservation;

- The research activities promoting horticulture, vegetable growing and fruit trees as well as improved seeds production will ensure agricultural production

diversification, enriching agricultural areas. Fruit planting will develop arboriculture in rural zones, nursery gardens reforestation, and participate to struggle against desertification by increasing vegetation at national level. In fact, permanent forage growing on anti-erosive devices is a “sweet” technique of struggle against land degradation. These growings can have profitable effects on soil structure and fertility;

- The research for a better support for access to agricultural inputs, notably for plant life protection, reduces loss of productivity and loss of profitability of cultivated plants during growth period and after harvest (protection of stocked products), but also as a quarantine arrangement. These research activities will principally serve to maintain and ensure profitability, but also to increase them if additional agricultural measures are taken. Research on rotation practices and other alternative to pesticides also favour struggle against parasites;

- In the research field on environmental investments, reforestation or fruit nursery gardens at village and community levels, hedges, windbreak, and halophytic plants, will reinforce struggle against desertification, conservation and diversification of sites flower planting. In fact, these researches will contribute to struggle against desertification through reforestation and but also through land restoration and conservation activities. Besides, these activities will beautify landscape by ensuring lands conservation and reducing hydric erosion. Likely, forest fencing will save flora as well as firewalls which will play an important role in bush fires negative effects limitation on flora and fauna. The research on management and use of harvest residues, through composting technique development, will have positive impacts on environment and agricultural activities: reduction of water table risk, reduction of gas emissions (methane) in the land fill sites ; contribution to resource conservation, to biodiversity management and natural habitats protection; reduction of chemical fertilizers needs, and phyto-sanitary products and negative impacts linked to their use; promotion of sustainable development practices in agriculture;

- Researches aiming at breeding productivity growth will have a significant positive impact concerning case detection and struggle against diseases (treatment, prophylaxis, struggle against vectors), artificial insemination and embryo transfer, laboratory activities (diagnosis, vaccine fabrication and residues analysis), food products analysis, etc.;

- Artificial insemination constitutes a permanent means to prevent venereal diseases propagation;

- Breeding in permanent housing meets agro-forest-zootechnical integration policy. In these conditions, cattle breeding contributes to fertility improvement and land protection through dung supply;

- Used as fertilizers, urines and dung on breeding areas improve land fertility, if additions are not excessive. Collected dung from cattle park can be used in farms, in vegetable growing or for biogas production, thus contributing to land fertility improvement ;

- Incidentally, researches on pastoral resources community management approach, based on holistic pattern, will allow pastoral resources management rationalisation; better organized mobility of herds; come-back of some species having disappeared in the past; tree cutting diminution ;

- Research in the Agro forestry domain / Breeding will help improve living conditions (job creation/ income improvement); land improvement, profitability increase; a limitation of fallows extension; a diminution of rural exodus; vegetation cover regeneration;

- Researches on a balanced composition of chemical /organic fertilizers will cause land improvement and an increase of profitability, through a limitation of abusive chemical products use ;

- The research on the improvement of cattle breeding will lead to an increase of populations' incomes; an improvement of the livestock productivity; an increase of strength; an increase of milk /meat production; a lightening of herds concentration in significant zones; an intensification of breeding; conservation and regeneration of vegetal units; a cover of the populations' needs in animal proteins;
- Forest research will, not only allow to increase the forest products, but also to slow down the erosion process;

- Researches on the intensification, diversification and organisation of intermediate channels will improve land fertility, thanks to the breeding integration; an increase of availability concerning organic substance; of salted lands recovery; land stabilisation through struggle against land erosion and loss of nutritive elements; a better development of lands; conservation of land productivity; profitability improvement; agricultural intensity increase; value increase of production factors; job creation; local industrial development and reduction of post harvest losses;

- Research on seeds quality improvement (seeds production techniques) will develop improved seeds characteristics: strong output capacity; positive response to improved cultures methods (ground work, fertilization, etc.); high organoleptic qualities; good resistance to diseases and insects. Research on seeds control and certification will allow preserving standards qualities.

4.2. Positive social impacts

- The sub projects to be funded by WAAPP are supposed to have positive social impacts meeting the population's needs. These positive impacts can be summed up as follows: new jobs creation (fight against poverty); improvement of agricultural services capacities and those of implicated producers' organisations; a better access to investment opportunities (access to micro credits);

- WAAPP will support research services to contribute to a better supervision of agricultural productivity increase, a better coordination of research, a better research results repartition between stakeholders, by fully respecting environment and natural resources management requirements. WAAPP will encourage partnership development between research institutions, OP, public services, private sector, NGOs and donors;

- WAAPP is a means of sustainable local development promotion which allows farmers to formulate their support request in targeted sectors, in terms of productivity constraints. WAAPP will allow them to participate to policy and national strategies development in agricultural sector;

- Through OP responsibility in demand formulation, WAAPP will favour gender consideration and equity in activities implementation. Women, who constitute essential levers in OP organisation and animation, will participate actively to the project activities of which they will be the privileged beneficiaries, in terms of income increase, technologies mastering and technical assistance;

- Production improvement as well as irrigation systems, small vegetable perimeters development, will allow job creation, local product diversification, nutrition improvement and will significantly increase family incomes. The population will then be able to satisfy their fundamental needs, particularly children's school fees, access to health care, participation to community infrastructures realisation, etc. The planned production systems, technologies and post harvest activities aim to promote productive agriculture without affecting environment (natural resources preservation, land fertility recovery, etc.);

- Reforestation activities, woody area protection, fire walls, will improve rural populations living condition, safeguard biodiversity, ensure firewood availability and thus facilitate women's tasks. Composting techniques development will involve many impacts: fertilizers price reduction; composting serving as an organic fertilizer replacing chemical ones; job creation and contribution to economic development in composting sector; population awareness in recycling and value increasing techniques of residual substances;

- Quality food product production promotion: creates an added value to actors' incomes; increases infrastructures and investments profitability ; reduces uncontrolled importations of red meat and poultry; improves the know how of meat and milk professionals;

- Breeding information system improvement ensures better policy and strategies development related to animal productions; ensures breeders and livestock food supply prevision; allows the description situation having an impact on livestock production capacity;

- Research on pastoral activities will develop methodological tools of herds follow-up; and to collect data for a better extensive herds management. They will also contribute to make pastures exploitation sustainable;

- Community management approach of pastoral resources based on holistic pattern: ensures a better improvement and value increasing of resources and pastoral production; an improvement of herds exploitation; allows resources mobilization from communities (counterpart, trading capital) and decrease cattle theft; ensures productions improvement (milk) as well as the reproduction parameters (birth increase and mortality decrease); guarantees market gardening development, creating supplementary incomes for farmers; ensures farmers' training; reduces conflicts and creates an accurate community responsibility;

- The availability of zootechnical and sanitary information collection and treatment means ensures: an efficiency and precision of collected data bases; the rapidity of treatment; scale economy; unlimited access for everyone to data bases and information;

- Processing infrastructures improvement research, (such as processing and conditioning units), will allow promotion, safety, value increasing of local agricultural production (vegetal, animal), distribution and commercialisation in respect of sanitary norms. This will increase local populations' incomes, reduce exodus and improve living conditions. In fact, the deficit of these infrastructures is a real handicap to local community economic development which loses a good part of their production; uses available means to ensure production security; and are unable to sell their production at the right time and in a satisfactory way;

- Biotechnical development to achieve productivity and sustainability objectives, (to produce more food on the same or on less land surface; with more nutritional value and less negative effect on the environment), remains one of the priorities of agricultural policy. In order to realise this priority, efforts must be focused on biotechnology tools development, which will improve agricultural biodiversity knowledge (that is, growing and livestock molecular characterisation in genetic molecular use and other associated techniques); biotechnological research to improve use of plants and animals; and application cells cultivation techniques in genetic and conservation improvement programmes;

- The use of agricultural biotechnology to ensure food security remains a priority in West Africa. To take advantages of this technology and ensure its optimal use, countries are getting ready to organise some fields tests on the same bettered or similar growing from biotechnology technologies, which helped accelerate development of national regulations and capacity reinforcement in biosecurity;

- Fruit and vegetables processing (subject to microbial proliferation) will allow keeping them in suitable hygienic state, nutritional value and organoleptic

acceptability. Research on fruit and vegetables processing gives also employment and incomes to women associations. Agricultural products processing contributes to reduce poverty and to nourish the increasing population while improving and diversifying available products. Production and processing mechanization will benefit to other sectors actors, such as service providers. As for social aspects, women will be main beneficiaries of services provisions (agricultural produce beating and processing), which reduces housework hardness;

- Research on medical safety (microbiological and chemical aspects) and food quality constitutes a major factor in food hygienic quality improvement; and one of the vital sectors for public health protection and agro alimentary industries sustainable development;

- Research on agricultural equipment and material will have positive impacts on the environment in terms of: traditional values and practices improvement, with access to a better quality crop and agricultural machinery; agricultural equipment and incomes increase; etc.

4.3. Adverse environmental impacts

Negative impacts of agricultural research activities and technologies

- To increase agricultural production, some activities and technologies issued in research could have negative impacts notably with pesticides use. In fact, agricultural production increase requires intensification through efficient struggle against crops enemies and mineral fertilizers use. More specifically, the development of vegetable perimeters at national scale can cause an accurate use of pesticides, to struggle against pests.

- Agricultural equipment use was often regarded as one of the major environmental degradation factors: deforestation, soil erosion, streaming rainwater.

- Pesticides have many negative impacts if their use is not rational: underground water pollution, streams, rivers, livestock contamination through watering, animal and human intoxication in case of bad use, presence of residues in food products (lowering their commercial value and being risk for public health), packing mismanagement causing risks when they are re-used to contain other food products, non targeted species ;

- Environment adverse effects are probable if vegetation protection doesn't sufficiently take into ecological aspects. The repeated use of active substances leads to pests resistance. Non specific struggling processes slow down pests propagation, but, at the same time, they affect a number of non targeted useful species. Growing pests risk then to propagate more quickly and need additional treatments;

- In the absence of a real integrated struggle against growing pests, agricultural production increase of could lead to an accurate use of chemical pesticides, which's impacts on environment could be negative;

- Chemicals use is linked with on fight against diseases vectors, crops destroyers and manures. In zones where agriculture is practised, water conveys agricultural pesticides and various toxic residues which accumulate in water surface. Fertilizer lead to water surface degradation.

- Extensive breeding has negative impacts on environment particularly: irrigation channels destruction; soil damaging; soil erosion; stream bank damaging; waste generation in stables which can pollute water surface and groundwater;

- Livestock grazing cause selective plant browsing, influencing local floristic composition;
- Not enough protected wells and streams risk to be polluted by animal rejections;
- Agro-forestry and breeding research results application leads to forests overexploitation and over pasture around water points;
- Soils salinisation, alkalisation and acidification: agricultural dies intensification and diversification increase land salinity and farming zones extension;

- Soils biological degradation (organic matters reduction, microfauna and microflora reduction).
- Soils and underground accelerated degradation;
- In the field of biotechnology and biosecurity, risks are related to national research institutes capacities deficiencies, in particular because of constraints related to financing and human resources. Several constraints in biotechnology use were identified by criticisms, and the most serious concerns biotechnology high cost; environmental and health problems such as gene leak.

4.4. NEGATIVE SOCIAL impacts

- Agricultural production increase targeted by WAAPP could contribute to increase water bound diseases and intoxications by pesticides;

- Agricultural production increase in irrigated systems augment risks of water bound diseases such as malaria, schistosomias;

- Agricultural activities development can lead to an increase of pesticides use which may cause accidents and intoxication in populations, either by their direct use (spraying) or bad storing, or by empty containers re-use;

- Pesticides impacts of health and causes: pesticides use is never without risk for pubic health. Pesticide exposure can occur during application, or through environment or food contamination (residues in water or agricultural products). Applicators are the most exposed, and very often, they are badly protected;

- Irrigation perimeters management will lead to loss of grazing lands causing conflicts between breeders' ands farmers;

- Protection equipments are not available for most farmers who are almost always exposed to poisoning by pesticides being sprinkled. Rural health centres in the related areas are always able to supply necessary assistance;

- Critical influence factors, common to all operational systems and breeding types, are the following: clearing for improving natural grazing lands or implementing hayrack; cattle load, which depends on animals number and cattle composition (species and animals) as well as forage availabilities; water points distribution .

- Collective products labelling could increase production cost and prices; marginalize rural producers ; to access to labelled products becoming costly for the little consumer in the interior ; cause labelling based on external markets norms;

- Breeding infrastructures modernization will increase production and maintenance costs;

- Agricultural production systems intensification often involves land conflicts, because of investments attracting migrants who will increase pressure on natural resources.

4.5. Negative impacts synthesis during implementation of agricultural research results

- Health risks related to pesticides use
- Deforestation, soil erosion
- Lack of integrated fight against crops enemies
- Significant destruction of habitat
- Vegetation clearing
- Soil erosion
- Soil fertility loss
- Soils salinisation, alkalisation and acidification
- Underground water pollution (fertilizers; pesticides, etc.)
- Cattle contamination (by drenching)
- Unsafe management of pesticides packing
- Non targeted species destruction (by pesticides)
- Water diseases increase
- Soil trampling and compaction by cattle
- Plants selective browsing (by cattle)
- Wells and water points pollution (by the cattle)
- Water diseases increase and intoxications (due to pesticides)
- Conflicts between breeders and farmers (agricultural perimeters progression)
- Risks related to capacity deficiencies in biotechnology and bio security

5. politiCAL and Legal environmental Framework

5.1. Environmental policy documents in WAAPP's targeted countries

In countries Targeted by WAAPP, the national framework of the policy in matter of environment management has been much developed those past years. In fact, many sectorial policies have been adopted and reinforced by other orientation strategic documents and planning exercises more exhaustive; the most significant are described as follows:

Documents of sectorial policy letters on environment are directly in line with research on sustainability conditions of economic and social development, compatible with management and ecologically rational exploitation of natural resources.

On the whole, for land and environment management, all countries have strategic policies and procedures as well as legal and statutory instruments for that matter. They've all subscribed to sub regional and international agreements and conventions as for environmental protection, fight against desertification, species and ecosystems of world wide interest, and fight against pollutions and nuisances as well as in the domain of climate changes.

National action plans for environment (PANE or PNAE) are the principal documents of environmental strategy which aim at harnessing pressures on the natural area ; favouring natural resources regeneration and protecting biodiversity ; improving populations setting and conditions; launch the process of a sustainable development.

Other sectorial documents exist: National action plan for environment and land degradation; strategy and action plan for biodiversity conservation; National strategy for the implementation of climate changes; Forest action plan of Senegal; Document of strategy and poverty control; etc.

5.2. Statutory framework

a. Environmental assessment legislation in Burkina Faso

The environment code (Act n°005/97/ADP of January 30, 1997 edicts the rules related to fundamental principles of environment preservation which are: fight against desertification sanitation and improving populations life setting, implementing international agreements ratified by Burkina Faso concerning environment preservation, preventing and managing artificial and natural calamities. The code provides in article 17 that the activities likely to have drawbacks on environment are subject to prior advice of the minister in charge of environment, the advice is established on the basis of an environmental impact survey on or an impact notice on environment.
Up to now, many application texts of the environment have been adopted by the government. It is mainly about those following texts:

- Decree n° 2001-342/PRES/PM/MEE of July 17, 2001 of field of application content and procedure of the survey and the impact notice on environment ;
- Decree n° 2001-185/PRES/PM/MEE of may 07, 2001, for norms fixation of pollutants rejects in the air, water and soils ;
- Decree n°98-322/PRES/PM/MEE/MHU/NATS/NEF/NEM/NCC/MCIA of July 28, 1998 which sets the opening conditions of dangerous establishments, unhealthy. And inappropriate Article 2 of the decree precise that « EDII » are those presenting dangers or drawbacks either for the commodity of the neighbourhood, or the health and public security, or for agriculture, environment, sites conservation, spaces, monuments and biological diversity. Article 5 of the decree related to EIE/NIE classifies the projects into 3 categories :
- A category : activities subjected to an impact survey on environment ;
- B category : activities subject to an impact notice on environment
- C category : activities which are subject to an impact survey on environment or to an impact notice on environment

Other environmental texts concerned by WAAPP

- The constitution of June 02, 1991
- The agrarian reform ; act n° 014/96/ADP of june 24, 1996 and its application decree n°97-054
- The forest code: act n°006/97.ADP of January 31, 1997 /PRES/PM/NET of February 6, 1997.
- The orientation law related to water management ; (act n°002-2001/ AN of February 08, 2001
- Act relevant to postoralism : (act n° 034- 2002/an of November 14, 2002)
- The public health code : act n°23/94/ADP of may 19, 1994
- The act of pesticides control : act n° 006/98/AN of march 26, 1998
- The general code of local cities

.

Different phases of environmental impact study

Phases	Involved Actors
Phase1 :Framing , study realisation and consultation of the public ③ Determination of the project category ③ Elaboration of terms of references ③ Validations of terms of references ③ Field investigations ③ Consultation of contracting parties (mainly local actors) ③ Writing study report and deposit to the ministry liable to the activity and a copy to the ministry in charge of environment	③ Proponents ③ Ministry in charge of environment ③ Project's sector Ministry ③ Design Office ③ Laboratories Analysis
Phases2 : Public investigation in the case of an impact study ③ Nomination of investigators by the minister in charge of environment ③ Information of local authorities and populations on the opening of the public investigation ③ Opening of the public investigation and writing the investigation report	③ Ministry in charge of environment ③ Proponents ③ Project's sector Ministry
Phase3 : Examination of the report and issuance of the motivated advice ③ Analysis of the study report in addition to the public investigation report ③ Analyse du rapport de notice d'impact ③ Préparation du projet d'avis motivé ③ Emission d'avis motivés par le ministre chargé de l'environnement	③ Ministry in charge of environment ③ Project's Responsible Ministry ③ National Experts
Phase 4 : Environmental monitoring ③ Field Investigation and data collection ③ monitoring of execution conditions of the project ③ Control and verification of the conformity with the environmental management plan	③ Ministry in charge of environment ③ Project's sector Ministry ③ Proponents ③ Design Office ③ Other actors involved (local populations)

b. Environmental assessment legislation in Ghana

The fundamental principle underlying Ghana's formal Environmental Impact Assessment (EIA) procedures is the preventive approach to environmental management in which EIA is applied as a tool, especially at the project-specific level.

The EIA requirements published in the Ghana EIA procedures are supported by law, the EPA Act, 1994 (Act 490) and Ghana Environmental Assessment Regulations, 1999 (LI 1652). The Act mandates the Ghana EPA to ensure compliance with laid down EIA procedures in the planning and execution of development projects, including compliance in respect of existing projects. The basic objectives of the EIA system are:

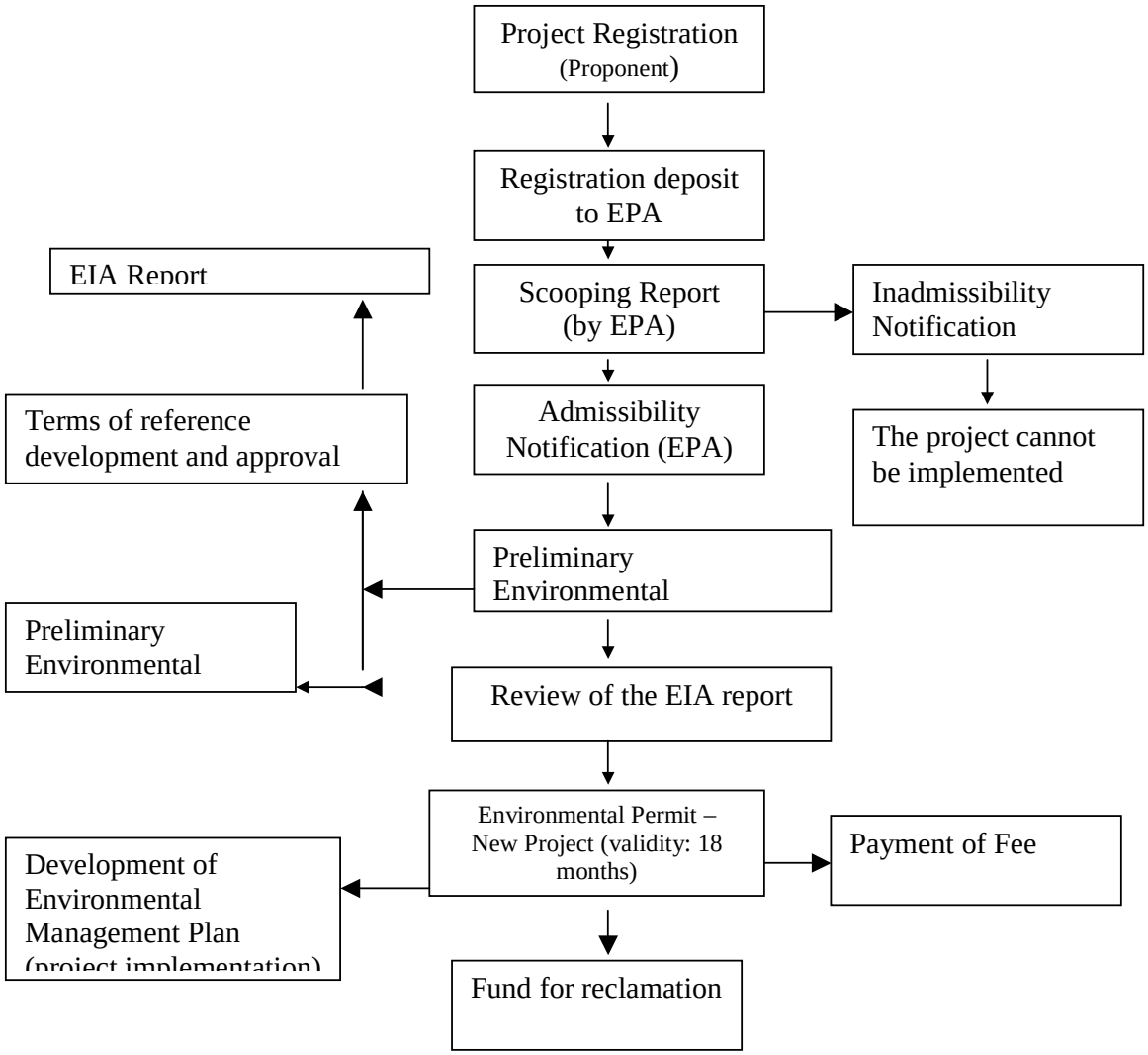
- To integrate environmental management and economic decisions at the earliest stages of planning an undertaking or investment and
- To provide avenues for the involvement of the public, proponents, private and government agencies in the assessment and review of proposed undertakings, among others

The procedures provide for the registration of proposed developments with the EPA and subsequent screening to determine the level of environmental assessment required for the necessary prior authorization. The WAAPP has not yet identified the specific locations for the implementation of its various components and therefore cannot be strictly assessed under the existing Ghana EIA procedures. A more general approach incorporating an overall assessment of the project is therefore indicated.

In general, three levels of environmental assessment are available under the Ghana EIA procedures. These are:

- Registration Assessment (RA) - based on information provided in completing Form EAl which is the starting point in Ghana's EIA procedures
- Preliminary Environmental Assessment - a less detailed form of EIA, this leads to a Preliminary Environmental Report (PER). The Terms of Reference (TOR) are determined by the EPA after the RA
- Environmental Impact Assessment (EIA) - detailed study based on an initial scooping report and carried out on TOR agreed with the EPA.

Schéma de la procédure administrative d'évaluation environnementale au Ghana



c. Environmental assessment legislation in Mali

Decree no 03 594/P-RM relevant to impact surveys on environment

This decree instructs impact assessment procedure. It specifies that any project which's implementation is likely to harm environment is subject to impact assessment. The impact assessment has two forms: an Environmental Impact Assessment (EIA) for major risks and an Environmental Impact Notice for minor risks.

- **EIA:** In these cases the proponent produces an Environmental Impact Study (EIS) report which has:
  - a detailed description of the project to be realised;
  - a detailed description and analysis of the site condition and its natural social economic and human environment;
  - Assessment of potential direct or indirect impacts in the project short medium and long term on natural social economic and human environment.
  - Description of envisaged measures to eliminate, reduce or compensate project damageable consequences on the environment.
  - Results of public consultation
  - Monitoring and evaluation programme

- The Environmental Impact Notice comprises;
  - the name and promoter's address
  - presentation of the project to be realised
  - the schedule of project realisation
  - the terms of reference of the impact assessment to be realised.

For all projects submitted to EIS, implementation is subordinate to getting an environmental licence issued by the Ministry in charge of environment. For projects not submitted to EIS, an environmental notice must be established.

Procedures relevant to environmental impact assessment comprise 5 phases

- The proponent addresses an application to the competent Administration, including project presentation; implementation schedule; the terms of reference.

- Administration examines the terms of reference within twenty one (21) days following a field visit.
- As soon as the terms of reference of the EIA are approved, the populations in the intervention zone are informed by the project proponent.
- Local Government in the city where the project is implemented organises public consultation with technical services and the proponent. The public consultation minutes is signed by all stakeholders and annexed to the environmental assessment report;
- The proponent makes the impact assessment realised which report is transmitted to the National Directorate of Sanitation and Pollutions and Nuisances Control (DNACPN) in fifteen (15) copies.

The environmental analysis is done by a technical committee. When that committee concludes the project environmental acceptability, the Minister in charge of environment issues an environmental permit for the project implementation. The Minister has a maximum of sixty (60) days from the deposit day of report to notify its decision.

As for carrying out an impact survey the general procedure is defined by the law but it dos not always make a distinction in the categorisation of projects or the level of environmental analysis to conduct.

Others statutory texts which may concern PPAAO Activities:

- Decree n 96-050/P-RM of February 14 1996 sets modalities classifying and declassifying of Fauna reserves sanctuaries and cynegetic areas of interest;
- Decree n 01-394/P-RM of September 06 2001 defines the object of wastes management art.2 concepts linked to that form of pollution art. 3
- Decree n 01-397/P-RM of September 06 2001 defines the object of the atmosphere pollutants management art.2 defines the concepts linked to that form of pollution art.3
- Decree n 01-396/P-RM of September 6 2001 defines the object of sound nuisances' management art. 2 the concepts linked to that form of nuisance art.3
- Decree n 01- 020 of may 30 2001 relating to pollutions and nuisances sets up the principle of the polluter payer i.e. the principle by which expenses resulting from prevention measures pollution reduction and control must be supported by the polluter.
- Legislation relating to soils and lands occupation is governed by the provisions of Land and Domain Code which determine the different types of domains as well as the conditions and regime of expropriation- Those provisions are completed by Act n 95-634 of April 12 1995 for code of local city in Mali.
- Act n 92-013/AN-RM of September 17 1991 setting a national system of normalisation and quality control.
- Decree n 90-355/PM-RM of august 08 1991 setting the list of toxic wastes and modalities of application of act n 89-61/AN-R/M

The other important measures relating to environmental legislation and regulation are:

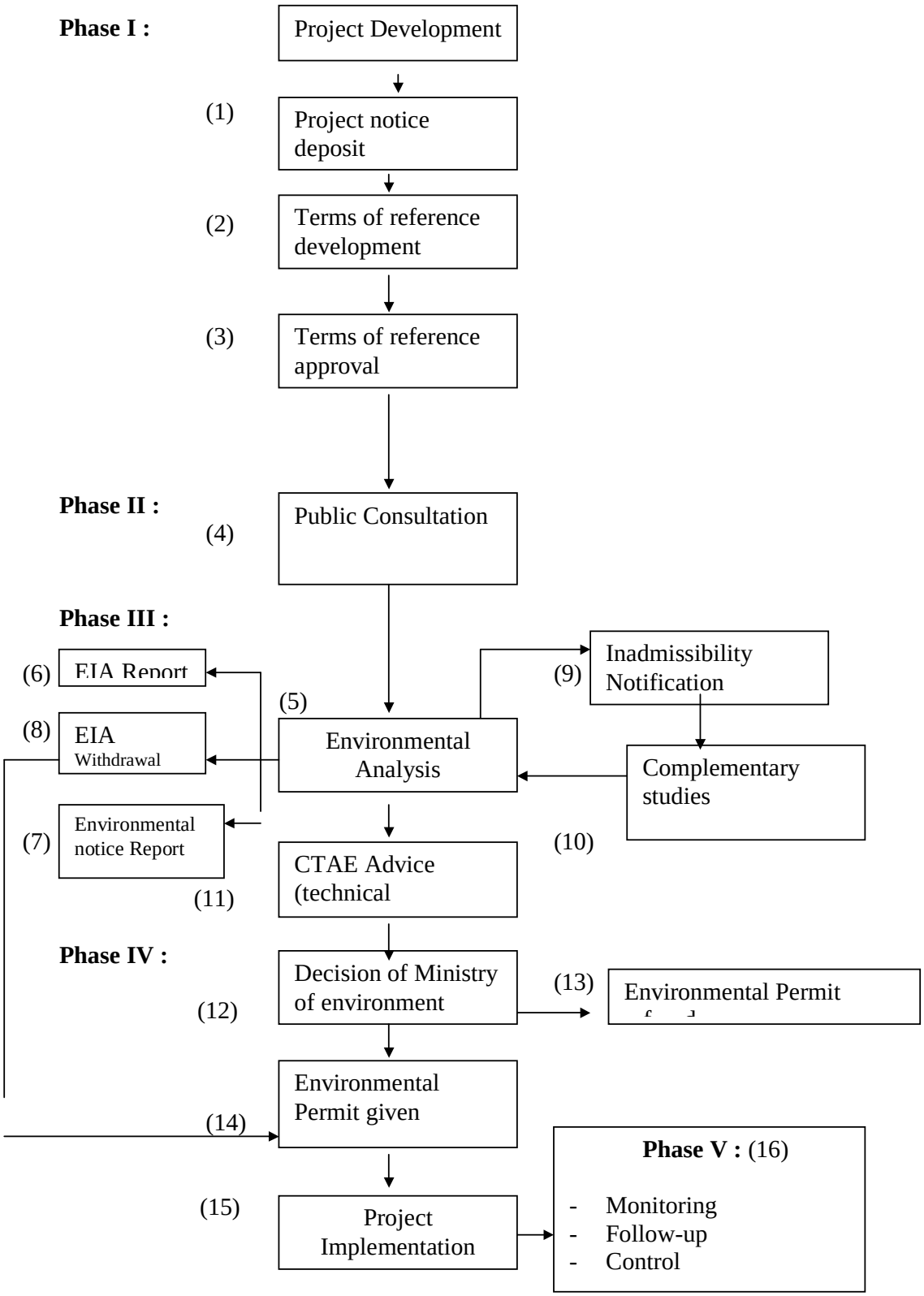
- The domain and land code
- Legislation relating to wild fauna and its habitat

- Legislation relating to forest resources
- Legislation relating to sea resources
- Legislation relating to water resources
- The code of cities
- Legislation on town planning
- Protection of life environment
- The mining code

As for the national environmental framework the major constraints concern the inapplicability of certain acts voted but as well to their lack of up-dating. In addition as for the respect and application of texts relating to environmental evaluations even if in some cases the procedure for impact survey on environment is defined through statutory channel. In practice the provisions are not always respected by all project promoters and globally no penalty is taken against offenders. As for the conduct of impact surveys the general procedure is defined by the law but there is no relevant sectorial guide mainly for the health sector.

In addition to this, the procedure doesn't often differentiate projects categorisation and the type of environmental analysis to be realised.

Administrative procedure flowchart for environmental assessment in Mali



d. Environmental assessment legislation in Senegal

National legislation about environmental assessment concern

Act n 2001-01 of January 15, 2001 about the code of environment is the principal tool for environmental management in Senegal. That act first sets the great environmental principles defines privileged frameworks of action. According to that act, any project of development or activity likely to harm environment as well as policies, plans, programmes, regional and sectorial surveys shall be submitted to environmental evaluation. That code considers environmental evaluation one of the help tools to the decision of competent authorities in charge of environment.

Decree n 2001-282 of April 22, 2001 for environment code is an implementation instrument oh the law to that end it sets obligations both to the authorities to the project and programme promoter. The part devoted to the study of environment impact is title II articles L3to 44 and annex 2. It imposes the evaluation of the environmental impact before the realisation of any project being part of that annex II. That decree part determines the procedure to follow and the content that the survey of evaluation must have. According to the potential impact, the nature, the size and location of the project, the types of project are classified in one of the following categories

- Category 1: The projects are likely to have significant impacts on environment a study of impacts on environment will permit to integrate environmental considerations in the economic and financial analysis of the project. That category requires a deep environmental analysis.
- Category2: Projects have limited impacts on environment where impacts can be attenuated when applying measures or changes in their conception .That category is the object of a light environmental analysis.

Orders relating to impacts surveys

The code of environment is completed by five orders which are:

- Order n 009470 of November 28, 2001 for EIA terms of reference content
- Order n009470 of November 28, 2001 for agreement conditions to conduct an environmental impacts assessment
- Order n 009472 of November 28, 2001 for EIA report content
- Order n 009468 of November 28, 2001 regulating public participation during environmental impact assessment
- Order n 009469 of November 28 2001 for Technical Committee organisation and functioning

Other statutory texts concerning environmental and natural resources management and WAAPP are the following:

- Acts relating to land regime: Land regime is mainly organised by Act n 64-46 relating to national domain Act n 76.66 for code of the state domain decree n 80-268 of March 10, 1980 organisation of the cattle route and setting the conditions of use of grazing lands.
- Act n 98/03 of January 08, 1998 for forest code
- Act n 86-04 for hunting code and fauna protection
- Act n2004-16 of June 04, 2004 for agro sylvo pasture law.

- Act n 81.13 of March 4, 1981 for code of water-regime of use of water resources quality protection of waters etc.
- Act n 96.07 of March 22, 1996 completing the local cities code which has proceeded to power transfer mainly concerning environmental and natural resources management.

The different stages of Senegalese EIA procedure are the following:

- ***Project review and classification***
  - If the project is classified in annex 1, furthered EIA is requested
  - If the project is classified in annex 2, environment analysis or impact notice is retained. In that case, the Technical Committee respond to the project proponent on the nature of study to realize.

- ***Proposal of terms of reference by the promotes validated by DEEC***

- ***Establishing an EIA report:*** this EIA is realized by an agreed consultant (individual consultant or consulting firm) at the proponent expense.

- ***Report examination by the Technical Committee:*** The EIA provisory report is submitted by the proponent to DEEC which ensures the technical committee secretary. This committee analyses the study in presence of proponent and the consultant; the comments are transmitted to them for submission of final pre validity report within 15 days from the meeting date.

- ***Public hiring :*** later 15 days after EIA validation

- ***Advice Preparation by the committee to the ministry in charge of environment. for decision :*** the technical committee, before definite approval of EIA, considers all suggestions expressed during consultations.

- ***Decision of the Minister in charge of environment.***
  - Acceptation: certificate of conformity (order) is then issued within two weeks maximum from the reception date of the EIA report revised or final.
  - Requesting complement of information ;
  - Where relevant, the decision applies later within one month from the reception of the final report ;
  - Motivated refusal
  - In any case, a notification advice of the decision of the Ministry in charge of environment is transmitted to the proponent.

6. world bank environmental and social safeguard Policies

6.1. Safeguard policies analysis

The World Bank environmental and social safeguard policies comprise both operational policies and procedures of the Bank. The safeguard policies are conceived to protect the environment and society against the negative potential effects of the projects, plans, programmes and policies. The most common environment and social safeguard policies are :

- ③ OP4.01 environment evaluation including participation of the public
- ③ OP4.04 Natural habitats
- ③ OP4.09 Pest management
- ③ OP4.11 cultural heritage
- ③ OP4.12 Involuntary resettlement of populations
- ③ OP4.10 Autochthonous populations
- ③ OP4.36 forest
- ③ OP4.37 Dams security
- ③ OP7.50 Project relating to international water channels
- ③ OP.7.60 Projets in litigation areas

The World Bank environmental and social safeguard policies which can apply to infrastructures and equipments structures realised within the implementation of WAAPP are OP4.01 « environmental assessment » and OP4.09 « anti parasite fight ». Infrastructures and equipments which launch the above mentioned policies must be considered by WAAPP. The remaining operational policies are not launched by WAAPP.

Safeguard policy 4.01 : environment evaluation

The OP 4.01 objective is to make sure that projects funded by the bank are viable and feasible at environment plan and decisions taking have improved through appropriate analysis of actions and their probable environment impacts (OP4.01). That policy is launched if a project will probably meet risks and potential environment impacts (negative) in its influence zone OP4.01 covers the impacts on physical environment (air, water, land) life environment, health and population security ;Cultural physical resources ; and

environmental concerns at transborder and world plan. The social aspects (involuntary reinstallation, indigenous people) as well as natural habitats, anti parasite fight, forestry and dams security are covered by separate policies with their own requirements and procedures PPAAO is summoned by that policy because some construction and rehabilitation activities (roads, markets, schools and health centres, etc.), may be the object of environment impact study.

Safeguard policy 4.04 Natural habitats

PO/PB 4.04, Natural habitats doesn't authorize the funding of project degrading or converting critical habitats. Natural sites present special interest and are important for the preservation of biological diversity or because of their ecological functions. Natural habitats deserve special attention during the realisation of impacts evaluations on environment. PPAAO has not planned intervention on natural habitats. That's why it is pursuant to that policy, without necessity of resorting to additional measures.

Op4.09 Anti parasite fight

To meet OP's requirements, a management plan of pest and pesticides has been elaborated for PPAAO, as a separate document. That plan has identified major pest and pesticide concerning PPAAO has described the public health context and institutional (notably in relation with anti vector fight within the programme fight against malaria) defines global parameters to minimize the negative specific potential effects on human health, environment and promote integrated anti vector fight. During its activities implementation, PPAAO will ensure actions conformity in relation to that management plan of pest and pesticides.

Safeguard policy 4.12 involuntary reinstallation of populations

OP4.12 objective is to avoid or minimise involuntary reinstallation where it is feasible exploring all the other alternative ways of viable projects. In addition OP 4.2 intends to assist displaced people by improving their former living norms, ability to generate revenues, production levels or at least to restore them. PPAAO is pursuance to that policy because no activities likely to provoke people's displacement are foreseen.

Safeguard policy 4.20 Autochthonous populations.

Autochthonous population, in the meaning of the bank, doesn't exist in Senegal. Consequently PPAAO is pursuant to that safeguard policy, without being necessary to take specific measures.

Safeguard policy 4.36 forestry

PO4.36, forestry backs sustainable sylvo culture oriented on conservation of the forest. It does not assist business exploitation in tropical humid primary forest,. Its global objective aims at reducing deforestation reinforcing contribution to wooded areas of environment, promoting wooding. The World Bank does not fund commercial exploitation operations on the purchase of equipments destined to the exploitation of tropical forest humid, primary. PPAAO is pursuant to that policy because none of its components is linked to it.

Safeguard policy 4.37, dams' security

PO/PB 4.37dams security recommends big dams realisation technical study and regular security inspections by specialized independent experts in dam's security. Thus PPAAO is pursuant to that safeguard policy because the project doesn't plan dams' construction or management.

Safeguard policy 4.11 cultural heritage
PO11.03 cultural heritage proceeds to an investigation on cultural resources potentially affected and their inventory. It integrates attention measures when impacts exist on material cultural resources. PPAAO is pursuant to that policy because activities relating to cultural heritage are not planned.

Safeguard policy 7.50 Projects relating to international water channels
PO7.50 projects affecting international waters verifies that there exists riverside agreements and guarantees that the states are informed and oppose no objection to interventions of the project. There is no public consultation but notification to riverside inhabitants is a required condition. International water channels exist (river Senegal; Niger; Volta in the project area) but globally, PPAAO does not force projects (like dams and bridges constructions) directly linked to those international water channels. Thus, the project is pursuant to that safeguard policy.

Safeguard policy 7.60 Projects in litigation zones
OP 7.60 Projects in litigation zones guarantees that people in litigation zones claiming their rights in litigation zone have no objection to the proposed project. PPAAO has no activities in litigation zones. Consequently PPAAO is pursuant to the safeguard policy, without specific measures to be taken.

Disclosure : OP4.01 also describes consultation and diffusion requirements, for category (i) of A and B projects ; and (ii) subprojects classified A and B in a programmatic loan, the borrower consults groups affected by the project and non government organisations (NGOS) about environment aspects of the project and lakes into account their views. The borrower starts that consultation as soon as possible. For A projects category, the borrower consults those groups at least twice : (a) a bit before the environment selection and the end of writing terms of reference of EIE ; and (b) once an EIE report draft is prepared. In addition, the borrower consults those groups all along the project implementation as often as necessary to address questions relating to EIE. The borrower gives relevant information quickly enough before the consultations, and in a language accessible to groups consulted. The borrower makes the EIS project available (for category A project) or any separate EIS report (for category E project) in the country and in the local language, at public place accessible to groups affected by the project, and local NGOS before the assessment. On the borrower's authorisation, the bank will diffuse the appropriate reports to infoshop. Category A sub projects won't be funded within this programme which is classified in B category.

In conclusion, it's likely that PPAAO is pursuant to the following safeguard policies, without specific measures: 4.04, 4.11, 4.12, 4.20, 4.36, 4.37, 7.50, and 7.60. To meet the requirements of the 4.01 safeguard policies (environmental assessment) and 4.09 (Pest management) and specific measures and actions have been proposed in the text below and within the framework plan of environment management in general. In conclusion, it can be affirmed that WAAPP is pursuant to the safeguard policies without special measures be taken, on condition that the recommendations described in this framework plan of environment and social management be implemented.

6.2. Concordances between op 4.0 and national legislations of the 4 targeted countries

O.P. 4.01Disposition	Conformity Analysis with National legislations			
	Burkina Faso	**Ghana**	**Mali**	**Senegal**
Environmental and Social Evaluation OP 4.01 is triggered if a project will probably meet risks and negative environmental impacts in its influence zone.	Conformity with OP4.01 with code of environment and decree on EIA	Conformity with OP4.01 (Act of 1994 (act 490)and the EIA rules 1999 (LI 1652)	Conformity with decree N°03 594/P-RM relating to EIA	Conformity with act n°2001-01 of 15/1/ and decree n°2001-28 of 22 April 2001 for EIA order n°009472 of 28/11/2001
Prior environnemental Exam OP classifies projets as follows : ③ A Category :certain major negative impact ③ B Category : Potential negative impact ③ C Category : non significant negative impact	Conformity with OP4.01 on the three categories A,B,C but no screening form and classification	Conformity with OP 4.01 on the three categories A, B and C Existence screening form and classification report scooping	Partial Conformity with OP 4.01 with 2 categories EIA et IEN no form of screening and classification	Partial Conformity with OP 4.01 with 2 categories : EIA and AE : no form of screening and classification
Public Participation : OP 4.01provides that for projects of category A and B, the groups affected by the project and local NGOs are consulted on the environmental aspects of the project, and take into account their points of view. For category A projects, these groups are consulted at least twice: (a) some time after prior environmental exam and before EIA ToR finalisation; and (b) once established EIA draft report. In addition, these groups are consulted all along project execution as long as need be.	Conformity with OP 4.01. (provision of decree on EIA)	Conformity with OP 4.0. (law of 1994 (act 490) and EIA regulations, 1999 L1652)	Conformity with OP 4.01 (conformity with decree N° 03-594/P-RM relating to EIA)	Conformity with OP 4.01 (order n°009 468 of 28/11/2001 on regulation of public participation
Information Diffusion OP 4.01 provides to make available the EIA project (for category A projects) or any EIA report separate (for category B projects) in country local language and in a public place accessible to groups affected by the project and to local NGOs before evaluation. In addition, World bank will diffuse appropriate reports to INFOSHOP.	Conformity with OP 4.01 (provision of decree on EIA)	Conformity with OP4.01 (act of 1994) (act 490) and the EIA rules, 1999 (L11652)	Conformity with OP 4.01 (conformity with decree n°03-594/P-RM relating to EIA)	Conformity with OP4.01 (order n° 009468 of 28/11/2001 on regulation of public participation

Conclusion: It appears from above analysis that there is relatively good conformity between national legislations and World Bank OP 4.01. However, except Ghana the other countries legislation (Burkina, Mali, et Senegal) present some insufficiencies in terms of projects and sub-projects classification (screening form and categorisation process) which will be completed in the framework of this ESMFP, mainly following the selection procedure described in chapter 8.

7. Institutional framework of WAAPP ENVIRONMENTAL Management

7.1. Les arrangements institutionnels et de mise en œuvre du PPAAO

The WAPP will be implemented at the regional level by WECARD (ECOWAS' mandated implementing agency) and at the national levels by the national coordination units of the PAFASP in Burkina Faso, AgSSIP in Ghana, the PSAOP 2 in Mali and the PSAOP 2 in Senegal

Regional level

WECARD, through its Dakar-based Executive Secretariat (ES), will assume overall coordination of the WAAPP, with FARA playing an advisory role (as assigned by the AU/NEPAD). WECARD's Executive Secretariat[1] comprises an Executive Secretary, a Scientific Co-ordinator, an Administrative and Financial Manager, Information and Communication Manager, and Impact Assessment Officer on agricultural research (to be recruited). WECARD works region-wide with stakeholders that include national agricultural research systems (NARS), producer organizations, private agribusinesses and civil society (NGOs). The WAAPP will adapt and strengthen WECARD's existing implementation arrangements in the key areas of financial management, procurement and monitoring & evaluation--so as to remain in compliance with Bank's fiduciary and reporting requirements—and governance of the competitive grant system.

WECARD will monitor the overall implementation of the project, reporting on progress related to the effectiveness of the dissemination mechanisms and the increase in agricultural productivity and competitiveness in the program's areas of interest. More specifically, WECARD will manage the WAAPP's regional window of the competitive agricultural research grants scheme (CARGS) in collaboration with the participating countries, according to a well designed manual of procedures. WECARD will also play the role of an advisory and screening body for the national window of the CARGS implemented in each country under the project. It will also play a similar role for the national centers of specialization. WECARD's M&E system will collate and synthesize information generated by the M&E systems of the participating countries.

National level in the 4 countries targeted by the programme

Burkina Faso PAFASP programmes Ghana AgSSIP Mali PASAOP Senegal PSAOP have the similar institutional arrangement which includes (i) a coordination committee; (ii) a national coordination unit and (iii) an execution agency by component In each country the coordination unit is located at the ministry in charge of agriculture with main following responsibilities coordination management assistance monitoring of the project global evaluation and supervision. Each of the four counties has in an operational way a funding system competitive agricultural research: INERA in Burkina Faso; CSIR in Ghana; IER in Mali and ISRA in Senegal.

Those countries have separate dissemination services as well as frameworks which get together producers organisations research institutions the private sector and civil society to identify and act on priorities relating to agricultural research and development. The

[1] WECARD's governance structure includes a General Assembly (GA), Governing Council (GC), Scientific and Technical Committee (STC), and the Executive Secretariat (ES).

coordination unit in each country will control PPAAO national window concerning the funding of a competitive agricultural research establishing CS the surveillance and evaluation of the project at national level. The mandates of national unities of coordination will be modified to reflect supplementary functions. Other actors are also involved in WAAPP implementation mainly in regional and sub regional institutions African Union, ECOWAS, UEMOA, CILSS etc. (ii) research and development universities and institutes in the sub region iii Private sector partners iv national agencies of agricultural policies. During WAAPP execution process the roles played by actors will comprise among others Training Research Development Communication and sensitisation Policy facilitation.

7.2. Environmental capacities of actors involved in WAAPP

e. At sub regional level: WECARD/WECARD and Regional Bodies

WECARD/WECARD

The west and Central African council for Agricultural research and development was created in order to establish regional cooperation to put synergies together to face common problems met in agricultural research and development. Its mission is the following I improve the efficiency of agricultural research in west and central Africa contributing to the building and consolidation of SNRA capacities through cooperation between its members partners to development regional and international organisations the private sector Non Government bodies research results users ii consolidate the sub region position of west and central Africa in a context of research and international agricultural development.

WECARD/WECARD has the mission to implement sub regional research policies defined by political authorities of state members. Its objectives are to promote cooperation consultation and information exchange between institutions members on the one hand and the other partners on the other hand ii define objectives of research and joint regional and sub regional priorities iii serve as a consultative service for research conducted by regional and international organisations working in the sub region iv develop joint research programmes so as to reinforce WECARD/WECARD complementary activities and its partners v harmonise existing research networks or other operational units of research with a regional character.

The following organs constitute the organisational structure of WECARD/WECARD: the General Assembly; the Board of Directors; the Scientific and technical committee and the executive secretariat which is the executive organ of decisions.

As noticed in its main missions environmental aspects occupy a central place in WECARD activities. Anyway it must be underlined that the executive secretariat of WECARD which is the execution organ does not have an environmental specialist in the sense of environmental evaluation to better appreciate the environmental and social impact of programmes and projects conducted by the institution. That insufficiency could be resolved by recruiting the evaluation expert of the research impact which could be reinforced if need be in environmental evaluation of programmes and projects

Inter Government organisations in the sub region

They comprise ECOWAS WAEMU and CILSS. Those organisations will transmit the research and development results obtained through the execution of WECARD at Ministers level for establishing the policy and decision taking.

- WECARD/WECARD and west African states economic community signed on december21 2005 a cooperation agreement whose object is agricultural research and contribute to the realisation in ECOWAS space of the satisfaction of the populations needs of food the economic social development and poverty control. Cooperation between ECOWAS and WECARD/WECARD articulates around research priorities defined by ECOWAS and the strategic plan for cooperation elaborated by WECARD/WECARD. They are as well about research and results dissemination in the following domains agricultural policies promoting food productions conservation supplying appropriate services to the needs of operators' activities. Peri urban agricultural systems sustainable irrigated agriculture natural resources management and production systems conservation and sustainable use of genetic plant and animal resources Information and communication systems.
- At UEMOA level there is an environmental and agricultural policy. UEMOA agricultural policy was first about implementing the community programme of first generation in the rural development domain water mastery Meat production development funding the agricultural sector organising the agricultural sector preparation of a common agricultural policy In the states members of the union the adjustment programmes of the agricultural sector presently represent the basis of national agricultural policies. Those programmes serve as a reference to the elaboration of the instruments of the union common agricultural policy. The Union environment policy has first emphasized the implementation the first generation community programme in environmental matter- coastal erosion fight against desertification management of transborder ecosystems. Presently the Union has an environmental policy document.

f. Environmental Assessment Institutional Framework in Burkina Faso

Ministry in charge of environment

At Institutional level, the Ministry in charge of environment (MECV) is organised according to decree n° 2005-040/PRES/PM/MECV of January 3rd, 2005 with the following structures:

- At central level, two (2) general directorates which are: General Directorate for Nature Conservation and General Directorate for Life Setting Improvement (comprising Directorate of Environmental Assessment);
- At decentralized level, thirteen (13) regional directorates, forty five (45) province directorates in charge of environment policy application at local and regional levels;
- The National Council for Environment and Sustainable Development Permanent Secretary which is consultation and coordination structure. Specialised Commission in environmental assessment legislation is planned within this institution.

At functional level, Directorate of Environment Assessment (DEA) represents the ministry of environment in the implementation of environment impact study procedure. Missions

assigned to DEA are: to promote environment assessment; to supervise environment impact studies; to ensure impacts studies reports analysis and validation; to regularly monitor projects and programmes with major impact on environment; to contribute setting environment cells within ministries. For achieving these missions, DEA comprises two services: environmental assessment promoting service; environmental management plan monitoring and control service. DEA has experienced staff in environment assessment.

In EIA procedure implementing, many constraints can be noted: Actors capacities weakness thus limiting their efficient involvement in impacts studies process; lack of sectorial guidelines facilitating procedure appropriation; weak level of regulation application related to impact studies. However, we note emergence of dynamics environmental associations (creation since 1998 of national professionals association of environment impacts assessment). Finally, environmental cells implementation process (ensuring DEA actions relay) in strategic ministries has been undertaken since 2002.

Ministry in charge of agriculture

The ministry of agriculture's mission is to conduct agricultural policy in Burkina Faso. The ministry comprises national and regional directorates all over the country. In addition to the strategic framework against poverty, which's objective is to accelerate growth based on equity and job opportunities and incomes generating activities for poor persons. Environmental issues are present through decentralised rural development policy letter one basic principle of which is natural resources integrated management (water, soil, vegetation), incomes and job generating in rural area. Also noted is rural development strategy (2015 horizon) aiming at rural sector sustainable growth contributing to fight against poverty, food security reinforcement and sustainable development promotion.

In the framework of agricultural production improvement, the agro-sylvo- pasture systems support programme (PAFASP) constitutes national relay to WAAPP through its objectives and institutional arrangements. PAFASP's objective is to promote competitive and productive agricultural sector, contributing to improve actors' incomes so as to favour economic growth and reduce poverty. PAFASP has been submitted to environment assessment with relevant intervention axes (i) to reduce pressures on natural resources by promoting more performing production systems :, (ii) to capitalize existing potentialities and synergies in agro-sylvo pastoral dies ; (iii) to reduce pressures on country wettest parts by rural development space rebalancing: (iv) to re-launch the natural resources restoration and conservation process. At social level, PAFASP will allow : (i) to improve vulnerable groups conditions (women and children) and capitalize emerging dynamics within those categories in some dies ; (ii) to increase incomes and improve nutritional situation, health, education and life setting in rural area ; (iii) to reduce vulnerabilities affecting the most sensitive areas to climates changes. Other agricultural programmes with environmental issues are : natural vegetation management programme; partnership programme for improving biodiversity management ; breeding action plan and investment programme; food security information system action plan; 2nd national land management programme. The ministry organised a national workshop on good agricultural practices (the report is being elaborated). Anyway, despite important efforts taking into account environment in policy and agricultural programmes, it is noted an absence of environment cells (or EIA specialised experts) within the ministry in charge of agriculture and agricultural programmes; this is a major limit to agricultural sector environmental issues integration. These deficiencies will be compensated within WAAPP's ESMFP.

Agricultural research institutions

The environment and agricultural research institute (INERA) is the national reference structure about environment and agricultural research. Its mission is to contribute to agricultural research policy implementation; to organise and management agricultural researches; to ensure agricultural development technical support; to contribute in training and scientific information; to ensure the research-development linkage. INERA has 5 regional agricultural and environment research centres, one centre for environmental and agricultural research and training (with four natural resources management scientific departments; vegetal and animal production; forest productions).

INERA has thematic multidisciplinary researchers. Environment issues constitute a permanent concern in INERA'a activities: example land resource monitoring programmes according to agricultural exploitation type; soils degradation evaluation systems according to technical itinerary, soil fertility management in cotton zones; pesticides impacts on soil; rational pesticide use; basic biological studies to support integrated fight, etc. INERA forestry department is active in vegetation exploitation, biology and physiology of certain species for household needs, etc. In its research programmes, INERA involves national and regional agriculture directorates, but also producers' organisations and NGO.

At institutional level even though it doesn't exist a particularly active unit in research activities environment assessment, it's noted the presence of thematic multidisciplinary researchers, well trained in their field; these experts should be reinforced in EIA .

g. Environmental Assessment Institutional Framework in Ghana

The Environmental Protection Agency for (EPA) is the institution responsible for EIA administrative conduct in Ghana. EPA is under cover of the ministry of local environment and rural development. EPA act (act 490. 1994) requires that the agency makes sure the conformity to EIA established procedures. EPA has competent staff in environment assessment. At regional and local level, districts Administrations are responsible for improving environment management in their zones. For this sake, local environment management committees have been setup in all the country's regions.

Ministry in charge of agriculture

The Ministry of food and agriculture (MOFA) conduct Ghana agricultural policy. The agricultural policy in Ghana takes seriously into account environment and natural resource management. One of the major instruments of implementing that sustainable agricultural policy is the sectorial programme of investments and agricultural services (AgSSIP). The main institutional and organisational objective of AgSSIP programme is to establish an adequate framework and an encouraging mechanism able to favour projects development and programmes conducted on producer's demand at small and large scale. At environmental level, programme intervenes mainly in capacity building assessment with relevant environment recommendations during the implementation: environment policy development within MOFA; environment specialists recruitment within MOFA ; environmental specific guidelines development for field agricultural agents ; training

MOFA agents in agricultural projects environment aspects; implementing anti poison centre, with the ministry of health ; etc.

Agricultural research institutions

In Ghana, the council for scientific industrial research (CSIR) constitutes the national reference structure about scientific research. CSIR coordinates research development in eight (8) agricultural research institutes to produce and apply innovative technologies for agriculture, industry, health and environment. Its mission is to produce and experiment innovative technologies which exploit science and technology efficiently for the social economic development in the critical sectors of agriculture, industry, health and environment while improving scientific culture of civil society. For coordinating research all over the country, CSIR has implemented sectorial research committees in the following sectors: agriculture, fishing and forestry, health, medicine and environment, industry, natural and social science. CSIR conduct the AgSSIP programme research component. CSIR integrates environment components in its research programmes, but the centre does not have environmental assessment experts although all research are specialists in environmental thematic.

Despite the important attention paid to environmental issues within agricultural programmes, more efforts are required to implement environmental units with targeted actors training in environmental assessment; these actors must be selected among agricultural agents in MOFA and CSIR researchers. These deficiencies will be compensated within WAAPP's ESMFP.

h. Environmental Assessment Institutional Framework in Mali

The Ministry of Environment and sanitation, responsible at government level for implementing the environmental policy, conduct EIA procedures through the National Directorate of Sanitation, Control of Pollutions and Nuisances (DNACPN). DNACPN monitors and watches over environmental issues through sectorial policies, plans and programmes development; supervises and controls EIA procedures, develops and cares for the respect of sanitation norms, pollution and nuisance. This Directorate has deconcentrated services at regional level, circles level and city level. The Directorate has competent agents in environmental assessment. At regional and local level, the territorial local communities' organs having in charge natural resource management are: communal councils, circle councils, regional assemblies.

Ministry of Rural Development (MDR)

Mali's agricultural policy conducted by MDR is defined within the strategic framework of "rural development orientation plan", which's principal axes are: improving populations' living conditions of sustainable development. The specific objectives are (i) food security research by agricultural productions increase, diversification, maximal internal value increasing (ii) improving productivity and environment protection within natural resources sustainable management ; (iii) developing an institutional framework which promotes actors participation and the emergence of professional capacities. In that implementation, the MDR is supported by : the national directorate for rural people support; the rural management and equipment directorate; the national regulation and control directorate. All three directorates are represented at regional level. Despite the presence of thematic environmentalist experts (biologist, agronomists, etc.), there is no environmental unit within MDR, neither are there specialist in environmental assessment.

One of the agricultural policy major axes is the "support programme to agricultural services and producers organisations" (PASAOP). The great reformation axes underlying that programme are inspired by a long term vision based on qualitative decentralisation evolution and the state's disengagement, agricultural services better performance and financial beneficiaries' participation to services costs. One of the PASAOP objectives is to improve the agricultural research institutes performances; to focus research activities towards users' demands; to explore ways and means to participate in agricultural research sustainable funding beside the State. The component "support to national agricultural research system" is driven by CNRA one technical die of which is IER. PASAOP has been submitted to environmental assessment the environmental management plan of which is based on: diseases and predators management; consideration of social aspects (vulnerable groups); setting implementation and monitoring mechanisms. The PASAOP assessment report realised by DNACPN indicates difficulties to appreciate activities because of their orientation towards actors capacities building certain modules of which deal with environmental aspects. As for field activities, satisfactory environmental performance perspectives are real according to environmental management plan measures.

In addition to the strategic framework of fight against poverty, environmental and social aspects are taken into account mainly in anterior agricultural programmes such as : the « agricultural sector adjustment programme; National agriculture dissemination programme ; National agricultural research programme; Support programme to agriculture

products value increasing and trading; Private Irrigation Promotion Programme ; Food Security Special Programme.

Agricultural research institutions

In Mali, agricultural research is structured according to following levels: (i) national level, the National agronomic research centre (CNRA) ; (ii) central level, the Head Direction of Rural Economy Institute (IER) ; regional level, research users regional commissions. CNRA is the political organ of agricultural research whereas IER is technical. IER's mission is to contribute to agricultural productivity through better adapted research for rural people's needs; to preserve natural resources; to increase food security, and producers' revenues and to ensure a sustainable rural development, making of rural development sector, the country economic growth engine. IER assigned missions are : contribute to definition and implantation of research objectives, means and study for agricultural development ; develop and implement agricultural research programme : ensure technical support to agricultural development ; contribute to training and scientific technical information for research and agricultural development staff; implement appropriate technologies of production increase and productivity improvement for rural people ; disseminate research and studies results; supply services in their competences. To achieve these missions, IER is restructured, based on a decentralised research organisation; projects and research activities planning cycle involving researchers, disseminators, producers, transformers and financial system. Six (6) regional agronomy research centres (CRRA) were created and distributed all over the country. In addition to stations and sub-stations research, activities are as well conducted with producers and within rural development bodies. Central laboratories and IER genetic resources Units are transversal specialised structures: the laboratory of animal nutrition; the laboratory of water- soil-vegetation; the laboratory of food technology; the Unit of genetic resources; the study and experimentation centre in agricultural machinery. IER has contributed to technologies development taking into account a natural resources sustainable exploitation, in agricultural techniques, creation of varieties, growing protection, cattle food, milk and meat production, fishing and sylviculture. IER has more than 250 researchers of different specialities all of them are thematic environmentalist but not specialised on environmental assessment issues.

Despite the efforts made to integrate environment in agricultural policies and programmes (research and dissemination), it is still necessary to reinforce MDR agents and IER searchers' environmental capacities, to better guarantee the efficiency of environmental and social issues in agricultural programmes preparation and implementation. These needs will be taken into account within this WAAPP's ESMFP.

i. Environmental Assessment Institutional Framework in Senegal

Ministry of environment

The ministry of environment and nature protection (MEPN) is charged of the environmental policy implementation defined by the Senegalese state. The (MEPN) has got three technical Directorates: Environment and classified Establishments Directorate (DEEC); National Parks Directorate (DPN): Waters and Forest, Hunting and Soil Conservation Directorate (DEFCS). The DEEC will particularly be involved in WAAPP. DEEC mission consists in monitoring the conformity of programmes, projects and activities which may have environmental impacts. DEEC ensures the concordance of these activities with environmental policy; legislation and norms adopted the administrative authorities.

The Division for Prevention and Pollution and Nuisances, Environment Impact Studies of DEEC plays a specific role in Environment Impact Studies (EIS) procedures monitoring. This Division manages EIS and prepares for the Ministry of Environment arguments and decisions about EIS.

Considering the capacities, DEEC has required technical competences to realize supervision, conformity and legality monitoring, mainly for development projects. DEEC has got technical capacities for monitoring of environmental measures implementation agenda for any project or program submitted to EIS. Presently DEEC is represented in all the country's regions. A technical committee nominated by ministerial decree (N° 9469 of November 28th, 2001), is charged of supporting MEPN in Impact Study reports validation. This committee comprises all state technical services, local communities and civil associations. Its secretariat is assured by DEEC.

Ministries of agriculture and cattle farming

Senegalese agriculture and cattle farming policy is defined by the "agro-sylvo-pastoral orientation Law (LOASP)" which: formally recognizes agricultural crafts and agricultural professional organisations; secures a social support to persons exercising agricultural activities; defines farms legal status; devices water mastering; secures prevention and risks related to agro-sylvo-pastoral activities. The Ministry of Agriculture, Biocarburant and Food Security is charged of Senegalese Agriculture policy implementation. The Ministry conducts the sectorial policy related to cattle breeding. In agriculture sector, the institutional development policy letter defines basic strategic orientations. As for cattle breeding, the Breeding Development policy Letter determines strategic intervention axis. There also exists decentralized rural development policy letter. In fact, the decentralisation process undertaken by Senegal has a final objective of assuring basic local development. Reforms undertaken in this framework have taken into account environmental dimension. So, the letter stress the necessity to support local communities in their environmental management, mainly by launching "the soil fertility rehabilitation programme", based on rural zone rationalisation allowing extensive practices limitation which are natural resources consumers .

An important framework for implementation of these policies is the Program for Agricultural Services and Support to Producers Organisation (PSAOP). Its objective is to realise a sustainable productivity increase, production and producers income trough a better access to markets and appropriate technologies meeting the producers' needs and

environment protection. At institutional level, the long term vision is so defined: (i) Producers' Organization (OP) strong and able to co-manage the types and quality of services received and have an influence on agriculture sector political orientations; (ii) Ministries of Agriculture and Livestock decentralised and focusing their public services main functions on policies definition, quality monitoring, assessment, and regulation framework definition; (iii) Agriculture services sustainable funding answerable to producers and filling their needs. PSAOP has a component "Support to national search structures" targeting three research services: The National fund for agricultural and food-processing (FNRAA); Senegalese Agricultural Research Institute (ISRA); The Food Technologies Institute (ITA). PSAOP was submitted to environmental assessment with acute measures described in the environmental management plan: integrated struggle against crops enemies; periodical assessment on pesticide residues; OP training in pesticides rational use; cattle breeding stabulation practice; Soil's fertility restoration; Sanitary animal's certification; Training in pesticides integrated management; Setting and exploitation of "Environment-Agriculture-Breeding" Database; agents'training in environmental assessment, etc.

Agricultural researches institution

ISRA is a scientific and technical research institute, its role being to device, organize and manage all researches related to rural sector in Senegal. Its mission is to generate knowledge and appropriate technologies needed to reach population food security objective. Prior research topics are: agronomy, animal, forestry, halieutic productions and rural socio-economy in varied ecological zone of Senegal. To lead its research activities, the institute is equipped with national centres or laboratories are located in Dakar region and lead the researches at the benefit of regional centres. ISRA has initiated many technical and technological innovations.

The Senegalese Institute of Agricultural Research (ISRA) and the Institute of food technologies (ITA) are charged of leading Agricultural and Agro-food Research activities so as to better their performance, their scientific management technologies, by rehabilitating their infrastructures and bringing new equipments. By the way, there exists the National Fund for Agricultural and Agro-food Researches (FNRAA), charged of funding national agricultural and agro-food researches system enabling it to fill users' needs through better available resources exploitation.

To overcome challenges facing agriculture, ISRA has initiated researches about environment to make up for knowledge deficit an growth issues, agricultural productivity: agro forestry with market gardening battering; agronomic value increase from filao plant; rationalization of rural land management by local communities; new tools for beans ("niebe") selection to resist against drought; compost enriched with phosphates to better millet-beans association; sorgho outputs doping and maize outputs increase, with fish remnants; vaccines development against animal diseases.

Important results have been noticed about integration of environmental issues in agriculture and cattle breeding research programmes. In ministry of agriculture, remarkable efforts are to be done in this field. By the way, at researches level, ISRA and ITA are developing for many years now good practices in agricultural production and food technologies. Environmental criteria are analysed in research topics. However, agricultural agents as well as researchers need to be trained or reinforced in environmental issues, for a

better integration of these aspects in their daily activities. These deficiencies will be overcome in the framework of the WAAPP's ESMFP.

7.3. Other Institutional actors involved in WAAPP environmental management

Local Communities
National decentralization laws grant territorial communities important responsibilities mainly in local natural resources and well-being management, implementation monitoring, but also in target populations awareness and mobilization.

National institutes of agricultural and rural councils
National agricultural and rural council institutions advise producers, and help satisfying their needs through contracted rearrangement.

Producers Organizations
Producers organization supply their members some opportunities to reach fertilizers, loans and market; they also help them intervene in decision taking process.

NGO and community associations
The State disengagement process has favoured association sector implantation at local communities' level. This sector is reinforced by civil society claiming good governance and environmental management. There are many types of organizations and non governmental actors: non governmental organization (NGO), basic community organizations (OCB); socio professional organization gathering women and / or youth sports associations, cultural and religions ones. They play a central role in social economic and cultural development of zones where the projects is located. NGO are grouped into many consultation frameworks and some of them might be important instruments for actors to bring more dynamism to WAAPP environmental management.

At local level, some OCB and other youth and women associative movement enjoy a verified field experience, in terms of realization support and are very keen on local development actions. These proximity organizations' advantage is that they are local dwellers and can easily win populations' trust.

Agricultural research external partners
Concerning research, a partnership and collaboration should be active between regional and even extra regional partners such as : International Centre for Agricultural Research and development (CIRAD); Research Institute for Development (IRD); Association for rice farming development in West Africa (ADRAO); International Carp Research Institute for Arid and Semi Arid Tropics (ICRISAT); International Livestock Research Institute (ILRI); International Agroforestry Research Centre (ICRAF); International Institute for tropical Agriculture (IITA); Northern Countries Universities; The National Societies for Agricultural Research of the Sun region (SNRA); Different Research Networks; Research Centers; Agriculture Services; agro-industries and private sector; NGO etc.

.

8. SCREENING PROCESS OF WAAPP ACTIVITIES

8.1. The environment screening process:

A part from Ghana, screening process fills a gap noticed in national procedures about environmental assessment, mainly in projects selection and classification. The ESMF plan is supposed to make up for this deficiency. The definition of micro-projects environmental categories will be determined by environmental and social screening results. The micro-projects examination and approval will be conducted by a qualified staff at local and regional levels. This selection process aims at: (i) precising WAAPP activities supposed to have negative impacts at environmental and social level; (ii) Indicating appropriate mitigation measures for activities with negative impacts; (iii) Identifying activities needing separate EIS; (iv) Describing analysis and approval institutional liabilities for results selections, mitigation measures implementation, and separated EIS reports preparation; (v) Realizing environmental parameters monitoring during agricultural activities implementation and management.

The screening process has two components:

- A first part related to "technological research demand"
- A second part related to technological and dissemination research results

j. Research topics environmental screening

Stage 1: Identification of technological research needs (demand)
Producers themselves or local producers' organizations will apply for researches by transmitting their demand forms to Agricultural Production Programs (APP) responsible of their own country (PAFASP for Burkina Faso; AgSSIP for Ghana; PASOAP for Mali; and PSOAP for Senegal).

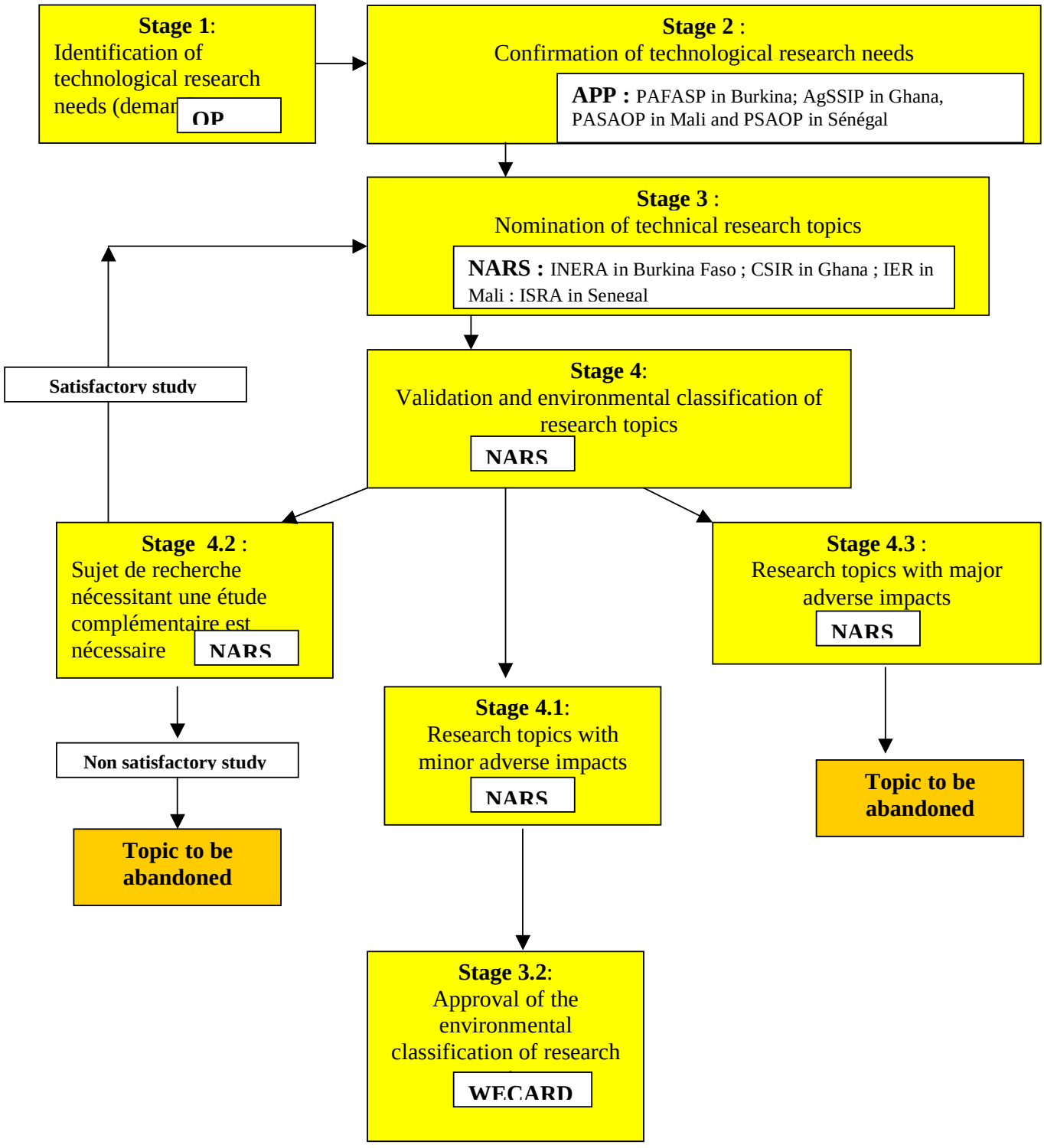
Stage 2: Confirmation of technological research needs
Confirmation of expressed research needs will be done by responsible for Agricultural Productivity Programs (APP) of each country, the EFP of which will appreciate environmental aspects of demands.

Stage 3: Nomination of technical research topics
Identified research needs will be presented by APP to National Agricultural Research System (NSAR) which will turn them into research topics (protocols). Research topics formulation, realized by NSAR searchers, will comprise a list of identified constraints; expected improvement related to productivity increase and environmental impact.

Stage 4: Research topics validation and environmental classification
Topics research validation and environmental classification will be done by scientific and technical committees of NARS, with the support of their Environment Focal Points (EFP/NARS). This classification will lead to : (i) research topics with minor environmental impact (so, they are to be financed) : (ii) research topics with medium environmental impacts necessitating complementary studies : (iii) research topics with major environmental impacts which should be abandoned.

Stage 5: Research topics environmental classification approval
Results Approval from research topics environmental classification will be realized by WECARD.

Research topics environmental screening flowchart



k. Environmental screening for the dissemination of research results

Stage 1 : Environmental and social selection of the technological project

The filling of the initial selection forms (annex 11 .1 or annex 11 .2) and environmental and social monitoring, including proposed appropriate mitigation measures (annex 11 .4) will be done at local level by local Producers Organizations, supported by ministry agents charged of agriculture at local level (departments, districts etc.). In forms filling process, OP members and rural producers themselves will actively participate in information collection and analysis. It is the same with Rural Councils' members, mainly in the project or sub-project conformity with local development orientations Plans. A part from potential environmental and social impacts, screening results will also indicate land acquisition needs and types of public consultations realized. The screening will necessitate capacity building in agricultural activities environmental and social aspects.

Stage 2: Project selection and classification validation

The results of these first forms filling exercise (of annex 11.1 or annex 11.2) will be presented to agricultural research's regional structures, and agriculture regional Directorates where Environmental Focal Points (EFP) will be chosen for forms information analysis and project classification . So as to meet World Bank's safeguards (mainly OP 4.01), it's suggested that WAAPP activities with potential direct or indirect environment impacts must be classified in three categories:

- A category: Project with obvious environmental and social major risks;
- B category: Project with possible environmental and social major risks;
- C category: Project with no significant impacts on environment

WAAPP is classified B category (Project Appraisal Document). So, screening results (Annex11.1 or Annex 11.2) and proposed mitigation measures (Annex 11.3) should lead to environmental B or C category. This stage will be led by EFP.

According to PO 4.01, agricultural productivity increasing activities of WAAPP will be classified in B or C category.

Category B means that negative environmental impacts on populations or important ecological zones (wetlands, forest, pastures, and natural habitats) are specific to a site, minor and can be mitigated immediately. WAAPP activities classified B category necessitates either application of simple mitigation measures (B.2 category) or preparation of a separate EIS.

Category C indicates that potential environmental and social impacts are minor, and don't necessitate mitigation measures. However, some agricultural or administrative infrastructures rehabilitation activities may be classified C category if environmental and social selection result reveal a few negative impacts and do not necessitate another environmental work.

So, if the form contents only « NO », the proposed activity (C category) needs no additional work, this EFP of WAAPP will seek approval and activity implementation. After selection's results analysis and category definition, EFP will precise whether: (a) environmental work will not be necessary: (b) simple attenuation measures will do: or (c) a separate EIS is necessary.

Stage 3 : Execution of environmental work

After having selected and analysed information results, and after having determined environmental category and required additional works, EFP will state: (a) if more works is necessary : (b) simple attenuation measures will do; or (c) a separate EIS should be realized. According to selection results the following works should be done, on the base of environmental impact study for appropriate remedial measures.

Case of simple attenuation measures application: In this case, no EIS is necessary. EFP should fill the environmental and social monitoring list (annex 11.3). So EFP supported by national environmental Directorates (DGVC in Burkina, EPA in Ghana, DNACPN in Mali and DEEC in Senegal) consult WAAPP checklist for appropriate mitigation measures selection.

Case of environmental impact study necessity: in such case, selection result reveals a complexity of activities, requiring separate EIS to be conducted by individual consultant or by firms. The EIS will identify and assess potential environmental impacts on proposed activities, assess alternative options and devices mitigation, management and monitoring measures to be proposed in the ESMP prepared as part of EIS for each activity. EIS and ESMP will be prepared in consultation with involved partners, comprising population who might be affected. The EFP (i) will prepare EIS terms of reference: (ii) will recruit expert teams to conduct EIS (iii) will conduct public consultations according to the terms of reference; (iv) will remind EIS authorisation procedure. The EIS will follow established national procedures, completed by those of OP 4.01.

Procedures for sub-projects needing EIS

Stage	**Activities**
First stage	Terms of reference preparation (T of R) Terms of reference will be prepared according to identification results and EIS needs is done by a consultant and will be reported as follows : - Description of the project's zone - Description of the under project - Environmental description - Legal and regulatory consideration - Analysis of the situation "without project" - Determination of potential impact of proposed under projects - Political consultation process - Mitigation measures development, along with a follow-up plan, and including the institutional capacities reinforcement and cost estimation
Second stage	Consultant choosing
Third stage	EIS conducting with public consultation
Fourth stage	EIS examination and approval

Stage 4: Examination and approval

Since WAAPP's activities are classified B or C category, selection process proposed by EFP will be validated and approved by environment services (DGCV in Burkina, EPA in Ghana, DNACPN in Mali and DEEC in Senegal) at each region level.

As for environmental screening form examination and approval, regional environment structures will precise results quality relying on forms information and taking into account

mitigation measures importance and applicability proposed in environmental and social monitoring list.

EIS reports are also examined and validated by environment services (DGCV for Burkina, EPA Ghana, DNACPN Mali and DEEC Senegal) which will verify if all types of impact are identified, and proper migration measures have been proposed for project implementation. In case an EIS is validated, environmental services present report allowing environmental conformity certificate delivery.

Stage 5: public consultation and disclosure

National legislations recommend information and populations involvement in EIS conduct, in collaboration with administration competent services and communities. Information is supplied through project presentation meetings, gathering local authorities, populations, agriculture producers' organizations, etc. Theses consultations will help identify mains problems and specify different preoccupations in EIS to be realised. The consultations results will be included in EIS report and available for the public.

To satisfy World Bank requirements for public consultation and disclosure, WECARD which is changed of WAAPP regional coordination, will prepare a disclosure letter to inform World Bank about ESMFP approval; ensure ESMFP reports disclosure for partners and eventually, people who might be affected. In this disclosure process, WECARD will be supported by target research institutes in the 40 countries: INERA in Burkina faso, CSIR in Ghana, IER in Mali and ISRA in Senegal. WECARD will also address WAAPP's authorisation to World Bank for diffusion in infoshop.

Stage 6: Environmental monitoring

Environmental monitoring helps verify and appreciate execution and efficiency of environmental measures implementation in WAAPP. Monitoring is essential and assures that: predicted impacts are exact; prevention, mitigation and compensation measures are sound; norms and regulations are respected. Monitoring result will allow, if necessary, to redirect programme activities. The environmental monitoring will be done within the WAAPP's activities global monitoring system.

At sub regional level: monitoring is done by WECARD through its expert who will assure the function of Environmental Focal Point (EFP/WECARD).

At national level, monitoring is done by official Research Institute (INERA in Burkina Faso, CSIR in Ghana, IER in Mali, ISRA in Senegal) where Environmental Focal Points (EFP) will be designated, also active in monitoring are: Agriculture National services and EFP in National Agricultural Productivity Programme (PSOAP in Burkina; AgSSIP in Ghana, PASOAP in Mali and PSAOP in Senegal), and National Producers Organizations. The National Environmental Services (DGCV in Burkina, EPA in Ghana, DNACPN in Mali and DEEC in Senegal) will also intervene in national monitoring.

Sub-regional and national monitoring will be realized by consultants (national or international) to conduct WAAPP's ESMFP half way and final evaluation.

At local level, monitoring will be realized by Producers' Organisations in collaboration with regional environment services and other decentralized agricultural services. At

community level, monitoring is realized by dissemination agents, in collaboration with OP and rural Council members.

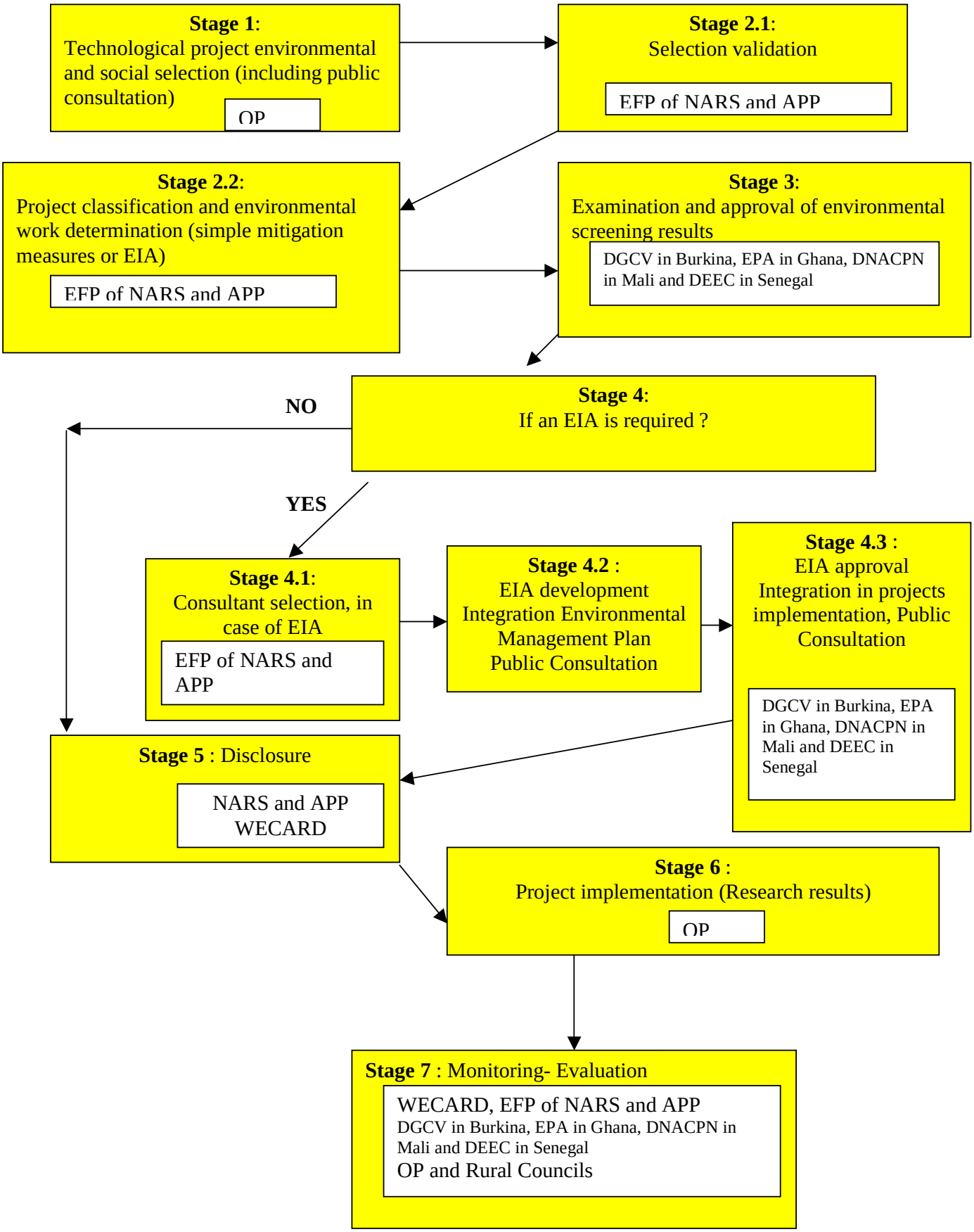
Stage 7: follow-up indicators

Indicators will be a support to mitigation measures implementation, monitoring and project evaluation for more efficiency. Theses indicators are developed by consultants in EIS, or by EFP in case of simple mitigation measures to be proposed. Indicators can be summarized as follows:

- Number of environment friendly research demands
- Number of environment friendly technologies from researches
- Environment consideration level of during researches
- Gender and equity consideration level in the support to OP
- Number of persons aware in hygiene and security measures related to agricultural activities
- Numbers of trained and aware persons in mitigation measures implementation, good environmental practices and environment consideration within agricultural activities.
- Environmental measures implementation in agricultural activities
- Numbers of agents trained in assessment, examination and environment management
- Vegetation degradation level, waters and soils pollution after research results implementation

These indicators are regularly followed during sub projects setting and running, and will be integrated in WECARD monitoring system and partner research institutes, but also in WAAPP's monitoring handbook.

Research results environmental screening flowchart, before dissemination



8.2. Screening process implementation liabilities

The table below summarises stage and institutional liabilities for selection and assessment preparation, approval and WAAPP implementation activities

Screening stages and liabilities

Stages	**Liabilities**
1.Identification and environmental and social selection of the project	Local Producers organisations
2.Selection validation and project classification	
2.1 Environmental selection validation	EFP of NARS and APP
2.2 Project classification and environmental task definition (simple mitigation measures or EIS)	DGCV Burkina, EPA Ghana, DNACPN Mali and DEEC Senegal
3. Environment task execution	
3.1 Application of simple attenuation measures	EFP of NARS and APP
3.2 Environmental Impact Study (EIS) realization	
• Consultant choosing	WECARD, NARS and APP
• EIS realisation, integration of environmental integration of environmental and social management plan in the documents Public consultations	Consultants specialized in EIS
• Environmental Impact study approval	DGCV Burkina, EPA Ghana, DNACPN Mali DEEC Senegal
4.Examination and approval	DGCV Burkina, EPA Ghana, DNACPN Mali DEEC Senegal
5.Disclosure	WECARD, NARS and APP
6.Monitoring	<u>Sub-regional:</u> • WECARD <u>National :</u> • SNRA (INERA for Burkina, CSIR for Ghana; IER Mali;PSAOP Senegal • PPA (PAFASP Burkina; AgSSIP Ghana PASAOP Mali and PSAOP Senegal • DESV Burkina; EPA Ghana DNACPN Mali and DEEC Senegal <u>Local:</u> • Producers organisation Rural Councils WECARD, NARS and APP

7.Indicators development	• WECARD, NARS and APP • Consultants

9. Environmental and social Management P LAN (ESMP)

9.1. Environmental management in agricultural productivity sector

National programmes to improve agricultural productivity

All national agricultural productivity programmes (PAFASP in Burkina; AgSSIP in Ghana, PASAOP in Mali and PSAOP in Senegal) have been submitted to strategic environmental assessment, with pertinent recommendations on environmental issues and institutional arrangement, to be realised during implementation. Thus, the current WAAPP's ESMF capitalizes the whole environmental measures recommended in environmental and social assessments carried out within agricultural productivity programmes.

Planed Environmental measures in PAFASP (Burkina Faso):

- Capacity building procedures in environmental assessment
- Local communities capacity building in soil and natural resources management
- Capacity building for various dies actors (cereal; fruit and vegetables; oilseeds/cotton; cattle/meat); training on processing techniques; standards of quality; food hygiene
- Support with national health standards development in agro food products
- Monitoring and evaluation plan development (impacts monitoring; ecological follow-up)

Planed Environmental measures in AgSSIP (Ghana)

- Safe and Sound Pesticides Management
- Trained Professional Personnel (Agricultural officers and farmers)
- Development of environmental guidelines or simple environmental manuals
- Promotion of farming systems (agro-silvo-pastoralism, agro-forestry, mixed cropping, etc.) and practices, including integrated pest management
- Promotion of basic and adaptive research into sustainable patterns of intensive farming systems by adopting appropriate cultural practices
- The proposed creation of new technical specialist positions in natural resources management; social science and monitoring and evaluation
- Organization of on-farm adaptive research programmes suitable for agro ecological zones.
- Provision of support for a national strategy in promoting the development and capacity building in biotechnology and bio-safety.
- Provision of training and education for pesticide producers and users, importers and distributors, extension agents
- Supporting programmes for improvement of communal grazing areas
- Promotion of the use of non-polluting methods such as the use of impregnated traps and bio pesticides
- Commitment to prepare environmental impact assessment for some programme activities

Planed Environmental measures in PASAOP (Mali):

- Recruitment of specialists in environment;
- Training in agricultural activities environmental aspects ;
- Sensitizing of producers in environmental and social aspects
- Systematic and regular EIS;
- Setting monitoring and evaluation system ;
- Technical measurements (on soil fertility management);
- Diseases and predatory management (Special Initiative for the Integrated Fight)

Planed Environmental measures in PASAOP (Senegal):

- Recruitment of environmentalist
- Designation of environmental focal points (EFP) within institutions involved in PSAOP implementation
- Data base setting related to "Environment/Agriculture"
- Provision for Environmental Impact studies
- Permanent monitoring and periodic evaluations of PSAOPs' ESMFP
- Training for main stakeholders involved in PSAOP
- Information and sensitizing campaigns for producers and populations
- Development of environmental standards related to hydro-agricultural management activities, and technical Pesticides Measurements: increase in agricultural production; extensions of the cultivated grounds (food crops; industrial crops); rehabilitation of hydro-agricultural works; installation, rehabilitation and management of hydro-agricultural perimeters and small irrigation; support to breeding sector)

Note: ***only PSAOP in Senegal envisaged Focal Point Environment designation within institutions involved in its implementation.***

National Agricultural Research Systems

Integrating environmental issues in agricultural sector is generally a mayor preoccupation for all the stakeholders. Within research institutes, agricultural services and agricultural projects, there are specialists in natural resources (soil specialists, biologists, agronomy specialists, pastoralists, zoo technicians, forestry experts, etc); but the latter's are not experienced in the following issues: Environmental assessment procedures of research project; environmental impacts assessment of research results (before their application). However, all research institutes of targeted (INERA in Burkina Faso, CSIR in Ghana, IER Mali, and Senegal) take into account environmental and social preoccupations in research activities. Anyway, some more capacity reinforcement is needs, mainly for all searchers in environmental assessment.

However, a significant progression has been noticed in the framework of some agricultural programs implementation, for example, the Quality origin Referential development for promotion exportation agricultural products. Some agricultural programmes satisfied producers' preoccupation because of remarkable positive impact on environment. For example, the Senegalese project "valuation of smoked-fishes remnants for soils fertility and agricultural production bettering ": results allowed a bettering crop output (of millet, sorgho, maize, peanuts and beans (niébé). Other positive impact is a reduction of wastes pollution, and generation of women employment (97% of smoked-fishes workers are females); at last a fish's wastes transformation unit is implanted.

In the field of integrating environmental issues in agricultural/agro alimentary research and application, important results were acquired by the national research institutions and their partners. These results are presented as knowledge, technologies ready to be employed or decision-making tools, for as sustainable agricultural development. For the majority, these results were disseminated to users; they allowed to dope production or to give a significant added-value to agricultural produce thanks to conservation or transformation technologies suggested by research. Considerable efforts were made for better inserting machine in production and transformation systems, with equipments well-developed, tested, validated and diffused thanks to all stakeholders' common work (research, development, industry, craft industry).

In the cattle farming section, initiated projects led to pastoral units implantation with positive impacts: livestock breeders are more involved in resources management, within settle structures; producers are developing many initiatives meeting local needs (anti-fire care, creation of veterinary chemistries, implantation of transhumant hosting committee, and establishment of consultation mechanisms, between the different users the landscape etc.).

The breeding sector experienced a fast development thanks to the good knowledge of pathogenic agents, with the development of effective vaccines at lower cost, like with feed formulation for adapted rations to each type of animals (chicken, ovine, etc). In forest productions, various woody species were selected for grounds recovery and agro forestry improvement and the natural stock management strategies are worked out for environment safeguarding. As for food crops, performed varieties and appropriated technology packages are developed to improve cultures outputs; and pre-basis seeds are available for the main cultivated species (millet, sorghum, corn, rice, etc).

As for capacity reinforcement, training themes were presented to producers with the support of Producers' Organisations; they dealt with following techniques: compost, transformation and conservation of vegetables and agriculture products: bovine development; dying; soap manufacturing; seeds reconstitution; etc.

However, a significant number of knowledge and generated technologies still remain in the researchers' drawers for various reasons: lake of satisfaction from producers; insufficiency of taking into account environmental and social aspects; etc. A considerable part of created or introduced materials had to be abandoned for various reasons: inappropriate to farms technical and socio-economic conditions and to production systems performances.

The institutional context assessment about environmental management in agricultural research sector reveals some constraints related to coordination, information dissemination, and diffusion of environment friendly technologies. In addition to this, it is notice in both sectors (agriculture and breeding) an absence of complete and up to date "environmental" data base.

9.2. Recommendations for the environmental management of WAAPP

WAAPP environmental management will based on : (i) "a vertical" (or national) logic helping to keep environmental experience of existing programs which are bettering agricultural productivity (PSAOP, PASAOP, PAFASP and AgSSIP); (ii) "a transversal "

(or sub-regional) logic supposed to coherently coordinate all actions but also federate synergies in full accordance with national exigencies in each country. In this exercise, coordination and monitoring institutional arrangements of WAAPP's environmental measures implementation, must be clearly defined both at regional national and local level, because of their central importance. This point of view justify necessary to reinforce WECARD institutional capacities, in terms of coordination and environmental monitoring of WAAPP activities.

As for research and technology diffusions, a deep environmental analysis and appreciation must be done at least at three levels:

- ***For agricultural technologies "ready for use" having good results in terms of agricultural productivity improvement:*** to what extent have environment aspects been considered? Their sufficiency? Additional information needs about environment, to ensure sustainability?
- ***For technologies "ready for use" having failed to satisfy fully producers' demands:*** what have been the environmental and social factors of these semi or global failures? Which remedial strategies should be adopted to make up for negative impact related to non satisfied demands?
- ***For sectors demand not yet satisfied by technology (or demand being studied):*** Which strategy must be adopted to include environmental and social preoccupations in researches, to ensure sustainability?

Experience and lessons gathering from agricultural sector (research and dissemination) necessitates reinforcing WAAPP environmental and social management. For this sake, the present ESMF Plan has proposed environmental assessment criteria, along with a screening methodology for projects and sub-projects to be funded by WAAPP. The screening process will help classify every under project, and indicate which impact study should be realized. An environmental management plan must be proposed and included in offers and execution documents. However, sub-project environmental assessment should be realized in concordance with national environmental legislations and World Bank's safeguards.

By the way, ESMFP proposes technical and capacity building measures that are still taken into account the different countries' agricultural programmes: (i) Provision for EIA (including environmental and social management plans) for category "B" activities ; (ii) Training in environment assessment; (iii) users and population awareness on risks linked to competitive agricultural productivity technologies; (iv) permanent monitoring of activities implementation (by the EFP in research services, environmental services, agricultural services, local communities, producers' organisations); (v) WAAPP mid-way and final monitoring (***these monitoring will be combined with those still scheduled for agricultural productivity programmes*** in the 4 countries, in order to ***create synergy*** end to ***reduce costs***).

On the other hand, certain environmental measures will have to be envisaged (or reinforced), in particular for WECARD, to reinforce its capacity in environmental management not only during WAAPP implementation, but especially in prospect for ECOWAS agricultural regional program. These additional or complementary measures to the national programmes concern:

- Development of a environmental screening procedure (chapter 8)
- Designation of Environmental focal points (EFP) for Burkina Faso, Ghana and Mali; As for Senegal, the EFP already indicated within PSAOP will be confirmed;

- Elaboration of environment respectful good practice hand book
- Harmonization and setting data bases on "agricultural and environmental production"
- Environmental Focal Points (EFP) levelling in environmental issues, during the WAAPP launching workshop;
- Implementation coordination/supervision by WECARD (this activity will be included in the total program of coordination and follow-up of the WECARD, with a part planned for the environmental aspects).

l. Environmental Focal Points (EFP)

AT SUB-REGIONAL LEVEL (SE/ WECARD)

Because of projects and sub-projects present size, an environment unit within WECARD will constitute a delay factor research projects preparation and implementation. In order to facilitate environmental and social issues integration in WAAPP's activities, it should be more practical, at regional programme coordination level, to create an ***"environmental function"*** by reinforcing the environmental capacities (training in EIA) of the expert in charge of research assessment within WECARD, and turn him into an Environmental Focal Point (EFP/ WECARD).

WECARD Environment Focal Point mission

WECARD Environment Focal Point (EFP/WECARD) will allow setting more effective coordinating mechanisms in this institution (i) to guarantee environmental and social aspects integration in implemented programmes; (ii) to ensure monitoring of environmental and social indicators at regional level; (iii) to develop prospective vision on environmental issues related to activities to be funded by WAAPP, in all the countries and at all program intervention levels, and especially in prospect for the ECOWAS agricultural regional programme. The EFP/WECARD mission should be articulated around the following activities:

- To analyse every component's programme or project to verify their adequacy with WAAPP's ESFM requirements and orientations;
- To ensure that WAAPP environmental and social procedure is taken into programmes and projects implementation;
- To initiate environmental and social data base in the project zone.
- To develop environmental and social indicators for monitoring and evaluation (procedure, impact and result indicators) in all the countries
- To realize WAAPP programmes and projects monitoring, assessment, supervision and post- evaluation to control environmental and social measures effective implementation;
- To define environmental and social guidelines procedures development, disclosure, implementation and updating (standard clauses and good practices code);
- To sensitize decision-makers and persons in charge of agricultural programmes in the countries (NARS, agricultural Programmes, agricultural Services, etc.) on the need for integrating environmental and social issues in the projects;
- To coordinate and supervise producers' capacity building, along with WAAPP's operational technical structures (state's organizations, environmental and social NGO, etc.) in sub-projects environmental and social issues ;

- To develop coordination and exchange system, with other institutions at community, regional and national levels, for a better environmental and social preoccupations consideration at all levels; facilitating data supplies and updating process;
- To carry out periodic supervision for the WAAPP ESMFP, based on environmental and social indicators.

Strategic indicators to be followed by EFP/WECARD

- Procedure, stages and environmental criteria in research activities
- Number of sustainable agricultural technique and technologies environmentally respectful
- Number of researchers trained in agricultural activities environmental assessment
- Number of Producers sensitized on environment and health linked to agricultural activities
- Number of techniques/technologies having EIA with implemented Environmental Plan of Management (EMP)
- Data basis on "agriculture/environment" set up and harmonized

AT NATIONAL LEVEL

At national level, Environmental focal Points will be designated within National Agricultural Research Systems (**EFP/NARS**) and Competitive Agricultural Productivity Programmes (**EFP/APP**): PAFASP in Burkina Faso, AgSSIP in Ghana and PASAOP in Mali; for Senegal, the EFP already indicated within PSAOP will be confirmed. These EFP will receive an environmental levelling at the time of WAAPP launching workshop, to enable them in their environmental and social function during WAAPP activities implementation. EFP will coordinate in their respective structures: (i) ESFMP implementation; (ii) WAAPP environmental and social monitoring (activities and mitigation measures implementation when necessary). These experts will be supported and permanently assisted by national environmental services, and will have to lead the following activities:

- Environmental and social application forms filling (annex 11.1 or 11.2): Selection of attenuation measures proposed in the environmental and social monitoring list (annex 11.3).
- Preparation of Terms of reference (ToR) for WAAPP activities requiring separate EIA
- EIA reports dissemination towards proper institutions open to the public;
- Environmental and social monitoring conducting (and eventual adjustments) for WAAPP activities; and
- Information and training workshops organisation on environmental assessment.

The EFP designation should allow a maximal influence on research needs selection process and identification, and necessity to implement research results as regard to environmental and social aspects. At rural communities' level, these EFP should be in synergy with agricultural organizations which will formulate technological research demands. EFP

should also be doted with material means (or equipments) enabling them to correctly and efficiently conduct their coordination and monitoring mission.

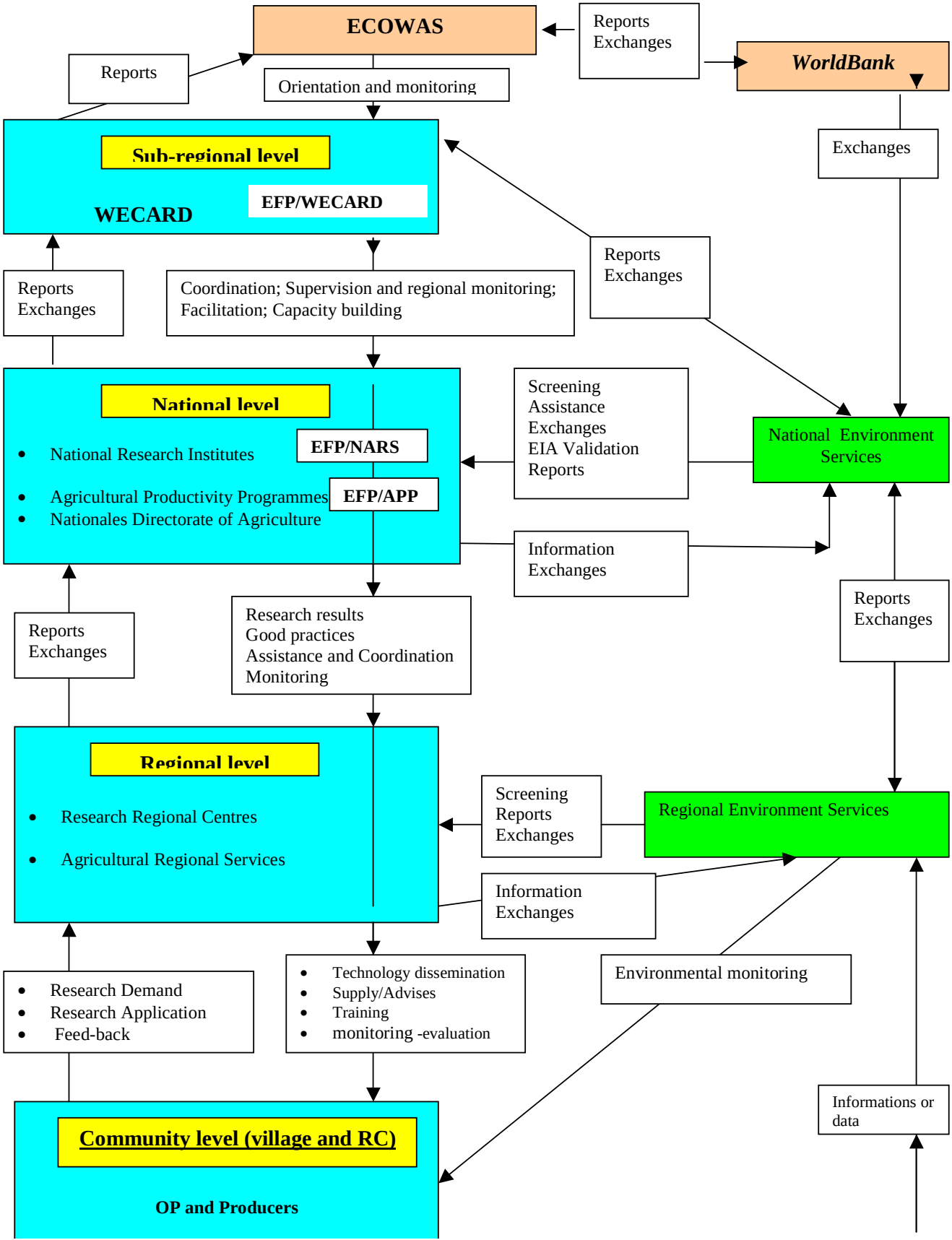
AT LOCAL LEVEL

At local level, technicians will be chosen both in regional Research centres and regional agricultural centres, but also from rural monitoring structures and producers organisations. They will serve as links between natural and community levels. At community level, they are chosen from peasants organizations and serve as “go betweens”. At rural communities’ level, these EFP should be in synergy with Producers’ organizations who will formulate technological research demands. EFP should also be doted of material means (or equipments) enabling than to correctly and efficiently carry their coordination and follow up mission.

m. Country monitoring indicators (by EFP/NARS and EFP/APP)

In each country, technical indicators are proposed to be followed by EFP of National Agricultural Research Systems and agricultural productivity programmes, but also, if possible, by environmental services, local communities and agricultural producers.

Monitoring elements	**Indicators**	**Elements to be collected**
Water	**Water resources state**	Physicochemical and bacteriological water analysis (pH, DBO, DCO heavy metals, germs, pesticides, nitrates...)
Soils	**Chemical fertility**	Erosion Organic pollution Rate of organic matter Composition in biogenic salts Saturation rate Capacity exchange
	Physical Proprieties	Depth Texture Structure Porosity Water holding capacity
	Behaviour and land use	Sensitivity to wind and hydrous erosion (affected surface) Rate of degradation (salinisation, alkalisation, erosion...) Outputs of the principal cultures Existence of fallow and Standard duration of culture
Flora and fauna	**Evolution of fauna; state of Flora and biodiversity**	Evolution of the occupation of the grounds Evolution of the types of vegetation Production of biomass Rate of covering of the grounds Reforestation activities Deforestation (rate and forests conversion for other uses) Habitats degradation and grounds conversion for other uses
Production systems	**Development in the technologies and the technical Performances**	Acreages and production Practise farming Adoption of the techniques of agricultural produce Productivity rate Quantity of inputs used (pesticides, weed killers, manure) Adoption rate of integrated organic fight methods Manure consumption Surfaces in biological culture Waste management (liquids, solids) from activities transformation Value increasing rate of processing industries by-products
Human Environment	**Hygiene and health Pollution and harmful effects Safety at the time of the operations and work**	Controls of the effects on the sources of Wearing production of adequate equipment of protection Presence of vectors of diseases Rate prevalence diseases related to water (malaria, bilharzias, Diarrhoeas, Respect of measurements of hygiene on the site Numbers intoxication dependent for the use of the pesticides


ECOWAS
Reports Exchanges
WorldBank
Reports
Orientation and monitoring
Exchanges
Sub-regional level
WECARD
EFP/WECARD
Reports Exchanges
Reports Exchanges
Coordination; Supervision and regional monitoring; Facilitation; Capacity building
National level
National Research Institutes
Agricultural Productivity Programmes
Nationales Directorate of Agriculture
EFP/NARS
EFP/APP
Screening Assistance Exchanges EIA Validation Reports
National Environment Services
Information Exchanges
Reports Exchanges
Reports Exchanges
Research results Good practices Assistance and Coordination Monitoring
Regional level
Research Regional Centres
Agricultural Regional Services
Screening Reports Exchanges
Regional Environment Services
Information Exchanges
Research Demand
Research Application
Feed-back
Technology dissemination
Supply/Advises
Training
monitoring -evaluation
Environmental monitoring
Informations or data
Community level (village and RC)
OP and Producers

n. Environmental Mesures and Schedule

N°	Environmental Mesures	Comments
	Realization of Environmental Impact Studies (EIS) • EIS might be required for "B" category, research and dissemination activities, to make sure they are environmentally and socially sustainable	***These activities and the related costs are included in countries' agricultural productivity programmes (PAFASP ; AgSSIP ; PASAOP et PSAOP)***
	Development of good agricultural practice hand book • WAAPP will particularly focus on research and dissemination technologies able to increase agricultural productivity. A precious tool will be an environment friendly good practice hand book, which will guide producers during implementation.	To budget for by WAAPP
	Setting of environmental database harmonized • WAAPP should support the setting of environmental and social database "Agriculture/ Breeding and Environment related to agricultural productivity amelioration technologies: it should also develop assessment and follow up environmental and social indicators.	To budget for by WAAPP
	Permanent monitoring of WAAPP's ESMFP • realised bu national EFP	***These activities and the related costs are included in countries' agricultural productivity programmes (PAFASP ; AgSSIP ; PASAOP et PSAOP)***
	Mid-way and final evaluation of WAAPP's ESMFP	***These evaluations will be combined with that already planned for the agricultural programs in the 4 countries; to create synergies and to reduce the costs.***
	Coordination and supervision by WECARD	To be partially budgeted by WAAPP (this activity will be included in the WECARD coordination and monitoring global program, with a part planned for the environmental aspects
	Environmental levelling for Environment Focal • Environmental and social issues (screening and classification of activities, indicators monitoring, hygiene and security linked to agricultural activities; selection of simplified mitigation measures from check-lists; national environmental legislation and procedures; monitoring of environmental measures implemented; pesticides	To budget for by WAAPP (include an environmental levelling during WAAPP launching workshop)

	management; EIA procedures : World Bank's safeguards Policy).	

9.3. Environmental measures coasts to be included in WAAPP

The funding mode of WAAPP environmental measures includes:

- Development of good agricultural practice hand book (20 000 000) fcfa ;
- Setting of environmental database harmonized (40 000 000) fcfa;
- Environmental levelling for Environment Focal (12 000 000) fcfa ;
- Coordination and supervision by WECARD (partial cost): 24 000 000 fcfa ;

The total is ***96 000 000 fcfa , to be included in the WAAPP funding***

Measures for ESMFP implementing	**Quantity**	**Unity Cost unitaire (fcfa)**	**Total cost (fcfa)**
Development of good agricultural practice hand book	1	20 000 000	20 000 000
Environmental data base harmonization and installation	1	50 000 000	40 000 000
Environment Focal Points (EFP) levelling (EFP/WECARD ; EFP/NARS and EFP/APA)	Participation to the WAAPP launching workshop	12 000 000	12 000 000
WECARD coordination and supervision	8 (2/country/year)	3000 000	24 000 000
TOTAL to be included in WAAPP budget			**96 000 000 fcfa**

9.4. Institutions liable of the implementation and monitoring

The main institutions involved in WAAPP activities implementation are :

- WECARD Executive Secretariat
- Ministries of Agriculture / Cattle farming
- National Programs for agricultural Productivity amelioration (PSAOP, AgSSIP, etc)
- Environmental Agencies or Environment Ministry
- Agricultural research institutions
- Producers organisations
- Research results users (producers)
- Rural zone monitoring institutions
- Local and rural communities
- NGO, supporting agricultural organizations
- Universities and other external research structures

This paragraph describes roles and liabilities about WAAPP scheduled environmental measures implementation.

o. Coordination, supervision and monitoring

At sub-regional level, coordination, supervision and monitoring is done by WECARD through its Expert charged of monitoring, who will ensure Environment Focal Point tasks (EPF/WECARD).

At national level, supervision and coordination is carried out by official Research institutes (INERA-Burkina Faso, CSIR-Ghana, IER-Mali and ISRA-Senegal) where EFP will be chosen, but also by national agriculture services and EFP chosen among national agricultural productivity improvement projects (PAFASP in Burkina Faso, AgSSIP-Ghana, PASAOP-Mali and PSAOP-Senegal) ; national producers organisations too. National Environmental services (DGCV – Burkina, EPA-Ghana, DNACPN-Mali and DEEC-Senegal) will also take part in national monitoring.

Consultants (national and / or international) will intervene in national and sub-regional monitoring, and will also realize WAAPP's ESMFP half way and final evaluation.

At local level, monitoring is done by producers' organisations in collaboration with regional environment services and other decentralised agricultural services. At rural communities' level, monitoring will be done by agricultural dissemination agents in collaboration with producers' organisations and rural councils members.

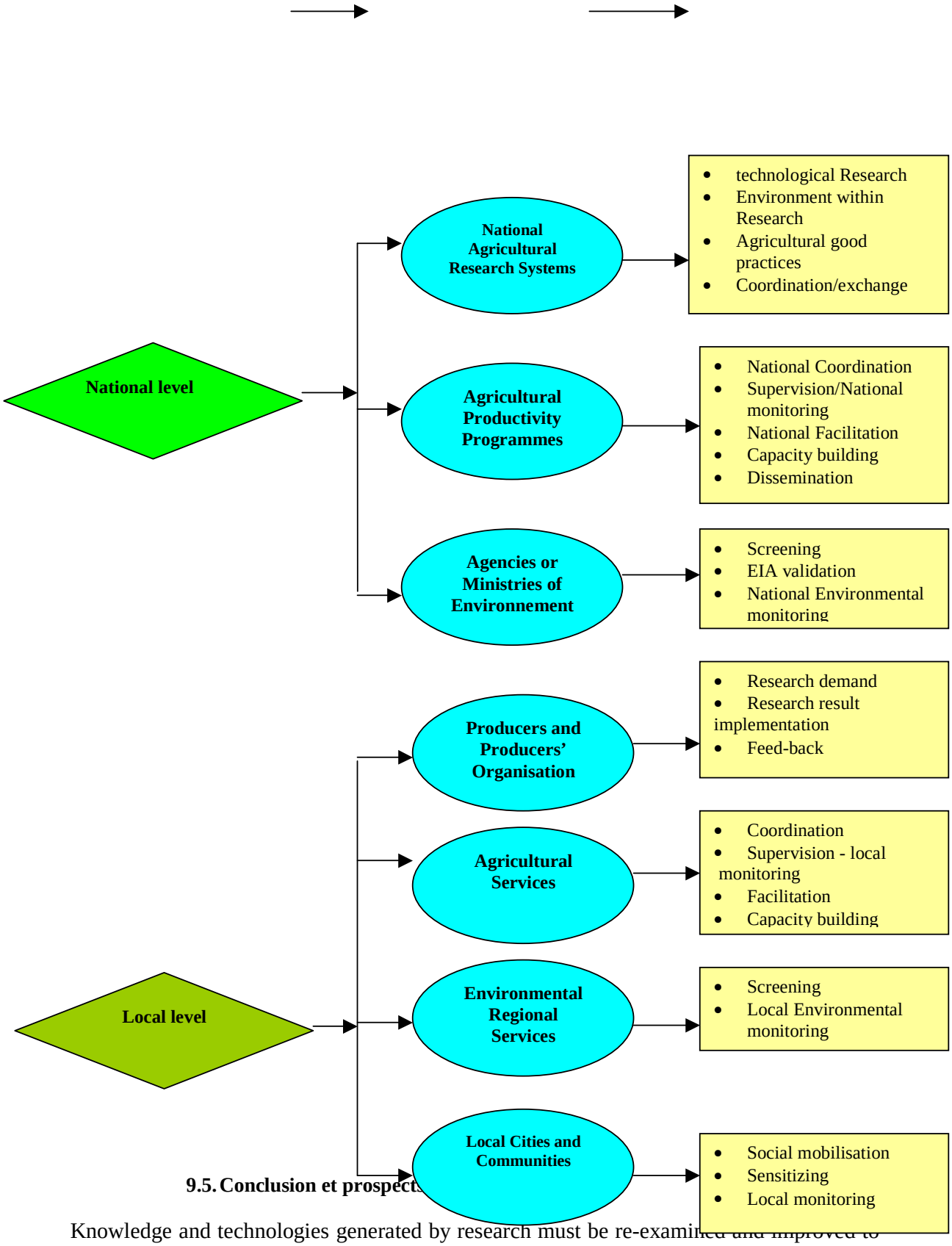
p. Environmental measures implementation

Consultants will be responsible for EIS realization; agricultural good practice hand books development; data base setting; environmental training; monitoring and evaluation etc. As

for the implementation, producers' organisations will be responsible for the execution of attenuation measures linked with agricultural technologies application.

Institutional liabilities level

Intervention level	Structures involved	Function
Sub-regional level	WECARD	• Coordination • Supervision and regional follow-up • Facilitation • Capacity building



9.5. Conclusion et prospect

Knowledge and technologies generated by research must be re-examined and improved to integrate environmental requirements and social trends demand. So, it will be necessary to

develop care attitude to understand changes in rural communities to answer users new demands.

In agricultural production, it important to analyse technical fields for better mechanization levels complementarities according to agro-ecological zones (hand farming, animal traction, and motorization). Analysis is also required in processing sector, controlled by consumers request nature. Thus, used materials performances knowledge, including use environmental effect, becomes precondition measure to any introduction and dissemination form.

Biotechnology development to achieve vital productivity and sustainability goals, in order to produce more food on the same ground surface (or less), with more nutritional value and less negative effect on the environment, must constitute priority in agricultural policies. To this end, efforts must be focussed on biotechnology tools development, which will improve agricultural biodiversity understanding; biotechnological research to improve plants and animals use; and gene techniques culture implementation in genetic programmes improvement and conservation.

All these next programmes will be developed in partnership with research users and customers in order to take into account social request. This partnership can make it possible to develop strategies taking into these issues, through scientific potential rational management of national agricultural and food-processing research system, and to sustainable financial resources. This partnership at national level should include other research institutions, universities, training schools, agricultural organizations, non governmental organizations, donors, decision makers, etc.

At sub-regional level, agricultural and food-processing institutions research will be able to profit, behalf of WECARD research institutions members, on complementarity's research principle, in fields which do not correspond to their comparative advantages.

At international level, scientific and technical assistance with universities, North countries advanced research institutions, as well as international agricultural research centers, will help improve efforts research articulation. This opening outside will also reinforce researchers expertise, training and framing, while creating synergies around research teams setting, making it possible to deal with transverse themes sets which interest different geographical areas.

According to this, environmental issues integration in research activities, but also during research results programmes implementation, will find a solid basis able to ensure sustainability in agricultural activities and productivity.

10. Public consultation process

Consultation sessions with partners and involved actors have been held, in order to inform them on WAAPP and get their opinions. Consultations were handled in the following way : (i) programme presentation; its context and justification ; its objectives ; planned activities in the different components and expected results ; its intervention and implantation strategy : (ii) opinions collection, preoccupations and suggestions noted in these sessions. Generally, WAAPP's actors and beneficiaries have globally well accepted the programme in its agricultural productivity improvement objectives: agricultural research institutions, agricultural services, agricultural programmes national environmental services, dissemination services, agricultural producers' organisations, etc. However, preoccupations and suggestions were recorded, to better guaranty programme success (see the following table).

Stakeholders' major preoccupations and suggestions

Category of actors	**Preoccupations/fears**	**Expectations/suggestions**
Research institutions	Consideration of environmental issues in Tof R Absence of specific environmentalists Study offices little qualified in environmental issues	* Training for all searchers * good environmental practice * environmental procedures Hard Book (Guide) * environmental monitoring and follow up Hand Book (Guide)
National services of agricultural dissemination	Budgetary constraints The preventive aspect (hygiene and basic enhancement) are neglected compared to curative aspects	* Intoxication Prevention strategy * environmental trainings * good agricultural practice * producers supervision * producers supervision * field actions follow-up * Field agents motivation
National environmental services	Staffs constraints and means of executing permanent proximity follow-up	* Respect of EIS procedures (field visits Tof R approval, EIS, analysis and validation) * Involvement of regional and local environmental follow-up structures * information/populations and producers awareness * support for environmental follow – up
Producers organisations NGO and associations (agricultural), community structures)	Problem of biomedical wastes management Limited financial resources	* training and awareness * staff's equipments * support in logistics and agricultural equipments

		Training / Recycling * capacity reinforcement * permanent supervision and follow-up * Implication in awareness and follow-up * reinforce prevention activities for a changing of behaviour

In general, the user's needs concern:

- information collection especially relating to vegetable productions, animal, forestry, natural resources and agricultural processing industry;
- Projects knowledge, programmes, researchers, institutions, funding sources, research equipments (laboratories, etc.);
- Dissemination and valorisation of achieved results on various supports to make them sufficiently visible and, therefore, accessible to decision-makers, development planners and to national, regional, international scientific community;
- Communication and marketing of potential, activities and opportunities offered by NARS, mainly targeting national development partners and the whole general public.

Agricultural Producers and their organizations

- Products and technologies development, focused on producers' requests, is an essential need often expressed. Without taking into account peasants priorities and criteria, products which are intended to them do not always satisfy their needs. To cure these problems, the users should be necessarily involved at all the technologies development stages: that is a WAAPP guiding principle. It supposes a good pegging by agricultural services, with relevant methods to approach all realities;
- Access to agricultural and rural technical information is also a request of producers, who require integrated information on available agricultural techniques on the national and international markets, in marketing and farms monitoring ;
- Local know-how value increasing of in solutions research has some methodological implications, but it ensures a better social adaptation for technical and methodological results, suggested by research. This knowledge needs to be shared by the whole stakeholders;
- Interventions coordination, coherence and synergy are essential in rural areas.

Local cities

Because of competences which are transferred to them as regards natural resources management, local communities needs relate to a whole tools in planning, management and decision-making aid enabling them to better know and manage their territories, to plan development, to direct and plan local development; monitoring and evaluation tool for local investments and infrastructures; reliable agricultural and rural political, and technological information, able to supply local programs development; assessment tool of policies impacts on local economy, such as accountancy matrices..

Private and public development structures

Development structures needs specially concern to a dynamic partnership, which ensures coherence between research and development programmes; and adequacy between technological research proposals and specific rural development problems. With such a partnership, it will be possible to build a permanent dialogue framework to better conduct research programmes related to development problems and to develop common research-development projects, to train personnel of these development institutions and to inform them on research results, to better develop products of research and to direct development problems towards agricultural research. The installation of agricultural and rural scientific and technological information system also constitutes a major concern for development institutions; this will constitute an exchange and flow network related to technological information between rural development actors.

ESMF detailed table, with institutional liabilities

WAAPP activities potential negative impacts	Mitigation Measures (research topic)	Implementation liabilities			
		Implementation	**Monitoring**	**Period**	**Cost (FCFA)**
Agricultural Productivity Improvement					
Crops output drop of (due to crops enemies)	Integrated fight and research promotion (**cf. Annex 11.4**)	OP NARS	WECARD APP EFP	During implementation	Included in APP budget
Unsafe chemical pesticides use Water pollution in irrigated systems	Periodic evaluation of pesticides residues contamination in irrigated systems and OP training on pesticides rational use (**Annex 11.4**)	OP NARS	WECARD APP EFP	1 /year	Included in APP budget
Cultivated soils expansion - Pasture loss for breeding - Land degradation and weak soil exploitation	- breeding Practice in permanent stalling - Spaces reservation for fodder crops - Soil fertility restoration (**cf. Annex 11.4**)	OP NARS	WECARD APP EFP	During implementation	Included in APP budget
Agricoles activities (vegetal production)					
- Significant destruction of habitat - Vegetation clearing - Soil erosion - Loss of pasture land - Use of important quantity of manure - contamination risks due to pesticides use	- Restoration of vegetable cover; anti-erosive struggle - Site reasoned choice; dunes Protection - Integrated struggle against cultures enemies - Organic manure use promotion - To implement pesticides management Plan (**cf. Annex 11.4**)	OP NARS	WECARD APP EFP	During implementation	Included in APP budget
Supply to breeding sector					
- Unsafe water sources - Diseases linked to bad hygiene conditions	- animals delivered medical certification - To envisage transit centre for imported animals - Research on vaccines (**cf. Annex 11.4**)	OP NARS	WECARD APP EFP	Before activity implementation	Included in APP budget
Capacity building, studies, training and awareness, to be funded by WAAPP					
Institutional and technical Capacity building	- Development of good agricultural practice hand book	EFP/WECARD	WECARD	2nd year	20 000 000
	- Setting of environmental database harmonized	EFP/WECARD	WECARD	During execution	40 000 000
	- Environmental levelling for WAAPP's Environment Focal Point - (EFP/WECARD ; EFP/NARS and EFP/APP)	EFP/WECARD	WECARD	At beginning	12 000 000
	- Coordination and supervision by WECARD	EFP/WECARD	WECARD	At beginning and during	24 000 000
TOTAL					**96 000 000 fcfa**

11. Technical Annexes

Annex 11.1. : Environmental and Social screening form (Burkina, Mali et Senegal)

The precise Environmental and Social Screening Form has been designed to assist in the evaluation of planned construction and rehabilitation activities under PIREP, The form is designed to place information in the hands of implementers and reviewers so that impacts and their mitigation measures, if any, can be identified and/or that requirements for further environmental impact assessment be determined. The ESSF contains information that will allow reviewers to determine the characterization of the prevailing local bio-physical and social environment with the aim to assess the potential activities impacts on this environment. The ESSF will also identify potential socio-economic impacts that will require mitigation measures and/or compensation. If the selection form contains unspecified affirmative answers "Yes", or those negative apparently unjustified "Not", the project request should explain in an adequate way and show that subject was apprehended to avoid unacceptable negative impacts.

Name of sub-project…….
Name of the region/community in which activity is to take place ……
Name of Executing Agent……
Name of the Approving Authority ……
Name, job title, and contact details of the person responsible for filling out this ESSF:

Name: ----------
Job title: ----------
Telephone numbers: ----------
E-mail address: ----------
Date: ----------
Signature: ----------

PART A: BRIEF DESCRIPTION OF THE PROPOSED ACTIVITIES

Please provide information on the type and scale of the activity (area, required land, size).

Provide information about actions needed during implementation including support/ancillary structures and activities required to build them, e.g. need to quarry or excavate borrow materials, laying pipes/lines to connect to energy or water source, access road etc. Describe how activities will be carried out, including support/activities and resources required to operate it.

PART B: BRIEF DESCRIPTION OF THE ENVIRONMENTAL SITUATION AND IDENTIFICATION OF ENVIRONMENTAL AND SOCIAL IMPACTS

Describe the activities' location, sitting; surroundings (include a map, even a sketch map)

Describe the land formation, topography, vegetation in/adjacent to activities' area
_____
_____

Estimate and indicate where vegetation might need to be cleared.
_____
_____

1. Environmentally sensitive areas or threatened species

Are there any environmentally sensitive areas or threatened species (specify below) that could be adversely affected by the project?

(i) Intact natural forests: Yes _____No _____
(ii) Revering Forest: Yes _____ No _____
(iii) Surface water courses, natural springs Yes _____ No _____
(iv) Wetlands (lakes, rivers, swamp, seasonally inundated areas) Yes _____No _____

(v) How far is the nearest wetland (lakes, rivers, seasonally inundated areas)? _____ km.
(vi) Area of high biodiversity: Yes _____ No _____
(vii) Habitats of endangered/threatened or rare species for which protection is required under the Malawian national law/local law and/or international agreements. Yes _____ No _____
(viii) Others (describe). Yes _____ No _____

2. Rivers and Lakes Ecology

Is there a possibility that, due to activitie, the river and lake ecology will be adversely affected? Attention should be paid to water quality and quantity; the nature, productivity and use of aquatic habitats, and variations of these over time.
Yes _____ No _____

3. Protected areas

Is activity (or parts of the facility) located within/adjacent to any protected areas designated by the government (national park, national reserve, world heritage site etc.).
Yes _____ No _____

If activity is outside of, but close to, any protected area, is it likely to adversely affect the ecology within the protected area areas (e.g. interference with the migration routes of mammals or birds).
Yes _____ No _____

4. Geology and Soils

Based upon visual inspection or available literature, are there areas of possible geologic or soil instability (prone to: soil erosion, landslide, subsidence, earthquake etc)?
Yes _____ No _____

Based upon visual inspection or available literature, are there areas that have risks of large scale increase in soil salinity?
Yes _____ No _____

Based upon visual inspection or available literature, are there areas prone to floods, poorly drained, low-lying, or in a depression or block run-off water

Yes _____ No _____

5. Landscape/aesthetics
Is there a possibility that activity will adversely affect the aesthetic attractiveness of the local landscape?
Yes _____ No _____

6. Historical, archaeological or cultural heritage site.

Based on available sources, consultation with local authorities, local knowledge and/or observations, could activity alter any historical, archaeological, cultural heritage traditional (sacred, ritual area) site or require excavation near same?
Yes _____ No _____

7. Resettlement and/or Land Acquisition
Will involuntary resettlement, land acquisition, relocation of property, or loss, denial or restriction of access to land and other economic resources be a result of activity implementation?
Yes _____ No _____

8. Loss of Crops, Fruit Trees and Household Infrastructure
Will activity result in the permanent or temporary loss of crops, fruit trees and household infra-structure (such as granaries, outside toilets and kitchens, livestock shed etc)?
Yes _____ No _____

9. Noise and Dust Pollution during Construction and Operation
Will the operating noise level exceed the allowable noise limits?
Yes _____ No _____

Will the operation result in emission of copious amounts of dust, hazardous fumes?
Yes _____ No _____

10. Solid or Liquid Wastes
Will activity generate solid or liquid wastes? (Including human excreta/sewage, asbestos)
Yes _____ No _____

If “Yes”, does the architectural plan include provisions for their adequate collection and disposal, particularly asbestos?
Yes _____ No _____

11. Public Consultations
Has public consultation and participation been sought?
Yes _____ No _____

12. Criteria of ineligibility

Micro-projects below would not be eligible with WAAPP financing:

- Micro-projects likely to be implement or located in classified zones natural habitats (question 3 above)
- Micro-projects likely to attack the classified resources national cultural inheritance (question 6 above)

PART C: MITIGATION MEASURES

According to Annex 11.1, for all "Yes" responses, EFP, in consultation with local agencies, in particular those which are in charge of the environment, describe briefly the measures taken to this effect.

Once the Environmental and Social Screening Form is completed it is analysed by the Environmental Focal Point of the Planning and Monitoring Unit of the Executive Secretariat of WECARD who will classify it into the appropriate category based on a predetermined criteria and the information provided in the form.

Annex 11.2. : Ghana environmental and Social screening form

1. PROPOSED UNDERTAKING / DEVELOPMENT

Title of proposal (General Classification of undertaking)

_____

Description of proposal (nature of undertaking, unit processes (flow diagram), raw materials, list of chemicals (source, types and quantities), storage facilities, wastes/by-products (solid, liquid and gaseous)

_____

_____

Scope of Proposal (size of labour force, equipment and machinery, installed/production capacity, product type, area covered by facility/proposal, market)

_____

_____

2. PROPOSED SITE

Location (attach a site plan/map)
Plot/House No…… Street/Area Name……
Town……...
District/Region……
Major Landmark (if any)……..
Current zoning……..
Distance to nearest residential and/or other facilities
……
……
……
Adjacent land uses (existing & proposal)
……
……
……
Site description (immediate activities should be described)
……
……
……

3. INFRASTRUCTURE AND UTILITIES

Structures (buildings and other facilities proposed or existing on site)

……
……
……
Access to water (source, quantity)
……
……
……
Access to power (type, source & quantity)
……
……
……
Drainage provision in the project area
……
……
……
Nearness to water body
……
……
……

Access to project site ;
……
……
……
Other major utilities proposed or existing on site (e.g. sewerage, etc)
……
……
……

4. ENVIRONMENTAL IMPACTS

Potential environmental effects of proposed undertaking (Both constructional and operational phases)
……
……
……

5. CONSULTATIONS

(seek views of immediate adjourning neighbours and relevant stakeholders and provide evidence of consultation)
……
……
……

6. OTHER ENVIRONMENTAL ISSUES

Potential significant risk and hazards associated with the proposal (including occupational health and safety) state briefly relevant environmental studies already done and attach copies as appropriate.

……
……
……

7. MANAGEMENT OF IMPACTS AND ENVIRONMENTAL ENHANCEMENT MEASURES

……
……
……

8. ATTACHMENTS

Tick appropriate oxes below indicating that the folling required documents have been attached :

(a) Authentic site plan (signed by a licensed surveyor and certified by Survey Dept.)
(b) Block plan of the site
(c) Photographs of the site
(d) Fire report from the Ghana National Fire Service
(e) Zonin letter from Town Country Planning Department

DECLARATION

I,……., hereby declare that the information provided on this form is true to the best of my knowledge and shall provide any additional information that shall come to my notice in the course of processing this application. I also declare that information provided is true.

…… ……..
Signature Date

* Use pages 7, and 8 where space provided is inadequate.

Annex 11.2 : Environmental and Social monitoring list

For each agricultural activity proposed, fill the corresponding section in the monitoring list; Annex 3 presents many attenuation measures; they can be amended if necessary.

WAAPP Activities	**Questions to be answered**	**Yes**	**No**	**If Yes**
Implementation and exploitation of techniques	-Will agricultural exploitation cause vegetation loss?			If the answer is yes, consider the attenuation measures

and technologies for the amelioration of agricultural productivity	- Are there appropriate services for the evacuation of wastes from exploitation? - Will remnants generated during implementation be cleared and ecologically destroyed? - Will security equipments and tools be available during implementation an implementation and exploitation? - Are there risk of underground or surface waters pollution robe caused by project activities? - Are there sensitive ecological zones, around the project exploitation zone, exposed to negative impact? - Are there negative impacts on the health of neighbouring populations and the staff charged of implementation and exploitation? - Are there negative visual impacts caused by works? - Are there nuisances from rejected agricultural activities wastes? - Are there human establishments or cultural, regions or historical sites next to the agricultural exploitation zone?			described in Annex 11.4

Annex 11. 4: Mitigation measures list

Global mitigation measures

Sub-projects	Negative Impacts	Attenuation measures
Agricultural Production Increasing	Low outputs due to farms enemies. Bad use of chemical pesticides and pollution in irrigation system waters	Promotion of integrated struggle and research in: Periodical contamination assessment due to pesticide remnants in irrigated systems and training of PO for pesticides rational use.
Cultivated lands extension	Pastures loss for cattle breeding; lands degradation and weak lands exploitation	Permanent or semi permanent breeding stalling practise and agro-sylvo zootechnic approach. Space provision for fern farming soil fertility restoration and environment protection
Support to cattle breeding sector	- uncertain supplies sources (risks of introducing new diseases) - sickness due to bad hygiene conditions	- Delivered zoo technician animal sanitary certification. - To envisage transit centre for imported animals. - to build shelters according to norms and secure hygiene and cleanliness.
	- Bad conservation of veterinary medicines and cattle food storage.	To afford equipment for a good conservation of medicines / training in this matter.
	Producers deficient knowledge in basic veterinary techniques	- training in veterinary techniques - Management of pharmaceutics offices
	- Presence of disease unknown in the area. - Non ecology adapted animals - Building material extraction - Excessive wood exploitation - Risks of contamination by ill conserved pharmacy products. - Area pollution by breeding products transformation wastes	- Make sure imported animals are not sick - Trees replanting for compensation Training and supply of cages for medicines and veterinary materials conservation - Preparation of ditches for wastes.
Improvement of products' quality channels	- Risks of marginalisation of weak producers in case of development only focussed on markets segmentation and products labelling. - High cost of meat for interior markets consumers. - Markets segmentation, collective labelling norms different from local preferences. Modernisation of infrastructures and their care costs	- Accompanying program for weak producers - To develop quality references - Better traditional infrastructures and focus hygienic aspects - Seek for sustainable settings adapted to the environment and not needing such qualified staffs. - Set up programs for traditional actor's promotion, to help access to labelled products.
Pastoral pilot Programme	- Affects agricultural and rural integration - Articulation with decentralisation and texts	- Support to other agricultural and rural activities. - Information and awareness program and local elites participation

	regulating it - Frequent conflicts about farms delimitation - Pressure on pastoral ecosystems - Non consideration of active traditional management type	- Dissemination of texts regulating pastoralism and farms fencing. - Care for vegetation loss regeneration through replanting. - Value local pastoral practice and endogen knowledge.
Zoo-sanitary Protection	- Pastures overloading - Expenses needed in zoo-sanitary protection permanent training of zoo technicians and other zoo-technical services - Finance leans demands for the setting of private zootechnic cabinets - Veterinary intervention costs unchallenged deficiency animal production logic economically justice able of zoo-technical interventions - Delay in pastures loading capacities - Advancement of erosion - Degradation of vegetation around water points - Excessive exploitation of underground waters - Elimination of solid and liquid wastes used in stalling	- To favour animals dispatching - Funding mechanism creation supported by fruitful channels such as; meat, poultry (chicken etc.) - A recycling program based on people's concerns and funded according to the mechanism to be studied - A support program for the settlement of breeding professionals - A precise assessment of varied professionals zones - Better the animal production results such as '' grazing'', this program can be funded with the help of supervisors organisations - Multiply water sources - Wastes management plan
Support to producers for survival and commercial farming (seeds supplies: agricultural intrans support; realisation of show pilot farms; training)	- Pesticides contamination risks - Sensitive habitat destruction - Soils érosion, hydrique cycle perturbation - Agriculture and pasture land loss - Overuse of fertilizers - Pesticides use - Pollution of underground napkin water stream – water plan - Livestock contamination through beverage - Intoxication in case of bad use - Ill management of covers - Non-target destruction - Overexploitation of vegetation zones	- Integrated struggle against farms enemies (Pests and pesticides management Plan) - Promotion of organic manure use as fertilizers - Restore forest texture efficiently and properly: avoid slopes, soils exposed to erosion - Reasonable site choice
Support PO for agricultural production (Rational use of entrants, pesticides and mineral	- Pesticide contamination risks while using them - Waters pollution by water flows - Building material extraction	- available protection equipments for users - reference for less toxic products and biological struggle integrated struggle against farms enemies - training in integrated management

fertilizers		of pesticides

Struggle against degradation

Impacts	**Attenuation measures**
Salt affected lands	Salt negative impact on agricultural soils can be avoided by deep draining system; it is possible to reduce salt at an acceptable level by draining at campaign beginning. This necessitates draining network for wastewaters evacuation. In terms of accompanying measures, private agricultural producers should be encouraged to adopt localised irrigation methods to cancel draining needs equipments acquisition, localised by inciting financial measures.
Soils engorgement	Soils engorgement could be reduced by adequate farming techniques and improvement thorough water management. Irrigation water supplies should be correctly managed according to the climate to avoid phreatic napkin percolation loss. In this field, programme must help support to improve irrigation waters management for diversification farming and little irrigation promotion.
Vegetable species submersion at retention water site	Recommended measures concern prevention, information and awareness; basic studies and studies about execution of micro-dams should necessary involve a chapter on submersion risks at micro-dams levels. An exhaustive identification of plants species located in zone and to be covered by water plan, should be realized, so as to quantify vegetal resources loss. Compensation trees replanting measures could be devised.
Farming and pastoral surfaces reduction Populations growth around retained water	Integrate basin retention programme in the framework of global land management and dealing for each eligible rural community to such types of activities. In order to put off conflicts due to different user' space interaction, and hydro-agricultural development, users with different interests, (agriculture producers, fishers, breeders), occupation plans approaches should be developed

Agricultural environmental good practices Measures

Seeds quality improvement (seeds production techniques)

- To develop improved seeds characteristics
- To organize seeds improved production and diffusion
- To organize specific inputs provisioning (manure, preservatives) and market production
- To diffuse intensive techniques to improve cereals competitiveness
- To improve harvest and post-harvest operations

Production systems and natural resources base improvement

- Control hydrous erosion with leguminous
- fertility improvement with corridor leguminous plants
- cover plants use
- Struggle against arable soil fertility drop by a better breeding integration
- Soil fertility monitoring
- Research programs on the soils nutrients integrated management
- Research programmes on Sustainable Systems and Improved Production
- Producers training (organic manure, rotation techniques, rotation/ cultures association);
- Anti-erosion techniques dissemination

Sustainable agricultural development of vegetal production

- To control erosion and soil organic reserve fast decrease by soil fertility restoration and soil sustainable management;
- To develop research on technologies which optimize organic fertilization new sources use, accessible and durable;
- To minimize effects of mechanized practices (farm equipments choices and adapted equipment to agro ecologic).

Breeding and pastoral systems sustainable development

- To promote fodder production and to sensitize breeders to animals food;
- To train breeders cattle food conservation;
- To improve the cover zoo sanitary;
- To diffuse improved parents;
- To improve livestock activities cover (organic circulation on lands);
- To define productions importance resulting from pastoral zones in national economy;
- To analyze economic production and pasture systems integration constraints
- To study impact of production systems and resources appropriation modes on pastoral ecosystems and their dynamics;
- To study resources access issues in decentralization context and pastoralism recognition in land legislation;
- To analyze pastoral spaces use and value increasing dynamic processes

Food products quality improvement

- To ensure foodstuffs quality (hygienic conditions; conditioning, transport, storage and processing);
- To privilege setting hazard analysis control critical point system (HACCP)

Biotechnology and biosecurity integration opportunities in research activities

- To use agricultural biotechnology tools to reduce agricultural development constraints;

- To integrate biotechnology in national and regional research networks activities
- To develop a national and regional initiative on biosecurity

Research topics

Vegetal production systems/techniques development and improvement

- Diversification and spreading out of fruit-bearing production;
- Introduction of oil groundnut varieties adapted to zone conditions;
- Development of farm equipment adapted to culture conditions;
- Struggle against parasitic putting under grass and plants;
- Ruminants breeding intensification by stalling and supplementation;
- Development and improvement of agricultural products processing techniques
- Development of production techniques and organic-mineral manure optimization;
- Development of integrated struggle methods against various predators;
- Domestication of forest fruit-lofts;
- Study of main diseases and fruit-bearing cultures predators distribution;
- Establishment of epidemiologic charts;
- Development of techniques to struggle against hydrous diseases;

Livestock productions techniques development and improvement

- Diseases diagnosis and epidemiology monitoring;
- Cattle genetic improvement by open core genetic improvement system;
- Development of a system of selection for the improvement of genetic resistance ;
- Studies for the improvement of the performances of reproduction/survie of the animals;
- Improvement of the productivity of the draft animals;
- Study of fodder systems and adapted techniques of food;
- Development of pastures state diagnosis methods;
- Test of milk conservation and processing techniques.

Techniques study and test for natural resource management improvement

- Improvement of animal organic manure;
- Test of crop and soil protection techniques against wind and hydrous erosion;
- Forest potential characterization and management
- Study of natural forests regeneration techniques;
- Impact study of pesticides use on soil biology and wetlands;
- Study of fallow and alternative systems: incidence on soil fertility;
- Development of methods to fight against water erosion;
- Methods engineering study for salt soil recovery (biological, chemical and physical process);
- Sylviculture and forest settlements management;
- Hydrous conditions effects and soil work on amendments improving effects;

Products processing and conservation methods improvement

- Research for alternative methods to harvests conservation chemical fight ;

- Improvement of personal seed stocks conservation methods

Die organization, operating and performances

- Typology of operating systems;
- Study of flow productions main circuits;
- Analyze and follow technical and economic production constraints;
- Inventory and improvement of storage and conservation traditional processes;
- Study of farming routes and techniques for improving horticultural products conservation aptitudes;
- Inventory and studies of possibilities for processing traditional techniques improvement of local fruit and vegetables

Environmental guideline during execution

The following directions should be respected during works execution:

- Sites should be located in zones distant from water points and sensitive areas
- Regulation of sites occupation (what is allowed or prohibited)
- Conformity with existing laws and regulations
- Hygiene and security in works sites
- Protection of neighbouring properties
- Protection of workers in activities zones
- Soils protection from surface and underground waters, avoid used waters and Polluting elements rejection on soils, surface and underground waters
- Signalisation of works achievement
- Authorisation: seek authorisation permit before works start
- Degradation / demolition of private belongings: inform and put concerned populations aware before any destructive action
- Protection of environment from noise: avoid noise pollution caused to nearby populations
- Protection of the environment against hydro carburant: control their conformity in matters of storage (oils, fuel, hydrocarbon)
- Protect environment against dust and other solid remnants
- Protection of soils, surface and underground waters: avoid spilling polluting elements of all types on these water sources
- Protection of landscape and vegetation
- Wastes management: use containers for wastes, placing them in the proximity of activities zones; then depose hem in authorized places
- Wood exploitation: authorisation of forestry services
- Disturbance of cultural sites: take special and respectful measures about such places located in activities zone

Annexe 11.5 : Résumé des politiques de sauvegardes de la Banque Mondiale

OP 4.01 Environmental assessment	The objective of the policy is to ensure the projects financed by the Bank are sound and sustainable, and decision making be improved through an appropriate analysis of actions and of their potential environmental impacts. This policy is triggered if a project is likely to have environmental risks and impacts (adverse) on its area of influence. OP 4.01 covers the environmental impacts (nature air, water and land); human health and security; physical cultural resources; as well as transboundary and global environmental problems.	Depending on the project, and nature of impacts a range of instruments can be used: EIA, environmental audit, hazard or risk assessment and environmental management plan (EMP).When a project is likely to have sectoral or regional impacts, sectoral or regional EA is required. The EIA is the responsibility of the borrower. In the context of the WAAPP, an Environmental and Social Management Plan was prepared (ESMF), including an Environmental Management Plan (EMP); the ESMF will help assess impacts activities and orient implementation. Specific EIA will be prepared for specific activities.
OP 4.04 Natural Habitats	This policy recognizes that the conservation of natural habitats is essential for long-term sustainable development. The Bank, therefore, supports the protection, maintenance, and rehabilitation of natural habitats in its project financing, as well as policy dialogue and analytical work. The Bank supports, and expects the Borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development.	This policy is triggered by any type of project (including any sub project under sectoral investment regime or intermediary funding) that have the potential to cause some important conversion (loss) or degradation of natural habitats, whether directly (by the construction) or indirectly (by human activities triggered by the les project). In the context of the WAAPP, agricultural activities that could have adverse impacts on natural habitats will be assessed by specific EIA.
OP 4.36 Forests	The objective of this policy is to help borrowers exploit the potential of forests in order to curb poverty in a sustainable manner, efficiently integrate forests in sustainable economic development and protect vital local and global environmental services and forests values. Where forest restoration and plantation are needed in order to achieve these objectives, the Bank helps borrowers in forest restoration activities in order to maintain or develop biodiversity and the operation of ecosystems. The Bank help borrowers in the creation of forest plantations appropriate from the environmental viewpoint and socially beneficial and economically sound in order to help meet the growing forests' needs and services	This policy is triggered each time an investment project financed by the Bank: (i) has the potential to cause health impacts and the quality of forests or the rights and the well being of the people and their dependency level with the interaction with forests; or (ii) aims at bringing some change in the uses of natural forests or plantations. In the framework of the WAAPP, activities that will adversely affect the quality of the forests or bring in some change in the management will not be financed.
OP 4.09 Pest Management	The objective of this policy is to promote the use of biological or environmental control methods and reduce reliance on synthetic chemical pesticides. In Bank-financed agricultural operations, pest populations are normally controlled through Integrated Pest Management (IPM) approaches. In Bank-financed public health projects, the Bank supports controlling pests primarily through environmental methods. The policy further ensures that health and environmental hazards associated with pesticides are minimized. The procurement of pesticides in a Bank-financed project is contingent on an assessment of the nature and degree of	The policy is triggered if procurement of pesticides is envisaged (either directly through the project or indirectly through on-lending); if the project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may lead to substantially increased pesticide use and subsequent increase in health and environmental risks; and projects that may maintain or expand present pest management practices that are unsustainable. In the WAAPP, it has been prepared, as a separated document, a Pest and Pesticides Management Plan which

	associated risk, taking into account the proposed use and the intended user.	take account into aactivities that may require pesticides use.
OP 4.11 Cultural Property	The objective of this policy is the help countries avoid or reduce the adverse impacts of development projects on physical cultural resources. In order to implement such policy, the word "physical cultural resources" means movable and unmovable objects, sites, structures, natural's aspects of landscapes that have an importance form the archeological, paleontoligic, historic, architectural, religious, aesthetic or other. Physical cultural resources could be found in urban or rural areas, as well as both in the open air, under the ground and in the sea also.	Under the WAAPP, activities that are likely to have adverse impacts on cultural property will not be financed.
OP 4.10 Indigenous populations	The objective of the policy is (i): ensure that the development process encourages full respect of dignity, human rights and cultural features of indigenous people; (ii) ensure they do not suffer from the detrimental effects during the development process; and ensure indigenous people reap economic and social advantages compatible with their culture.	The policy is triggered when the project affects indigenous people (with the characteristics described in OD 4.20 para (5) in the area covered by the project There is no indigenous populations in Senegal, according to OP 4.10
OP 4.12 Involuntary Resettlement	The objective of this policy is to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs. Furthermore, it intends to assist displaced persons in improving their former living standards; it encourages community participation in planning and implementing resettlement; and to provide assistance to affected people, regardless of the legality of title of land.	This policy is triggered not only if physical relocation occurs, but also by any loss of land resulting in: relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood, whether or not the affected people must move to another location. WAAPP's activities do not require population resettlement.
OP 4.37 Dams security	The objectives of this policy are established as follows: For new dams, ensure the design and supervision are done by experienced and competent professionals; for existing ones, ensure that any dam that can influence the project performance is identified, an assessment of the dam security conducted, and the other required safety measures and corrective measures implemented.	The policy is triggered when the Bank finances (i) a project involving the building of a big dam (15 m of height or more) or a dam presenting great hazard; and (ii) a project depending on another existing dam. For small dams, general safety measures designed by qualified engineers are appropriate. In the WAAPP, no funds will be available for dams building or renovation
OP 7.50 Projects implemented on international waterways	The objective of this policy is to operate in such a way as the projects financed by the Bank affecting the international watercourses do not affect: (i) the relationships between the Bank and her borrowers and between States (members or non members of the Bank); and (ii) the international watercourses are used and efficiently protected? The policy applies to the following project types: (a) hydro electric, irrigation, flood control, drainage, water collection, industrial and other projects involving the use or potential pollution of international watercourses, and (b) detailed studies for project design under item (a) above quoted including those carried out by the Bank in her position of implementation agency or else.	This policy s triggered if (a) A river, a channel, lake or any other watercourse located between two states, or a river or a surface river discharging into a river located in one or two states, be they members of the World Bank or not (b) a river die which is a component of a watercourse descried under item (a); recognized to be a necessary communication channel between the ocean and the other states, and any river discharging into these waters and (c) a bay, strait, or channel bound by two states or more or flowing in an unknown state. In the WAAPP, agricultural activities that are likely to have an impact on international waterways will not be financed. In all cases, the Basin Organisations will be informed.
OP 7.60 Projects located in contentious zones	The objective of this policy is to operate in such a way as the problems experienced by projects in contentious areas are tackled as early as possible so that: (a) the relationships between the Bank and member countries are not affected; (b) the relationships between the borrower and neighbors are not affected; and either the Bank or concerned	This policy is triggered if the project proposed is located in a «contentious area» The questions to be asked are particularly the following ones: Is the borrower involved in these conflicts concerning an area? Is the project located on a conflict area? Is a component of the project that was financed or likely to be financed part located in a conflict area?

	countries do not suffer any damage because of this situation.	In the WAAPP, activities will not take place in areas of conflicts

12. General Annexes

12.1. Persons met

NAME AND SURNAME	FUNCTION	ADDRESS
Burkina FAO		
1. Dao Bassiaka	President of Burkina Faso Farmers Association Federation (FEPABE)	FEPABE/ Ouaga
2. Sawadago Ouedraogo Mariam	General Secretary	FEPABE/ Ouaga
3. Traoré Véronique	Accounting	FEPABE/ Ouaga
4. Birba Athanasse	member	FEPABE/ Ouaga
5. Gansonré Marc	member	FEPABE/ Ouaga
6. Zongo Moumini	Accounting	FEPABE/ Ouaga
7. Ouedraogo Windimpoui	Organization Responsible	FEPABE/ Ouaga
8. badiort Ouattara	General Director General Directorate of Life being Improvement (DGACV/MECV)	DGACV/MECV
9. Denis TOE	Environmental Assessment Director	DGACV/MECV
10. Athanasse Ouedraogo	Life Being Director	DGACV/MECV
11. Désiré Ouédraogo	POPS Focal Point	DGACV/MECV
12. Coulibaly Mamadou	Director Vegetable Production and Conditioning	DGPV/Ministry of Agriculture
13. Kaboré Etienne	Director	DGPV/Ministry of Agriculture
14. Toe Jean Bassama	Director of Dissemination services	DGPV/Ministry of Agriculture
15. Traoré Soungalou	Entomologist	Ministère Santé
16. Gnissa Traoré	DG/INERA	INERA
17. Michel SEDOGO	Research Director, President TSC/WECARD	CNRST
Ghana		
18. Dr. Felix NYOKO	Scientific Adviser	CSIR
19. Dr ; Joseph COBBINA	Scientific Adviser	CSIR
20. Daniel AGGREY	Principal Programme Officer /EPA	EPA
21. John A. PWANWANG	Director /Pesticide Registrar	EPA
22. John A. Dziwornu	Coordinator of Ghana Natural Association of farmers and fisheries (GNAFF)	GNAFF
23. kiofi Brobbey KYEI	Director	AGLOW FARMS
24. Joseph FAALONG	Coordinator of AgSSIP	MOFA
25. Vesper SUGLO	Director , Plant Protection and Regulation Services Directorate	MOFA

Mali		
26. Abdourahamane SIDIBE	Chief Division Legislation and plant health control	DNA
27. Amadou CISSE	Deputy General Director	IER
28. Mme Diarisso Niamoye	Scientific Adviser /Pesticides	IER
29. Abdoulaye Yaya Maïga	Scientific Adviser -Environmentalist	IER
30. Adama Traoré	CNRA Executive Secretary	CNRA
31. Clément Daniel	Director	DNA
32. Ali Abdou GADO	Deputy General Director	OPV
33. Abdoulaye CISSOKHO		OPV
34. Bouire SOUALIKA	Entomologist	OPV
35. Abdoulaye Touré	Coordinator PASAOP	PASAOP
36. Cheikhna SIDIBE	Director	DNACPN
37. Boubacar DIAKITE	Deputy Director	DNACPN
38. Abdoukarim Makalou	Chief Division Study and Planning	DNACPN
39. Famoussa BAGAYOKO	Chief section management of EIA procedures	DNACPN
40. Gaoussou Dembélé	Charged of environmental statistical	DNACPN
41. Idrissa Traoré	Charged of PNIR monitoring	DNACPN
42. Siriman Kanouté	Programme officer	DNACPN
43. Bouna SEMEGA	trainee	DNACPN
44. Keffa Diarra	Trade union of cotton plants and Food of Mali	SYCOV
45. Tahirou Bamba	Trade union for cotton and cereal cultures value increasing (SYVAC)	SYVAC
46. Natha Diarra	Technical Adviser	SYCOV/SYVAC
47. Fousseyni TRAORE	Secretary-general Permanent Parliament of the rooms of agriculture of Mali (APCAM)	APCAM
Sénégal		
48. Taïb Diouf	General Director /ISRA	ISRA
49. Demba Farba Mbaye	Searcher, Mission Responsible	ISRA
50. Cheikh LO	Searcher, Vegetal Production	ISRA
51. Victor Emole Coly	Searcher, UNIVAL responsible	ISRA
52. Ndaiga Mbaye	Searcher, Vegetal Production, CT/DG	ISRA
53. Jean Pierre Ndiaye	Pedologist	ISRA
54. Daouda DIA	Coordinator of PASOP	PSAOP
55. Magaye Thioune	Chief Division/ Agriculture Directorate (DA)	DA
56. Elimane BA	Chief Division charged of EIA/DEEC	MEPN/DEEC

12.2. Bibliography

- Environmental Assessment Guide Book Vol.1: policy, procedures and intersectorial issues: World Bank / francophone Secretary of In International Association for Impacts Evaluation. Montreal 1999
- Environmental Assessment Book Vol.2: Sectorial guide lines. World Bank / francophone Secretary of International Association for Impacts Assessment, Montreal 1999
- World Bank's operational Guide Bank – Operational Policies. World Bank , Washington 1999

Burkina Faso

- Operational Policies. Operational Book (Guide) of World Bank
- Preparation of support program for agro-sylvo-pastoral channels (PAFASP). Targetting of channels and intervention zone of PAFASP, final version. Ministry of Agriculture, of Hydraulics and animal resources (MAHRH) September 2005 (Salifou Konaté).
- Environment Assessment pilot project about agricultural exploitation. Republic of Senegal, September 1997.
- Project about community based biodiversity conservation in strategic transformation zones of parks W. Arly and Pendjari (WAP), Benin, Burkina, Niger. EIS, final version, executed by Pr Robert Kassi of EDIC
- Law N°014/96 ADP about farming and land reorganisation in Burkina
- EIS of Support Project for agro-sylvo-pastoral channels (PAFASP).
- eography Bureau of Burkina Studies. Researches. Support. Advice and training:
- Geographic Department of Burkina Surveys, January 2006
- Environment and Social Management framework (CGES). Community rural development (DRC), august 2003.
- Report about environment in Burkina Faso, 1st edition march 2002

Ghana

- An Agenda for Sustained Agricultural Growth and Development (1996-2000)
- EPA (1997) Draft State of the Environment Report - Chapter on Land Management and Agriculture
- EPA (1999) Draft National Initial Communication on Climate Change for Ghana.
- EPC (1991) Ghana Environmental Action Plan Volume 1
- MOFA (1995) Development of a New Agriculture Sector Strategy for Ghana -
- MOFA (1999) strategic environmental assessment of Program Preparation Document on the Agricultural Services Sector Investment Program (AgSSIP) Main Report and Annexes 11, 6A

Mali

- Mali Republic, Support Project for Rural Communities (PACR). ESMPV
- Collection of Legislative and Regulatory texts about forestry, faunic and halieutic resources management. Ministry of environment, National Direction of Nature Conservation, September 1999

- National Environment Action Plan and National Actions Programs of the Convention against desertification (PNAE / PAN – CID): Ministry of Environment. Volume I environment diagnosis, 1998
- National Environment Action Plan and National Actions Programs of Convention against desertification (PNAE / PAN – CID). Ministry of Environment. Volume II action programs 1998.
- Law n°01 – 020 of may 30th, 2001 about pollution and troubles, of Republic 2001
- Law n°95 – 050 about principles of constitution and management of territorial communities, Presidency of the Republic, 1995
- Decree n98 – 415 / PM – RM of 24 / 12 / 98 fixing the Institutional Framework of Environment Issues Management, Premature / General Secretary, 1998.
- Process II Document, dec 2004 . DNS. Statistics 2005, May 2006.
- Demographic and Health survey of Mali (EDSM).
- Survey about poverty eradication and development of sustainable means of existence in mines communities of Mali. Anglais Centre and of Development Policy Formulation: PNUD, October 2002.

Senegal

- Mbaye Mbengue Faye, ESMF of PDMAS, Ministry of Agriculture and Hydraulics / Word Bank, July 2005.
- Political Resettlement framework. $PSAOP_2$, temporary report August 2005
- Reflexion workshop: "execution bill of phase 1 of PSAOP Livestock breeding sector and formulation of activities program project (2^{nd} phase).
- Synthesis document: situation and perspectives of breeding sub-sector. Ministry of cattle breeding Nov. 2003
- Environment Code: Ministry of Youth, Environment and Public Hygiene Republic of Senegal. Dakar, 2001.
- Document in Environment and Natural resources of Senegal. Ministry of Environment and Nature Protection. Dakar, 1998.
- National Strategy and Action for biodiversity conservation. M.E and N.P Dakar, 1998.
- National Monography on Biodiversity in Senegal. M. E. and NP Dakar
- National Action Program of Struggle against Desertification, ME and NP / SP – CONSERE – Dakar 1997.
- Doucouré D. Survey about implementation of national action plan of biomedical wastes management. Senegal. April 2005 – Consultant
- Struggle against poverty document (DSRP). Esam II. (DPS 2002).
- Law n°2001 – 01 of January 15^{th} 2001 about Environment Code
- Law n°64-46 of 17^{th} June 1964 about national domain
- Law n°72 – 02 of Fev. 1^{st} 1972 modified
- Law n°96 – 06 of March 22, 1996 about competences transfer to regions townships and rural communities.
- Law n°98 – 03 of January 8^{th} 1998 about Forestry Code.
- Agricultural and food research bill in Senegal. 1964-2004; ISRA / ITA / CIRAD.
- Annual report 2002-2003 of technical and technological innovations for production increase ISRA.
- Environmental Assessment of ISRA Strategic Plan. MA / ISRA – CSE 1996
- Annual Report CORAF / WECARD. 2005

12.3. Terms of References

1. Introduction, context of the study and Description of the project components

2. Object of the consultation

Pursuant to operational directives of the World Bank, the project is classified in "B" category of projects subject to prior environmental evaluation procedure. The realisation of the project activities will certainly bring benefits to local populations but could generate in some cases negative effects if measures are not taken at environmental and social level. The project will have to take into account those negative predictable effects in the planning, realisation and implementation of those investments.

The study which will be conducted is a sub regional study and will concern firstly the following countries: Burkina Faso, Ghana, Mali, and Senegal. It aims at ensuring the respect of statutory and legal national provisions in environmental evaluation matters on the one hand and taking into account the World Bank safeguard policies on the other hand. That environmental evaluation should permit to prepare a plan cadre of environmental and social management so as to prevent the potential negative effects but also to consolidate in a sustainable way the positive impacts which would generate the project activities implementation. The prior environmental evaluation shall then consolidate the conception of the project by ensuring optimal contribution on environmental, social cultural, human and economic aspects.

3. ESMFP objectives

The Environmental and Social Management Framework (ESMF) is conceived as being a sorting mechanism for environmental and social impacts of investments and activities unknown prior to appraisal. It presents as a practical tool to determine and evaluate environmental and social future impacts of sub projects to be funded by the programme. To that end it serves as guide to the elaboration of environmental and social impacts studies specific to sub projects whose number, sites and environmental and social characteristics yet remain unknown. In addition, ESMF shall define the monitoring framework and surveillance as well as the institutional provisions to take during programme activities implementation to attenuate unfavourable environmental and social impacts, to suppress or reduce them to acceptable levels.

4. Mandate of the consultant/design office

The consultant will be charged to collect and analyse the information and basic data to evaluate negative and positive impacts, direct or indirect of the project on physical and human environment, and to prepare a general plan of environmental management. It will be based on ;(i) existing documents, notably ESMF developed in the context of other projects in execution in each of the four countries;(ii) consultations carried at relevant institutions level of each of the four countries to elaborate only one ESMF which will be published once approved in each of the four countries.

More specifically the consultant's mission will be on the following aspects:

- **Environmental problematic in the four countries:** make a synthesis of recent documents available to present a brief description and analysis of principal environmental problems in the four countries as well as the causes of those problems and the Government's responses to those causes.

  Administrative, Statutory, Legal and Political Framework; present a synthesis of the national policy of environment protection in the four countries, as expressed in the key document of policies and other sources, and present the main statutory and administrative texts relating to environment and natural resources management and the procedures of environmental and social impact studies; recommend appropriate measures to reinforce the political, legal and statutory framework, mainly the procedures of the EIA.

- **Institutional Framework:** present a description of the institutional structure (at national, regional, communal and local level) established by the different Governments for the management of the environment and natural resources and in particular for the conduct of EIA; evaluate the capacities of technical frameworks at each institutional level to perform its management functions, monitoring and environmental evaluation ; recommend appropriate measures to reinforce the institutional framework of environmental and social safeguard.

- **Consultation Process:** Evaluate participatory processes (at central level, provincial, communal and local) and the participation of beneficiaries(civil society, public institutions, private sector) in project's actions implementation ; recommend appropriate measures to reinforce consultation processes, mainly specific EIA procedures conduct to sub-projects, diffusion, implementation and monitoring of environmental and social management plans.

- **Environmental and Social Management Framework Plan (ESMFP):** Prepare an ESMFP type to ensure that project is pursuant to policies and regulations of countries concerned and World bank's safeguard policies.

- **Environmental Evaluation:** specify the process of environmental evaluation in pursuance to existing procedures for specific EIA to different sub projects; Identify the roles and responsibilities of Government institutions and other organisations involved(at central and decentralised level in each of the four contexts, develop an environmental index card which will identify the potential impacts of sub projects; Develop a matrix of predictable negative impacts for tpe activities of the project, with recommendations for good practices, prevention actions and appropriate attenuation measures.

- **Monitoring and Evaluation**: Propose an environmental and social impacts monitoring and evaluation process/framework for investments to be funded by the project which will integrate in project monitoring and evaluation system. Identify several environmental and social key indicators which will be used to evaluate project impacts.

- **Capacities Reinforcement:** Propose a training programme in environmental evaluation and management to reinforce capacities of regional and communal executives as well as design offices and non government basic organisations.

- **Budget** Estimate the costs of ESFFP implementation for the project, precise the additional costs proposed, as well as costs of the programme related to institutional capacities reinforcement, environmental and social impacts monitoring process and evaluation.

- **Sequencing of the consultation:** The study will be realised under supervision of WAAPP coordination preparation and will be in tight collaboration with national structures in charge of environmental assessment issues, research institutions, producers' organisations and private active relevant operators. The methodology presented by the consultant and approved by the commander of the study will be the one which will be applied.

- **Reports:** A provisional report will be deposited to the coordination of the project preparation, on paper format in ten copies and on digital support, later 20 days after reception by the consultant of the agreement notification. That report will be submitted for observations to the World bank. That report will as well be distributed to the principal actors concerned (Governments, Technical and financial partners, producers organisations, private operators) during a workshop.

  Commentaries shall reach the consultant later a week after reception of the provisional report by the coordination of WAAPP. The final report integrating all the commentaries must be deposited to the coordination of the preparation of WAAPP, on paper format in 15 copies and on digital support within 10 days after reception of observations.

  The final report shall be concise and centred on context, information collected analysis the conclusions and recommended actions with synthesis charts support on data collected and appropriate references.
  The General plan of environmental management will comprise all the correction measures envisaged in the project and those proposed after this study to eliminate or attenuate or compensate the damageable consequences of the project on environment, the institutional arrangements the distribution of roles and responsibilities, the execution planning of the different measures, an estimation of execution costs of corresponding measures;
  The monitoring and evaluation programme which presents environmental and social realistic indicators allowing the control and monitoring of implementation progress of ther programme of environmental management and on the efficiency of correction measures applied, a technical description of proposed duties(type, frequency and interpretation); the investment and exploitation costs; the institutional aspects(roles, responsibilities, reports); required trainings;
  The programme of reinforcement of capacities which presents the needs in reinforcement of institutional capacities and technical training for the management and environmental evaluation as well as the estimates of relating costs

Content and Plan of Report

a) List of acronyms

b) Analytical summary in English

c) Background and context
d) Introduction describing ESMFP objective, principles and the followed methodology
e) Description of the project emphasising the project components; the target zones; the coordination devices and implementation of the micro project
f) Light presentation of natural milieu conditions (physical and biologic),of human social economic and cultural milieu in the intervention zone of the project.
g) The political judicial statutory and administrative as well as an outline of safeguard environmental policies applicable to the project as well as a discussion of required conditions by the different policies.
h) The institutional framework detailing the institutional provisions relating the management of the project cycle. It is about the sorting mechanism, selection of sub projects as well as the process enabling to launch the environmental and social specific impacts evaluations(limited or furthered) of sub projects, review, approval and diffusion of evaluation reports;
i) Description of capacities reinforcement, training and technical assistance if need be, necessary to the implementation of ESMFP;
j) The monitoring and evaluation framework with type indicators, monitoring schedule and the responsible parties to the implementation of this plan
k) Budget for implementation of ESMFP; and
l) Technical annexes helping to implement ESMFP;

- Form/Process of selection of sub projects;
- chart of environmental control comprising the impact environmental and social chart of the micro project and the attenuation measures;
- a form of environmental review
- a type matrix presenting the components of of environmental and social management plan
- References

- **Consultant profile and qualification of experts:** The consultant shall have confirmed experience in environmental evaluation of projects and programmes of Rural Development in sahel countries; and good knowledge of procedures and operational policies of the World Bank. Consultants shall have very good command of French which is the working language. The profiles of the key staff of the consultant shall comprise senior international experts and nationals with the experience and qualifications below:

  A specialist in environmental evaluation of projects submitted to funding of the World Bank (strategic evaluation) with at least ten(10) years experience in that domain and solid expertise on rural development problematic in sub-sahara Africa. He/She should as well be familiar with public health questions and norms of quality, having solid experience in the analysis of production agro sylvo pasture production systems respecting environment and human health.

  The consultant will be chosen on the basis of restrained lists by the World Bank

- **Duration of the study:** The consultation will take place on 20 to 25 days from the date of signature of the contract, on the grounds that most information exists in EIA reports in each country. That period covers the preparation, the conduct of the

study, the dissemination of results and the writing of consolidated reports of the mission results