

Document of  
The World Bank

PROJECT BRIEF

ON A

PROPOSED GRANT FROM THE  
GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF USD 5.4 MILLION

TO THE

WAEMU

(ON BEHALF OF GOVERNMENTS OF  
BENIN, BURKINA FASO, MALI, SENEGAL AND TOGO)

FOR A

PROPOSED WEST AFRICA REGIONAL BIOSAFETY PROJECT

{May 17, 2006}

## CURRENCY EQUIVALENTS

(Exchange Rate Effective {January 2006})

Currency Unit  
CFAF... = US\$1  
US\$... = SDR 1

FISCAL YEAR  
January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

BCH	Biosafety Clearing House
CAS	Country Assistance Strategy
CILSS	Comité Permanent Inter Etat de Lutte contre la Sécheresse au Sahel
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
CPB	Cartagena Protocol on Biosafety
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization
FDA	French Development Agency
GEF	Global Environment Facility
GMO	Genetically Modified Organism
GRET	Research and Technological Exchange Group
IA	Implementing Agency
IDA	International Development Agency
INSAH	Institut du Sahel
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IITA	International Institute of Tropical Agriculture
IPR	Intellectual Property Rights
LMO	Living Modified Organism
MOU	Memo of Understanding
NARI	National Agricultural Research Institution
NBA	National Biosafety Agency
NBF	National Biosafety Framework
NCA	National Competent Authority
NGO	Nongovernmental Organization
NPC	National Project Coordinator
OECD	Organization for Economic Co-operation and Development
OP	Operational Program
PBS	Program for Biosafety Systems
PDO	Project Development Objective
PPP	Private Public Participation
RPMU	Regional Project Management Unit
SDC	Swiss Development Corporation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

USAID U.S. Agency for International Development  
WAEMU West African Economic and Monetary Union  
WECARD West and Central African Council for Agricultural Research and Development

Vice President:	Gobind Nankani
Country Manager/Director:	Mark Tomlinson
Sector Manager:	Mary Barton-Dock
Task Team Leader:	Jean-Christophe Carret

**AFRICA**  
**Proposed West Africa Regional Biosafety Project**

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BENIN, BURKINA FASO, MALI, SENEGAL, TOGO

PROPOSED WEST AFRICA REGIONAL BIOSAFETY PROJECT

PROJECT BRIEF

AFRICA

AFTS3; AFTS4

Date: May 17, 2006 Country Director: Mark Tomlinson Sector Manager/Director: Mary Barton-Dock Project ID: P096058 Lending instrument: GEF Grant GEF Focal Area: Biodiversity Supplement Fully Blended: NA	<u>Team Leader:</u> Jean-Christophe Carret <u>Sectors:</u> Crops, General Agriculture /Fisheries /Forestry, Agricultural Extension and Research, Information Technology <u>Themes:</u> Biodiversity, Rural services, Nutrition and Food, Rural Nonfarm, Environmental Policy				
<b>Project Financing Data:</b>					
<input type="checkbox"/> Loan <input type="checkbox"/> Credit <input checked="" type="checkbox"/> Grant <input type="checkbox"/> Guarantee <input type="checkbox"/> Other:					
<u>For Loans/Credits/Others:</u> Total Bank financing (US\$m.): 2.40 Proposed terms:					
<b>Financing Plan (millions of US\$)</b>					
<b>Source</b>	<b>Local</b>	<b>Foreign</b>	<b>Total</b>		
GLOBAL ENVIRONMENT FACILITY	(*)1.4	(*)4.0	(*)5.4		
IDA	0.4	2.0	2.4		
WEST AFRICA REGION GOVERNMENTS	1.5	0.3	1.8		
ALREADY INVESTED	2.5	2.1	4.6		
IDENTIFIED FINANCING	1.7	5.0	6.7		
TO BE FINANCED	1.1	2.3	3.4		
Total	8.6	15.7	24.3		
(*) does not include Block B grant					
<b>Grant recipients:</b> Benin, Burkina Faso, Mali, Senegal, Togo					
<b>Proposed Responsible Agency:</b> West African Economic and Monetary Union (WAEMU) Address: 380, rue Agostino Neto – 01 BP 453 Ouagadougou 01 – Burkina Faso Contact Person: Malick Diallo Tel: 226 50 31 88 73   Fax: 226 50 31 88 72   Email: <a href="mailto:malick.diallo@uemoa.int">malick.diallo@uemoa.int</a>					
<b>Project implementation period:</b> 4 years <b>Expected effectiveness date:</b> January 1, 2007 <b>Expected closing date:</b> December 31, 2010					
<b>GEF Estimated disbursements (Bank FY/millions of US\$)</b>					
FY	2007	2008	2009	2010	2011
Annual	0.4	1.1	1.9	1.7	0.5
Cumulative	0.4	1.4	3.3	5.0	5.4

Does the project depart from the Country Assistance Strategy (CAS) in content or other significant respects? <b>Ref. PAD A.3</b>	<input type="radio"/> Yes <input type="radio"/> No
Does the project require any exceptions from Bank policies? <b>Ref. PAD D.7</b> Have these been approved by Bank management? Is approval for any policy exception sought from the Board?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> No
Does the project include any critical risks rated “substantial” or “high”? <b>Ref. PAD C.5</b>	<input type="radio"/> Yes <input type="radio"/> No
Does the project meet the Regional criteria for readiness for implementation? <b>Ref. PAD D.7</b>	<input type="radio"/> Yes <input type="radio"/> No
<b>Project development objective Ref. PAD B.2, Technical Annex 3</b> The project development objective is to accompany the ongoing Living Modified Organisms (LMOs) LMOs development dynamic in the agriculture sectors by implementing biosafety regulatory frameworks which will ensure field trials and, if proven safe, commercial release of transgenic cotton and other crops in the beneficiary countries. This objective will be achieved through the setting up of an enabling regulatory environment, capacity building and public outreach to meet the requirements of the Cartagena Protocol on Biosafety (CPB) that all five countries have ratified and other international obligations relevant to biosafety. The project will also build a regional observatory and Biosafety Clearing House (BCH) on modern biotechnologies and monitor the impacts of their introduction especially in the cotton sector.	
<b>Global environment objective Ref. PAD B.2, Technical Annex 3</b> The global environment objective of the project is to protect regional biodiversity against the risks associated to introduction of LMOs that could be released in the environment. This will be achieved through the development of common science-based, and in compliance with international, risk assessment and management methods in the approval process of modern biotechnologies of LMOs. The project will initially benefit the WAEMU region but offers a potential for scaling up at the ECOWAS level.	
<b>Project description</b> [one-sentence summary of each component] <b>Ref. PAD B.3.a, Technical Annex 4</b> The project has three component: (a) Adapt and disseminate regional methodologies to assess and manage risks; (b) Implement national biosafety regulatory frameworks; and (c) Set up biosafety and IPR legal frameworks among beneficiary (WAEMU) countries and monitor the impacts for the introduction of modern biotechnologies in the cotton sector in the WAEMU space.	
<b>Which safeguard policies are triggered, if any? Ref. PAD D.6, Technical Annex 10</b>	
<b>Safeguard Policies Triggered by the Project</b>	<b>Yes                      No</b>
Environmental Assessment (OP/BP/GP 4.01)	<input checked="" type="checkbox"/> <input type="checkbox"/>
Natural Habitats (OP/BP 4.04)	<input type="checkbox"/> <input checked="" type="checkbox"/>
Pest Management (OP 4.09)	<input type="checkbox"/> <input checked="" type="checkbox"/>
Cultural Property (OPN 11.03, being revised as OP 4.11)	<input type="checkbox"/> <input checked="" type="checkbox"/>
Involuntary Resettlement (OP/BP 4.12)	<input type="checkbox"/> <input checked="" type="checkbox"/>
Indigenous Peoples (OD 4.20, being revised as OP 4.10)	<input type="checkbox"/> <input checked="" type="checkbox"/>
Forests (OP/BP 4.36)	<input type="checkbox"/> <input checked="" type="checkbox"/>
Safety of Dams (OP/BP 4.37)	<input type="checkbox"/> <input checked="" type="checkbox"/>
Projects in Disputed Areas (OP/BP/GP 7.60)*	<input type="checkbox"/> <input checked="" type="checkbox"/>
Projects on International Waterways (OP/BP/GP 7.50)	<input type="checkbox"/> <input checked="" type="checkbox"/>

\* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

Significant, nonstandard conditions, **if any**, for: ***Ref. PAD C.7***

Board presentation: October 2006

Grant effectiveness: January 1, 2007

Covenants applicable to project implementation: to be determined by appraisal

## **A. STRATEGIC CONTEXT AND RATIONALE**

### **1. Country and sector issues**

1. The cotton sector plays a critical role in the economies of the West African Economic and Monetary Union (WAEMU), especially in Benin, Burkina Faso, Mali, Senegal, Togo (the five beneficiary countries) and Côte d'Ivoire. All of them except Côte d'Ivoire will be beneficiaries of this project. In total, 12 million farmers are dependent upon the cotton sector for their livelihood in the WAEMU region, and the performance of the sector is key for economic growth and for determining the prevalence and level of poverty. These countries were able to gain market share in cotton over the past three decades, but falling prices and increasing market pressures make it important for them to find ways to improve their competitiveness and seek more favorable trade conditions.

2. Mainly driven by insect resistance to chemical pesticides, Burkina Faso with private sector support has engaged for the last three years in “regulatory”<sup>1</sup> field testing of transgenic cotton. Scientists and government officials in Mali and Senegal, and to some extent in Benin and Togo would like to start field trials too, for transgenic cotton and also for other crops, both food and cash crops. The plant science industry which has already invested in Burkina Faso, is also keen to move further in the cotton belt, in Mali and Senegal first, then in Benin and Togo at a later stage. All parties, Burkina Faso included, have expressed the need for biosafety regulatory and safeguards mechanisms that are not in place for the moment, to move forward and ensure a safe introduction of LMOs that will be released in the environment.

3. In this context, the Cartagena Protocol on Biosafety (CPB) invokes the application of precautionary principles that seeks to contribute to the safe transfer, handling, and use of transgenic organisms, otherwise known as living modified organisms (LMOs). To comply with the CPB and global trade norms, signatory countries must establish a national regulatory authority that balances the opportunities and perceived risks from biotechnology, based on national technical and managerial entities that are guided by protocols for environmental, and food and feed safety.

4. At the national level, the five beneficiary countries involved in this project have ratified the CPB.<sup>2</sup> All five beneficiary countries have participated in projects funded by the GEF and implemented by the United Nations Environment Programme (UNEP) to develop National Biosafety Frameworks (NBFs).<sup>3</sup> In this regard, inter-ministerial biosafety committees have been created by the UNEP-GEF projects for policy decision making and preparation of NBFs.

5. At the sub-regional level, biosafety is entering the policy arena through sub-regional economical organizations such as ECOWAS (Economic Community of West-African States) and the Permanent Inter-State Committee for Drought Control (CILSS). Initiatives have commenced in the research and technical sector, in particular through the West and Central African Council for Agricultural Research and Development (WECARD) and the Sahel Institute (INSAH), a specialized arm of the CILSS. WECARD has published a biotechnology and biosafety action plan while INSAH is working on a regional seed regulatory system.

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<sup>1</sup> As opposed to “show case” trials which are not for approval purposes

<sup>2</sup> Burkina Faso (November 2003), Mali (September 2003), Benin (May 2005), Togo (September 2004), and Senegal (January 2004) are Parties to the Cartagena Protocol on Biosafety (CPB).

<sup>3</sup> See <http://www.unep.ch/biosafety/> for more detailed information.

6. Within the francophone countries particularly through WAEMU<sup>4</sup>, another sub-regional entity, many efforts on the development and promotion of common regulatory framework in the agricultural and environmental sectors have been undertaken. WAEMU recognized the strategic place of agriculture in the economy of its member countries, and adopted a common agricultural policy<sup>5</sup> in December 2001 that aims primarily at achieving food security, strengthening the common market of agricultural products, and improving the livelihood of producers. On the environmental side, a common policy<sup>6</sup> is being prepared and will be examined by the Head of State Council at the end of 2006. As a part of this process, WAEMU intends to launch an initiative on regional biosafety frameworks and has created a budgetary line for 2006.

## **2. Rationale for GEF/Bank involvement**

7. The sub-region's technical and institutional capacities in biosafety remain weak, especially in key areas relating to risk assessment; monitoring and enforcement of biotechnology research and transgenic field trials, public information and participation, and laboratory equipment (see Table 1, Annex 1 for more details). The technical and scientific knowledge and skill of researchers and enforcement agencies, as well as the quality of the facilities available to them, are lower compared with the average level available in the developed world.

8. Without support from the GEF, the countries are not likely to come together to undertake activities such as designing safeguards framework that will ensure a safe introduction of LMOs that will demand international expertise, but that provide regional and global benefits by protecting biodiversity from gene/pollen flow or invasiveness.

9. The establishment of national biosafety framework has already started through UNEP/GEF-funded projects. Moving beyond this stage into further design, adoption and implementation is a challenging task but one that can potentially be rewarding in terms of protection of biodiversity while reducing the use of pesticides, increasing agriculture productivity, food security and competitiveness in international trade.

10. GEF seeks diversification of implementation agencies (IA) and has welcomed the World Bank to implement this regional project. The Bank is already the IA for GEF on two capacity-building projects related to NBF pilot projects in Colombia and India. It will be the implementing agency for the proposed Regional Biosafety project in Latin America and the Caribbean Region, with participation from Brazil, Colombia, Costa Rica, Mexico and Peru.

11. The World Bank with its broad experience in bringing together the appropriate partners in providing expertise and technical support related to pertinent policy issues (agriculture, environment, trade, intellectual property rights, science and technology, and international convention compliance) is the appropriate development institution. Its environmental and social safeguards and fiduciary frameworks make it the relevant institution which could support the stakeholders, accompany the ongoing dynamic and mainstream sustainable arrangements for implementation of risks assessment and management.

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<sup>4</sup> The eight WAEMU countries are Benin, Burkina Faso, Mali, Senegal, Togo, Côte d'Ivoire, Niger, and Guinea Bissau.

<sup>5</sup> Acte additionnel n° 03/2001 portant adoption de la politique agricole de l'UEMOA.

<sup>6</sup> Politique Commune d'Amélioration de l'Environnement.

12. The World Bank has also been strongly involved for many years in the agricultural and rural sector in most of the West African countries and undertook a series of biosafety-related studies<sup>7</sup>. In Mali, Burkina Faso and Senegal, the World Bank is implementing important projects and policy reforms on agricultural diversification, research and extension. Its involvement also includes institutional reforms, support to producer organizations, strengthening of nascent food supply chains, and export promotion for agricultural products (see Annex 2). Through this experience, the Bank has developed constructive relationships with many of the governments and stakeholders that will participate in the project.

### **3. Higher level objectives to which the project contributes**

13. At the regional level, the project is in line with the stated biotechnology and biosafety action plan prepared by ECOWAS, namely, that successful application of biotechnology to agriculture in the ECOWAS region requires increased capacity at the national and sub-regional levels, as well as in the biotechnology and biosafety areas.

14. The proposed project will enhance the existing harmonization of agricultural and environmental policy of WAEMU (see annex 1 for more details) and help coordinate the biosafety initiatives with other multilateral and bilateral organizations, such as the Food and Agriculture Organization (FAO) and UNEP, USAID, the French Ministry of Foreign Affairs and the Swiss Development Corporation (SDC).

15. This project fits into each national government's strategy to reduce poverty based on the stated objectives of the Country Assistance Strategy (CAS) of the respective project countries: Benin, Burkina Faso, Mali, Senegal, and Togo. According to these strategies, agricultural growth is considered the engine of economic growth and a prominent feature of poverty reduction strategy. One of the major challenges to be addressed is how to achieve accelerated productivity through the diffusion of technology while giving priority to sustainable natural resource management and protection of biodiversity (see Annex 1 for details).

16. The project will contribute to the goals and strategic priorities of the GEF operational program. This project aims to improve the participating countries' capacities to handle issues concerning the safe and sustainable import and use of transgenic crops and products that contribute to the quality and health of the global environment. Thus, the project fits within the GEF focal area on Biodiversity and the GEF Operational Program (OP) on Conservation and Sustainable Use of Biological Diversity Important to Agriculture (OP13). The proposed regional approach in this project is also consistent with the GEF Biosafety Strategy<sup>8</sup> and GEF Report<sup>9</sup> which promote sub-regional cooperation as an effective means for information sharing and harmonization of legal frameworks to maximize the use of institutional, financial, technical and human resources in the region.

17. Moreover, the project fits within GEF Biodiversity Strategic Priority No. 3 on capacity building for the implementation of the CPB. The Project Development Objective is to

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<sup>7</sup> "Biosafety Regulation: A Review of International Approaches," The World Bank. April 2003; "Briefing Paper for World Bank Management: Biosafety and Capacity Building 2001"; and "African Agriculture and Biotechnology – Assuring Safe Use While Addressing Poverty 2003."

<sup>8</sup> GEF/C.27/12 dated October 12, 2005, at paragraph 24 (a).

<sup>9</sup> See GEF Report, "Final Draft of the Evaluation on GEF's Support to the Cartagena Protocol on Biosafety," November 1, 2005, pg. 30.

implement biosafety regulatory frameworks through strengthening the National Competent Authorities in charge of biosafety, training of various stakeholders, and promoting public awareness and participation.

18. A proposed global GEF/UNEP project, “Building Capacity for the Effective Participation of Parties in the Biosafety Clearing House (BCH),” would utilize GEF grants averaging US\$100,000 per country to finance the BCH at national levels. If that project materializes, the present regional biosafety project will finance the development of a regional BCH, biosafety knowledge generation, training and capacity building, the promotion of public awareness and participation, institutional strengthening, and coordination relating to biosafety activities.

19. The project results may also contribute to Strategic Priority No. 4 on the generation and dissemination of best practices for addressing current and emerging biodiversity issues by identifying innovative approaches and tools in risk assessment, and database tools for knowledge generation and sharing in biosafety, and by developing models for capacity building and institutional strengthening.

## **PROJECT DESCRIPTION**

### **1. Lending instrument**

20. The proposed total project cost is estimated at US\$24.4 million (See table in Annex 6). This figure will be evaluated in details before project appraisal. Under this scenario, the project would be financed through the: (i) GEF grant (US\$5.4 million), (ii) IDA for an estimated contribution of about US\$2.4 million (see para below for more details); (iii) five beneficiaries countries for an amount of US\$1.8 million (including contribution from WAEMU), (iv) existing donors/investors (Swiss Agency for Development Cooperation (SDC), the French Development Agency, the French Ministry of Foreign Affairs, USAID and the private sector) for an amount of US\$7.8million; (v) potential investors (French, USAID, SDC, private sector and CropLife<sup>10</sup>) for an amount of US\$3.5 million. At this stage and before finalizing, the financing gap is estimated to be around US\$3.4 million.

21. In countries where the Bank is financing Agricultural Services Projects or other planned IDA operations (see Annex 2), IDA co-financing could tentatively be made available for US\$2.4 million to support project implementation, mainly to subcomponents B2 and B3 and subcomponents C1 and C2. Some activities are not eligible for GEF funding, such as the setting up of the regional observatory for modern agricultural biotechnology to monitor the impact of modern biotechnology and the adoption and the creation of a regional IPRs framework to mitigate the commercial risk associated with LMOs. The link between the project and the West Africa Agricultural Productivity Program (WAAP) will be further discussed during project preparation, when WAAP preparation results become evident.

### **2. Project development objective and key indicators**

22. The project’s development objective (PDO) is to accompany the ongoing LMOs development dynamic in the agriculture sectors by implementing biosafety regulatory frameworks

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<sup>10</sup> The association representing the plant science industry

which will ensure safe field trials and, if proven safe, commercial release of transgenic cotton and other crops in the beneficiary countries.

23. This objective will be achieved through the setting up of an enabling regulatory environment, capacity building and public outreach to meet the requirements of the Cartagena Protocol on Biosafety (CPB) that all five countries have ratified and other international obligations relevant to biosafety. The project will also build a regional observatory and Biosafety Clearing House on modern biotechnologies to monitor the impacts for the introduction of transgenic cotton.

24. Tentatively, the key performance indicators are (see Annex 4 for details):

- The percentage of cotton field trials using the new regional science-based risk assessment and management methods prior to implementation

### **3. Project global environment objective and key indicators**

25. The global environment objective of the project is to protect regional biodiversity against the risks associated to introduction of LMOs that could be released in the environment.

26. This will be achieved through the development of common science-based, and in compliance with international, risk assessment and management methods in the approval process of modern biotechnologies of LMOs.

27. The project will initially benefit the West Africa Economic and Monetary Union (WAEMU) region and offers a potential for scaling up at the Economic Community of West African States (ECOWAS) level.

28. Tentatively, the key performance indicators could be (see Annex 4 for details):

- Satisfactory annual impact monitoring result studies showing that regional ecosystems/biodiversity adequately protected from risks associated with gene/pollen flows and invasiveness.

### **4. Project components**

29. The proposed project will include at this stage five of the eight member countries of WAEMU (Benin, Burkina Faso, Mali, Senegal, and Togo). Most of these countries have already recognized the importance of the cotton sector (Benin, Burkina Faso, and Mali), some are already ready to move ahead under the influence of an increasing public-private partnership, and are envisaging products trials or are encouraged about developing cotton production (Togo and Senegal). Senegal, Mali, and Burkina Faso already have a relatively advanced program on agricultural biotechnology in place and have indicated strong interest in the project, as they feel an appropriate safeguards framework is needed. They have also demonstrated a keen interest in moving forward with an harmonized biosafety framework at the regional level. All the beneficiary countries have participated in the NBF projects, funded by GEF and implemented by the UNEP.

**Component A – Adapt and disseminate regional methodologies to assess and manage risks**  
(estimated at US\$ 3.5 million of which GEF: US\$0.9 million)

30. Component A will produce operational and regionally harmonized methodologies consistent with international standards such as guidelines, technical documents, forms, and checklists for risk assessment and management of LMOs. The project will at this initial stage focus on transgenic cotton, but will be extended to other crops according to the priorities and outputs of the biotechnology research institutions. The existing tools in the countries and in the subregion will be assessed and strengthened consistent with international standards on risk management developed by specialized organization, such as Organization for Economic Co-operation and Development (OECD) and UNEP. These tools will be disseminated at the national level through workshops and specific trainings to the regional and national stakeholders.

31. The three subcomponents related to risk assessment are on the: (i) establishment of a regional web-based BCH website in partnership with the FAO and UNEP (in French, the official language of WAEMU) as a central portal for scientific documentation for easy access by the participating countries, key stakeholders and the public at large; (ii) development of common environmental risk assessment and management tools of international standards; (iii) design of common risk assessment tools for food and feed safety; and (iv) dissemination of manuals enumerating on procedures for handling LMOs and carrying out risk assessment and management at the national levels. All these activities are to be supported through workshops and trainings.

**Component B – Implementation of the National Biosafety Regulatory Frameworks**  
(estimated at US\$ 11.4 million of which GEF: US\$1.5 million)

32. This component will focus on strengthening the existing NBFs in the five beneficiary countries which have undertaken their NBFs, supported by UNEP/GEF. Since none of the said countries has started NBF implementation, the project will first (i) review and update the existing legislation, then support the process for adoption; (ii) strengthen NCAs, NARIs and regional research institutions; and (iii) raise public awareness and participation of various stakeholders specified in Annex 8 in the decision making process.

33. The three subcomponents relating to NBFs are: (i) reviewing legislative work started with the help of the completed UNEP-GEF biosafety projects, including improved public participation; (ii) raising public awareness of various stakeholders ranging from policy makers, enforcement officers, media, scientists and farmers, through information campaigns, communication, and training, all in the countries' vernacular languages; (iii) (a) strengthening national biosafety agencies and related administration to improve their coordination function, increase their capacity to review biosafety assessments for transgenic crops, enforce the regulations, and conduct post-release monitoring of LMOs and their impact on environment and food and feed safety; (b) strengthening the coordination between ministries; and (iv) building risk assessment capacities of laboratories and regional research institutions to undertake both basic testing and more complex analysis for biosafety research/analysis. The component will also strengthen the capacities of NARIs and regional research institutions in the development of strategies for managing and negotiating IPRs and in assessing the impact of IPRs on the plant breeding and seed sector.

**Component C – Set up regional legal frameworks for biosafety and IPR among beneficiary countries** (estimated at US\$ 9.4 million of which GEF: US\$3.0million)

Component C will contribute to WAEMU's effort to integrate an economical and political area through harmonization of sector policies related to biosafety. Given the economic interdependence of the five beneficiary countries, the project will facilitate in coordination and harmonization of IPRs policies and guidelines based on WAEMU's key principles of subsidiarity where member states subjugate their power to WAEMU to pursue a common objectives and progressiveness.

34. The three subcomponents are (i) setting up a regional coherent policy and regulatory framework on biosafety and IPRs; (ii) establishing a regional observatory on modern agricultural biotechnology that monitor the impact of such technology to the environment, food and feed safety and the socioeconomic issues in accordance with a set of key indicators developed by WAEMU and all its stakeholders. If progress is made in the regional harmonization effort, the observatory could gradually become responsible for LMO approvals that was first handled at the national level; and (iii) supporting the establishment of project management, monitoring and evaluation unit. During the mid-term evaluation of the project, an assessment will be undertaken to determine whether resources of Component C should be increased.

**5. Lessons learned and reflected in the project design**

35. The development of the proposed project have fully taken into account two GEF documents, namely the GEF Strategy<sup>11</sup> and the GEF Evaluation report<sup>12</sup> which recommended on *in-country coordination and stakeholder involvement* in strengthening National Competent Authorities to ensure NBF implementation and coordination between different stakeholders; the preference over *regional approach; the use of regional research institutions*, [such as WECARD in risk assessment and INSAH] for biosafety regulations; and collaboration with existing bilateral and multilateral projects undertaken by USAID's PBS, the Swiss Development Cooperation, the French GEF and the FDA, cotton producer organizations and UNEP's forthcoming project, "*Building Capacity for the Effective Participation of Countries in the Biosafety Clearing House*).

36. The GEF Council in the GEF Evaluation report<sup>13</sup> has deliberated on its support for the implementation of the Cartagena Protocol on Biosafety; the recommendations are summarized in the table below.

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The title of the document is "Elements for a Biosafety Strategy" dated October 12, 2005.

<sup>12</sup> The title of the document is "Final Draft of the Evaluation of GEF support to the Cartagena Protocol on Biosafety" dated November 1, 2005.

<sup>13</sup> Ibid.

<b>Lesson Learned</b>	<b>How Lesson is Reflected in Project Design</b>
1. The GEF effort has contributed to the hastening of CPB ratification.	The proposed regional approach will further expedite inclusion of new countries that recognize the economic potential of biotechnology and the importance of safe handling of transgenic crops, guided by risk assessment and management that are in accordance with international standards.
2. The stocktaking process used for the development of the NBFs was not adequately adopted in the local context since it was limited by financial resources and legal expertise.	The World Bank experience in rendering complex technical and policy advice, new partnerships with multilateral institutions, and planned country assessments will enhance the context-specific implementation of the project. The World Bank is also undertaking its own stocktaking assessment that will identify the gaps embedded within the existing regulatory frameworks.
3. Capacity development in risk assessment and management has been general and introductory in nature.	The proposed capacity-building efforts and development of the tool kits and checklists to support implementation of biosafety regulations are based on capacity needs assessments. The initial product orientation to transgenic cotton for capacity building provides a real case study; later on, the improved capacity will spill over to undertake risk assessment and management of other transgenic crops.
4. The modality for the NBFs has been effective in countries with prior biosafety experience and some level of existing competence but not in countries with less experience.	The new project will be sensitive to the local needs for the five countries and will propose national programs tailored to each country's context in order to strengthen the technical and scientific capacities of the identified agencies.
5. Limited cooperation and coordination existed between donors, the GEF Secretariat, and the Convention on Biological Diversity Secretariat.	The present project actively seeks collaboration of all the donors involved in the biosafety/biotechnology areas in the region (for example, the FAO in risk communication)
6. Subregional harmonization of scientific, legal, and regulatory framework was lacking.	A key objective of the project is harmonization of biosafety regulations and IPRs policies within the WAEMU framework. This can be achieved by working closely with WAEMU, which has a mandate for regulatory harmonization.

37. The present project will also learn from the ongoing project for biosafety capacity building in India implemented by the Bank since 2003. The main messages from that project include the key role of building public awareness and of consultations; the importance of multi-stakeholder involvement in guiding project strategy; the time and effort required to establish smooth inter-ministerial coordination mechanisms, and the benefit of a needs assessment for training to guide the design of the capacity-building program. All of these lessons have been taken into account in the present regional project. In addition, all training materials and guidelines from the India project will be made available to the present regional project.

## **5. Alternatives considered and reasons for rejection**

38. In line with the NBF preparation, the project could have proposed an exclusive national approach for the implementation of the NBFs. However, a concern existed about the cost-effectiveness of national biosafety frameworks in the context of the WEAMU countries. Moreover, these countries had since the early 1990s successfully developed a regional system on pesticide registration through the Sahelian Committee of Pesticides. For these reasons and to conform to the recent conclusions and recommendations of the GEF Council meeting<sup>14</sup>, a regional approach was chosen. This approach will facilitate sharing of information and experiences among partners and stakeholders throughout the sub-region, and will work towards the formulation of a regional biosafety framework and IPRs policy.

## **B. IMPLEMENTATION**

### **1. Partnership arrangements**

39. The project will complement the biotechnology-biosafety initiative undertaken by ECOWAS, a larger regional organization that includes all WAEMU member countries, as well as Cape Verde, The Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone, with a total of 15 member countries. Following ministerial conferences in June 2004 in Ouagadougou and in June 2005 in Bamako, WECARD at the request of ECOWAS has developed an action plan on agricultural biotechnology and biosafety with support from USAID. WAEMU, a monetary union for the eight francophone member states, which has the mandate on regulatory harmonization, is well known for its fast track adoption of compulsory harmonized regulation and sector policies while ECOWAS decisions are only propositions. However, the project will favor a common approach between WAEMU and ECOWAS. Thus, it is expected that the project will have positive externalities across the ECOWAS region.

40. At the regional level, a close partnership will be developed with two technical research institutions namely, WECARD and INSAH. The project would complement the biosafety and biotechnology technical works that the two institutions have already started, with the financial support from USAID. This initiative identifies several priority areas for action on agricultural biotechnology and biosafety. On biosafety, it envisages the development of a harmonized sub-regional framework to minimize problems relating to trans-boundary movements of LMOs. INSAH's involvement in biosafety is focused on harmonization of regulation, since it has extensive experience with regional pesticide authorization and regulations and phytosanitary measures. In 2003, INSAH released an inventory of regulations and guidelines for the authorization of LMOs movements in the Sahel. It launched a process in November 2004 to develop framework agreements defining a common regulation on conventional and genetically modified seeds and biosafety in the CILSS zone. These drafts have been submitted to the states for consideration and have been discussed in a stakeholder workshop in January 2006 in Niamey.

41. At the national level, the project will be implemented closely with the National Competent Authorities in charge of biosafety and with relevant national producer organizations, as well as representatives from the private sector and civil society.

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<sup>14</sup> The documents are "Elements for a Biosafety Strategy" dated October 12, 2005 and the "Final Draft of the Evaluation of GEF support to the Cartagena Protocol on Biosafety" dated November 1, 2005.

42. The project will have the risk assessment expertise of international research institutions such as the International Institute of Tropical Agriculture (IITA), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD).

43. UNEP will be a crucial partner, as the former implementation agency for the development of the NBFs in the beneficiary countries. So is FAO, which is developing an Internet-based communications program on biosafety and biotechnology in West Africa. Another important partner is CropLife, which supports a network of regional and national associations of plant science industry, and their member companies in 91 countries.

44. This project would seek to collaborate with, and not duplicate, other ongoing donor-supported biosafety investments, notably those of the USAID, the AFD, the French Ministry of Foreign Affairs and the Swiss Development Corporation (SDC).

## **2. Institutional and implementation arrangements**

45. The reasons behind proposing WAEMU to implement this project are that (i) transgenic cotton will spread first in three countries that belong to WAEMU (Burkina Faso, Mali, and Senegal); (ii) it has previous experience in sector policy harmonization in a region that shares a homogeneous legal system; and (iii) WAEMU is keen to create a regional legal framework for biosafety that will speed up the LMOs testing process, instead of a situation where the framework has to be replicated in each country. In addition, it is expected that WAEMU's experience will be replicated and scaled up through ECOWAS. The Bank has been supportive of WAEMU since 1994 and was involved in the formulation of the West Africa PRSP<sup>15</sup> in 2001.

46. Given the technical nature of some aspects of the project (i.e., risk assessment) and the large number of participant countries, the project would establish a Regional Coordination Unit, headed by a regional coordinator hired by the project within the rural and environmental department of WAEMU, the proposed implementation agency. This unit will manage the project functions during preparation and implementation. It would contribute for long-term sustainability because WAEMU will continue to be involved in biosafety activities beyond the 4 year project period. The regional coordinator hired by the project will be directly responsible for the overall coordination of the project and the implementation of activities for Component C. The partial or complete implementation of Components A and B could be subcontracted through a competitive process to regional institutions such as WECARD and INSAH, and/or other regional research institutions (e.g., the Rural Development Institute/IER in Mali for social assessment).

47. The regional coordination unit will also be accountable for ensuring that financial reporting and auditing requirements are met and that the World Bank procurement, disbursement, and financial management policies and procedures are followed. A financial management and procurement capacity assessment of WAEMU will be undertaken during the preparation of the project. The fiduciary responsibility of the project will most likely be under the administrative and financial department of WAEMU. If needed, a procurement and financial management specialist will be recruited.

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<sup>15</sup> See Attachment 7 to the Memorandum of the President on a Regional Integration Assistance Strategy for West Africa, dated July 11, 2001, Report No22520-Afr, p. 53

48. In addition, a national project coordinator will be nominated in each of the countries to provide supervision, coordination at the interagency level and to ensure the effective implementation of the regionally harmonized regulatory framework including biosafety law and IPRs policy. The national coordinator, if different from the GEF and CBP focal points, will communicate and coordinate with the existing GEF and CBP focal points to seek complementarities rather than duplication in biosafety management.

49. A capacity assessment of the implementing agencies' financial management and procurement of will be undertaken during the preparation of the project. The fiduciary responsibility and financial management of the project will be vested with the administrative and financial department of WAEMU. WAEMU will be the implementing agency with a designated account. Thereafter WAEMU will sign management services agreements with the executing agencies in the five beneficiary countries that undertake to implement any activities under Component A and B. This will enable funds withdrawal from the designated account to the executing agencies.

50. A Council Ministries from WAMU (West Africa Monetary Union) will be responsible for the overall monitoring of project implementation. This Council Ministries will include the Minister of Environment from the five beneficiary countries who are responsible for the environment or agriculture or both, representatives of WECARD and INSAH or other regional research institutions, and the major stakeholders (regional producer organizations, consumer groups, science plant industry and NGOs). The Council Ministries will meet as required, at least once a year physically and additional meetings would be conducted virtually.

### **3. Stakeholder participation**

51. The project will engage with broad-based stakeholders at the national and regional level within the WEAMU region. The GEF project will widen the scope of stakeholder participation at the appropriate decision-making processes through the technical and scientific training provided, while ensuring access of information through the regional BCH and participation of the public in the decision-making process through workshops, training, and outreach programs (a detailed training needs assessment of the major stakeholders is presented in Annex 8). The major stakeholders involved in the project preparation and implementation include: (i) officials from WAEMU (ii) ministries of environment, (iii) ministries of agriculture, (iv) national agricultural research institutions (e.g., the National Rural Institute/IER in Mali, and the National Institute of Environment and Agricultural Research/INERA in Burkina Faso), (v) ministries of trade, (vi) ministries of health, (vii) industry and producer organizations (e.g., CropLife, the National Union of Cotton Producers/UNPCB of Burkina Faso, or the Network of Farmers and Producers Organizations/ROPFA), (viii) nongovernmental organizations and associations (e.g., the Burkina Biotech Association), (ix) consumer groups, and (x) other relevant stakeholders. A stakeholder participation action plan, to be monitored regularly, for the period of project implementation will be finalized by appraisal.

52. The establishment of the BCH at the regional front will further enhance the sharing of information and its dissemination among interested parties/stakeholders, thus providing opportunities to NGOs; civil society; academics; the business community, particularly the cotton companies; and farmer and producer organizations on pertinent issues relating to biosafety management.

#### **4. Monitoring and evaluation of outcomes/results**

53. The project's Monitoring and Evaluation Plan will be developed during preparation. [It will fully take into account results and recommendations contained in the recent GEF Report, "Evaluation of GEF's Support to the Cartagena Protocol on Biosafety."]<sup>16</sup>

54. To track progress toward the desired outcomes, the Regional Coordinator stationed in WAEMU and the Steering Committee will develop a set of intermediate regional and country result indicators in accordance with the results framework drafted in Annex 4 for monitoring purposes. The final results framework will name the key output and outcome indicators, annual targets, baseline situation, source of data, frequency of data collection, the strategic use of the data, and the entity responsible for collecting and reporting the data. The Regional Coordinator and the Steering Committee will produce quarterly reports describing progress in implementing the project and noting trends in key performance indicators where information is available. The unit will in addition produce semiannual reports, commencing six months after project effectiveness, summarizing progress achieved during the previous six months and submit them to the Bank within one month thereafter. The task team leader or the World Bank Project managers will pay close attention to the information contained in the progress reports to quickly identify and address challenges in implementation. Monitoring reports will also be shared with all project stakeholders, including government officials. These reports will also serve as key inputs to project planning and strategic exercises and to steering committee meetings.

55. The Regional Coordinator of WAEMU will monitor the implementation of the overall project management through quarterly financial management reports and annual technical audits (Annex 9). Under Component C, the project will support development of the project monitoring system and creation of the capacity for monitoring as needed within the coordination unit (\$150,000) as well as the creation of an observatory on environment, food and feed safety and the socioeconomic impact of agricultural biotechnology (\$US 2million).

56. Under Component C, the project will support the project monitoring system and build the capacity for monitoring, as needed, within WAEMU and national competent authorities.

#### **5. Sustainability and Replicability**

57. *Institutional sustainability.* The fact that the proposed implementation agency might be WAEMU, a well-established and financially sustainable sub-regional organization, is a key element in ensuring institutional sustainability and could help ensure sustainability of project outcomes. Moreover, the position of the Regional Coordinator in WAEMU would create a biosafety coordination unit at the end of the project and open a permanent position. At the national level, key public sector institutions, such as the ministries of agriculture, environment and research institutions, along with the GEF and biosafety focal points, will play a prominent role in implementing the project that will contribute to institutional sustainability. Other factors that could ensure sustainability of project outcomes are the development and implementation of the regional BCH mechanism (web-enabled) and information sharing among partners and other stakeholders which is indeed an instrument that contributes beyond the lifetime of the project. An institutional assessment will be undertaken during project preparation with the PDF Block B grant. The study will include an evaluation of the existing institutional capacities for the

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<sup>16</sup> GEF Report, "Final Draft of the Evaluation on GEF's Support to the Cartagena Protocol on Biosafety," November 1, 2005.

proposed biosafety framework implementation at the national and regional level and identification of specific weaknesses that would require capacity building and technical assistance. The main recommendations will be included in the project design in view of further strengthen the project sustainability

58. *Financial sustainability.* A sub-regional operation is expected to bring medium-term economies of scale in implementing the CPB. The use of well-established sub-regional organizations improves fundraising ability (i.e., a group of countries versus a single country) and reduces intraregional competition and duplication efforts. In addition, it provides a base from which the West African regional biosafety capacity could be strengthened. The regional organization can also, collectively and effectively, communicates the need for allocation of national public expenditures to support competent national authorities. The mobilization of funds in the respective countries and effective partnerships built during project implementation with the private sector is also expected to contribute to financial sustainability. Moreover, the project will not support operational costs related to the implementation of the national biosafety frameworks, as most countries have already expressed their commitment to mobilize their national budget. Finally, potential financial mechanisms such as setting up a regional tax or application fee on LMOs applications are expected to be explored during project implementation. A financial sustainability assessment will be undertaken during project preparation with the PDF Block B grant. The study will include an evaluation of the operating costs of the proposed biosafety framework implementation at the national and regional level, and an evaluation of the various financing mechanisms required for the biosafety framework implementation. . The main recommendations will be included in the project design in view of further strengthen the project sustainability.

59. *Replicability.* The focus of the project on cotton is driven and supported by all participating countries. This could be an effective way to help the countries implement their NBFs at both national and regional levels. This commodity-focused practice, country/region-specific, is designed to be replicated in other sectors within countries and in other regions in Africa, especially in the larger ECOWAS space. The strategy of developing and strengthening the capacity of both sub-regional institutions and national-level entities in the beneficiary countries can serve as a potential model for other sub-regions in Africa and even other regions based on their common agro-ecological and sociopolitical characteristics. By the end of the project, knowledge sharing through the BCH mechanism(s) will be well tested and fine-tuned—other countries or sub-regions can have easy access to knowledge about the project’s successes or shortcomings and can replicate project strategies in accordance with their needs. In addition, the availability of trained technical personnel as the output of the project will enable the cross-fertilization of technical skills across Africa.

## 6. Critical risks and possible controversial aspects

60. The major potential risks that may affect project success and their respective mitigation measures incorporated into project design are outlined in the table below.

<b>Risks</b>	<b>Risk Mitigation Measures</b>	<b>Risk Rating w/ Mitigation</b>
The participation of five countries with different interests and capacities to implement the CPB and the participation of multiple institutions involved within each country may make project implementation difficult.	The initial focus on one commodity, cotton, among countries with a common interest (because of the importance of cotton) should facilitate regional coordination and project implementation tailored to the readiness of each country	M
Regional harmonization efforts are hampered by national resistance or resistance of regional stakeholders.	The proposed implementation agency, WAEMU, possesses political will and experience in regional integration and harmonization of policies. It also has a good reputation in the five countries.	M
Reputational risk for the Bank when dealing with the sensitive issue like agriculture biotechnology.	Project preparation will involve all stakeholders, including those opposed to LMOs. The project will recruit a communication specialist and prepare a strategic communication plan.	S
Possible economic gains from the production of Bt cotton or other transgenic plants may be offset by the fact that the countries have not been able to negotiate issues related to intellectual property rights (IPRs).	Through other co-financing, support will be provided for legal and technical advisory services to assist countries with IPRs negotiations and with the setting up of a regional IPRs legal framework.	M

H = High; S = Substantial; M = Modest; L/N = Low/Negligible

## 7. Loan/credit conditions and covenants

### C. APPRAISAL SUMMARY

#### 1. Economic and financial analyses

#### 2. Technical

#### 3. Fiduciary

#### 4. Social

#### 5. Environment

## 6. Safeguard policies

<b>Safeguard Policies Triggered by the Project</b>	<b>Yes</b>	<b>No</b>
Environmental Assessment ( <u>OP/BP/GP</u> 4.01)	[X]	[ ]
Natural Habitats ( <u>OP/BP</u> 4.04)	[ ]	[X]
Pest Management ( <u>OP</u> 4.09)	[ ]	[X]
Cultural Property ( <u>OPN</u> 11.03, being revised as <u>OP</u> 4.11)	[ ]	[X]
Involuntary Resettlement ( <u>OP/BP</u> 4.12)	[ ]	[X]
Indigenous Peoples ( <u>OD</u> 4.20, being revised as <u>OP</u> 4.10)	[ ]	[X]
Forests ( <u>OP/BP</u> 4.36)	[ ]	[X]
Safety of Dams ( <u>OP/BP</u> 4.37)	[ ]	[X]
Projects in Disputed Areas ( <u>OP/BP/GP</u> 7.60)*	[ ]	[X]
Projects on International Waterways ( <u>OP/BP/GP</u> 7.50)	[ ]	[X]

### 6.2 Safeguards screening category

61. B-Partial Assessment through an environment and social impact framework.

### 6.3 Safeguard and environmental screening categories

62. The team was advised during the QER meeting on February 28, 2006 to categorize the project from "C" to "B" due to the dual focus of the project. The first aspect emphasis on strengthening the capacity of various pertinent stakeholders in the process of establishing the National Biosafety Frameworks (NBFs). The second aspect is pertaining to the establishment of the NBFs that led to the diffusion of biotechnology in the five beneficiary countries. This diffusion warrants for the establishment of an instrument to safeguard the environment, human health and socio-economic considerations that have been the cornerstone of the Cartagena Biosafety Protocol.

The team was furthered advised to prepare an environment and social impact framework that would facilitate the five beneficiary countries to implement it at the national level. The proposed environment and social impact framework is appended to as annex 12A.

## 7. Policy Exceptions and Readiness

63. The proposed project does not require any exceptions from Bank Policies.

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\* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

## **Annex 1: Country and Sector or Program Background**

### **AFRICA: West Africa Regional Biosafety**

Agricultural productivity in West Africa generally remains very low, and growth has been slow or stagnant in the four past decades. The use of improved technologies, including biotechnologies, to increase productivity is a major pillar in the rural sector strategies of all the beneficiary countries. Cotton is the major commodity in all these countries and is an important component of the rural economy.

Researchers and ministries of agriculture of the five beneficiary countries are of the view that agricultural biotechnology provides a new opportunity to increase the productivity and competitiveness in the agricultural sector, particularly in cotton production. Bt and VIP cotton are transgenic varieties of cotton that reduce insecticide costs because the plants themselves are resistant to the main insect pest, the cotton bollworm. In the West Africa cotton belt, Burkina Faso has initiated field trials with transgenic cotton (see also Annex 3). Mali may begin similar activities/field trials as part of its work on the Program for Biosafety Systems (PBS)<sup>17</sup> funded by the U.S. Agency for International Development (USAID). Senegal has a policy to increase its cotton production to 100,000 metric tonnes and, at the research level, is the clear leader in biotechnology. Field trials will be starting as soon as the biosafety law is in force. Benin and Togo are likely to follow this economic trend to prevent the loss of competitiveness that could arise if their neighbors began commercialization of transgenic cotton.

The regulatory framework developed in Burkina Faso is the most advanced in the region and was driven by the launching of transgenic cotton field trials in 2003. In 2004 legislative measures were adopted by decree,<sup>18</sup> as opposed to debate in the National Parliament. With the support of the UNEP/GEF project, the government has prepared a law that is currently being considered by the Parliament. Burkina Faso established a National Biosafety Agency within its Ministry of Environment in February 2005, with the mandate to coordinate biosafety activities among government agencies and private organizations to ensure safety in the use of LMOs (production, imports and exports, and commercialization). In order to accomplish this mission, the agency will rely on the support of other agencies, such as Customs, for import and export control, and the Ministry of Agriculture to regulate LMOs field trials and post-commercialization monitoring. The NCA will also collaborate with other committees established by law. The same kind of regulatory and institutional mechanisms are expected in the other countries, especially in Mali and Senegal where the process has already started.

While all the beneficiary countries have released their final NBFs, most of them still have to be discussed and approved through national stakeholder workshops before adoption by national parliaments. Within these frameworks, a National Competent Authority (NCA) must be established in each country and will be in charge of biosafety coordination and final decision making on LMOs application. A National Biosafety Committee will provide scientific expertise to the NCA, and an observance committee, composed of various civil society representatives, will enhance public participation in decision making. Risk assessment and management tools and guidelines will be prepared under the responsibility of an internal scientific committee (i.e., one within the research institutions and relevant administration).

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<sup>17</sup> See <http://www.ifpri.org/themes/pbs/pbs.htm> for more detail.

<sup>18</sup> Republic of Burkina Faso, 2004, "Règles nationales en matière de sécurité en biotechnologie," Decree no. 2004-262/PRES/PM/MECV/MAHRH/MS of 18 June 2004.

As a result, none of the five countries has started implementing the recommendations provided by the NBFs to realize the objectives of CPB on the safe transfer, use, and handling of LMOs. Concurrently, building the capacity of various stakeholders, such as policy makers, National Agriculture Research Institutions (NARIs), and farmer organizations, is urgently needed to ensure that the associated risks to LMOs is safe and soundly managed. In addition, the effective use of intellectual property rights (IPRs) in plant breeding, particularly for transgenic crops needs to be emphasized.

As part of this sector policy, WAEMU has embarked on developing a common approach and harmonization of integrated policy on the production of agricultural and industrial goods and services.<sup>19</sup> Other related areas are in fostering cooperation among national agencies on agricultural research, seed certification, industrial norms and testing,<sup>20</sup> phytosanitary measures, and food and feed safety standards. Initiatives have also been undertaken to improve the competitiveness of major agricultural supply chains such as cotton, rice, and maize with a view to harmonizing and carving out a common position especially on cotton for the sub-region.

The detailed information on the five countries' cotton sectors to support the statements in Sections A.1 and A.2 of the main text are provided below. At the end of this annex, Table 1 provides a summary of the status of: (i) modern biotechnology development (and especially plant and cotton biotechnologies); (ii) risk assessment; (iii) regulatory development, and preparation of the NBF; (iv) risk management, monitoring and enforcement; (v) general public awareness and participation; and (vi) farmer awareness in the eight WAEMU countries.

## 1. Mali

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### *Country and sector background*

Mali's economy is largely dependent on agriculture; it produces groundnuts, rice, cereals, and horticultural products. However, the productivity is very low, with the exception of irrigated rice. This is attributable to a number of factors, namely, the application of traditional low input cultivation techniques, limited access to credit, and the lack of agricultural services (extension, technical advice).

The Master Plan for Rural Development (2001-2010) (*Schéma Directeur du Développement Rural*) mentioned in the CAS (2003) identified programs to support agricultural services and producer organizations, intensification and diversification of agricultural production, and promotion of exports to Europe and the West African regional market, where Mali's products have a comparative advantage. In addition, one of the key CAS priorities was to increase the productivity of agricultural activities through equipment and technology input.

Cotton is the major export crop, with a production of around 300,000 tons a year. Over the period 1995-2000, cotton exports accounted for approximately 35 percent of the total export revenue. Cotton is grown by almost 160,000 farmers and covers about one third of the cultivated area. From 1999 to 2001, the sector faced a severe crisis due in part to the fall in world prices and weak management of the parastatal agency the *Compagnie Malienne du Développement des*

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<sup>19</sup> See Memorandum of the President on a Regional Integration Assistance Strategy for West Africa, dated July 11, 2001, Report No. 22520-Afr, p. 13.

<sup>20</sup> Ibid.

*Textiles (CMDT)*. With support from the World Bank, a restructuring plan was adopted in 2001 that launched a partial liberalization in the cotton sector.

The National Environmental Action Plan has recognized that environmental degradation contributes to the erosion of biodiversity; thus, building capacity in biodiversity management is crucial (CAS 2003).

### ***Regulatory, policy, and institutional framework on biotechnology and biosafety***

Mali signed the Cartagena Protocol on Biosafety in April 2001, and ratified it in August 2002. The country started to develop a National Biosafety Framework under the UNEP GEF Program on September 2002 with the establishment of a National Committee consisting of different stakeholders under the responsibility of the Ministry of Environment (*S cretariat Permanent du Cadre Institutionnel de la Gestion des Questions Environnementales*).

A draft framework was released in April 2005 and includes an *Avant projet de loi relative a la s curit  en biotechnologie en R publique du Mali*. The framework stipulates for the establishment of a National Committee of Biosafety and Biosecurity and a Public Committee on Biosafety to ensure transparency in decision making. The framework further provides guidelines and procedures for import, handling, approval, labeling, commercial release of LMOs, risk assessment and management, and mechanism for public participation.

The enforcement of animal health and phytosanitary regulations of plants (quarantine pests and diseases, agricultural inputs) has been implemented by the *Direction G n rale de la R glementation et des Contr les (DGRC)* of the Ministry of Rural Development (MDR). This agency is preparing guidelines related to genetically modified (GM) crop management, and could play an important role in monitoring and enforcing biosafety regulation.

In the area of biotechnology, Mali is engaged with donors, development agencies, and business communities for the introduction of Bt cotton. IER, USAID, Monsanto, and Dow Agrosciences have developed a five-year action plan on transgenic cotton including field trials. Collaborations and partnerships have developed with regional research and development institutions such as CIRAD, IRD, ICRISAT, IITA, and CILSS. Key players in technology transfer and extension programs are mainly the CMDT (compagnie malienne de development textile) and the cotton producer's organization, with the four main one combine in the GSCVM (groupement des syndicats cotonniers et vivriers du Mali).

Mali is also emulating its neighbor Burkina Faso in placing a fast track procedure to undertake field trials of transgenic cotton. Despite this effort, there has been strong opposition to LMOs led by the Mali Coalition for the Protection of Genetic Heritage.<sup>21</sup>

The main agricultural research institutions and areas of research are highlighted as follows:

<b>Research institutions</b>	<b>Activities and expertise related to biotechnologies</b>
IER—Institut d'Economie Rurale (MAEP <sup>22</sup> )	Crop production, livestock, forestry, environment and natural resource management "Recherche marqueur mol�culaire de la r�sistance a

<sup>21</sup> Statement of Civil Society at the Closing of ECOWAS Ministerial Conference on Biotechnology in West African Agriculture, Bamako, June 24, 2005, at <http://www.grain.org/research/contamination.cfm?id=322>

<sup>22</sup> Minist re de l'Agriculture et de la P che.

	l'insecte suceur du sorgho, caractérisation moléculaire de la tolérance a la sécheresse du sorgho"
LCV—Laboratoire Central Vétérinaire (MAEP)	Production of animal vaccines Research and diagnosis of animal disease Pesticide residue analysis
Laboratoire de culture in vitro of Katibougou (Ministère de l'Education, Institut Polytechnique Rural, IPR/IFRA)	Biotechnology, "Culture de tissus pour la production de semences de pomme de terre, et les culture anthers de sorgho"
Laboratoire de Biologie Moléculaire Appliqué, Microbiologie de la Faculté des Sciences et Techniques (Université de Mali)	Research on human health: tuberculosis, malaria, HIV, Development of transgenic vaccines (project)  Research on molecular characterization of cow pea variety and on the genetic diversity of sorghum

### ***The World Bank portfolio***

A list of other related projects funded by the World Bank are as follows:

The **Agriculture Services and Producer Organization Project**, which focuses on key agricultural institutional reforms to improve on the delivery of agricultural services to producers and the planning control and regulatory functions.

The **Agricultural Competitiveness and Diversification Project** promotes innovative technologies<sup>23</sup> through intensification of cropping systems and productivity improvement for high-value products, including ensuring quality and food safety management.

The **Gourma Biodiversity Conservation Project**, helping local communities, national and international research institutions to improve the management of Malian biodiversity.

Mali will participate in the **West Africa Agricultural Productivity Program (WAAPP)** initiated by NEPAD.

## **2. Burkina Faso**

### ***Country and sector background***

Agricultural production, particularly sorghum, millet, maize, cotton seed, and lint—and livestock, remains the dominant source of revenue for rural households in Burkina Faso. However, income is undermined by pests and diseases, periodic drought, and unpredictable water supplies. To improve the agricultural economy, the government has prioritized the application of technological solutions to mitigate environmental risks, increase production and promote diversification.

The cash crop for Burkina Faso is cotton, which has increased in production by more than 8 percent per annum in the period 1998-2003, reaching 550,000 metric tons in 2004. This comprised two thirds of the country's export earnings and prompted the government to introduce genetically modified seeds, including better yield Bt cotton. In 2003, an agreement was signed

<sup>23</sup> Whether biotechnologies will be promoted is not mentioned in the project document.

between the government, Monsanto, and Syngenta for experimentation with Bt cotton and Vip cotton. As a result, the National Research Institute in Agriculture (INERA) conducted two field trials on these two GM cottons. Moreover, the World Bank has ensured its continued support for improving cotton sector productivity and competitiveness (CAS, 2005).

SOFITEX, the former state cotton enterprise, is responsible for most of the sector activities (purchasing of seed cotton, sale of inputs, processing, and marketing). In 1999, the *Union Nationale des Producteurs de Cotton du Burkina Faso* purchased a 30 percent share in the company (Dagris, 34%; government, 35%). Two other cotton enterprises exist in Burkina Faso: FASOCOTON and the SOCOMA.

### ***Regulatory, policy and institutional framework***

Burkina Faso signed the Cartagena Protocol on Biosafety in May 2000, and ratified it in August 2003. The country started to develop a National Biosafety Framework under the UNEP GEF Program on February 2002. A draft framework was published in January 2005 and includes a national strategy and policy on biotechnology and biosafety, institutional arrangements, and a strategy for civil institution communication. A few ministries have been identified for involvement in biosafety management; the main ministries include the Ministries of Agriculture, Livestock, Environment, Research, Health, Trade, and Justice. A tentative National Committee on Biosafety (*CNPB: Comité National Provisoire de Biosécurité*) has been established.

Furthermore, the study also made recommendations on the need to improve the capacities of research institutions to undertake risk assessment and management. This is primarily due to the fact that the transfer of technology and know-how is introduced by multinational biotechnology companies involved in field testing.

Burkina Faso initiated legislative measures in biosafety management with the promulgation and adoption of decree No. 2004-262 on June 18, 2004, as an interim measure pending the adoption of the law by Parliament and the government. This regulation covers the use of LMOs in contained conditions and small-scale field trials, import, transport, commercial release, distribution, and export of LM food and feed.

The main agricultural research institutions and areas of research are:

<b>Research institutions</b>	<b>Activities and expertise related to biotechnologies</b>
INERA—Institut National pour l'Environnement et la Recherche Agricole	<ul style="list-style-type: none"> <li>- Improved seed and plant varieties, based on conventional technologies</li> <li>- Biodiversity assessment</li> </ul>
Laboratoire de Virologie et de Phytopathologie du CREA de Kamboinse, in partnership with foreign laboratories	<ul style="list-style-type: none"> <li>- Capacity on biotechnology (needs to be assessed)</li> <li>- Biodiversity of viruses, genetic aspect of virus plant resistance, management of plant virus diseases</li> </ul>
IRSAT—Institut de Recherche en Science Appliquée et Technologie (Université de Ouagadougou)	<ul style="list-style-type: none"> <li>- Food engineering technologies</li> </ul>
CRSBAN—Centre de Recherche en Sciences Biologiques Alimentaires et Nutritionnelles (Université de Ouagadougou )	<ul style="list-style-type: none"> <li>- The center includes six laboratories : microbiologie et biotechnologies microbienne, génie génétique, biologie moléculaire, technologie alimentaire, nutrition animale et biochimie, pharmacologie</li> </ul>

CNSF—Centre National de Semences Forestières	- Improved forest seed and plant varieties
CIRDES—Centre International de R&D sur l’Elevage (Bobo-Dioulasso)	- Production of vaccines, animal health - Biotechnologies
Laboratoire National de Santé Animale (Ouagadougou)	- Production of vaccines, diagnosis kits

### ***The World Bank portfolio***

A list of related projects is as follows:

The forthcoming **Programme d’Appui aux Filieres Agro-Sylvo-Pastorales (PAFASP)** to support productivity enhancement in the cotton sector while promoting diversification. The project will develop private sector channels to intensify production, increase competitiveness, and diversify commercial agriculture while alleviating constraints to marketing and agro-processing, including the promotion of cotton productivity, capacity building of cotton producer organizations, and the agencies in charge of cotton monitoring and liberalization.

A **GEF-funded Partnership for Natural Ecosystem Management (PAGEN)** that supports rural community efforts in conservation. It also aims at strengthening the management and revenue-generating capacity by enhancing a three-way partnership of the forest and wildlife administration, local communities, and private sector tourism operators.

The **Sahel Integrated Lowland Ecosystem Management (SILEM)** program that strengthen the capacity of rural communities in natural resource management, including participation in the decision-making process.

Burkina Faso will participate in the **West Africa Agricultural Productivity Program (WAAPP)** initiated by the NEPAD.

## **Senegal**

### ***Country and sector background***

Senegal’s agriculture has a weak productive base (CAS, 2003). This weakness limits Senegal’s agriculture potential; it is largely attributed to low soil fertility, insufficient rainfall, low productivity, vulnerability to drought, price fluctuations for raw materials, and inadequate market structure to stimulate competition in the supply sectors.

The PRSP and CAS consider agricultural growth a key feature of the poverty reduction strategy and therefore promote the cultivation of high value-added crops, the application of irrigation, and agricultural diversification into horticultural products, fresh fruits, and cotton. In addition, the strategy emphasizes the creation and strengthening of producer organizations as full partners in rural development policy, the decentralization of the Ministry of Agriculture to be more responsive to local needs, and the development of marketing information networks.

Cotton is grown on about 70,000 farms in nearly every region, and is mostly concentrated in the southeastern part of the country. Cotton accounted for approximately 3 percent of total exports in Senegal during 1995-2000. The management company SODEFITEX was privatized in 2003 and 30 percent of the capital is now owned by farmers (51%, Dagrís; and 10%, government). The goal of the policy is to raise production to 100,000 tons of seed cotton and 45,000 tons of cotton fiber by 2020 through irrigation and mechanization.

Senegal houses much of the world's marine biodiversity and aims to take appropriate measures for its protection and sustainable utilization. The CAS priorities include the protection and management of marine flora and fauna, the marine and coastal environments, and the prevention and regeneration of fragile resources.

### ***Regulatory, policy, and institutional framework***

Senegal signed the Cartagena Protocol on Biosafety in October 2000, and ratified it in October 2003. The country started to develop a National Biosafety Framework under the UNEP GEF Program on May 2002.

A National Biosafety Framework<sup>24</sup> was released in January 2005. A major achievement was preparation of a draft law to be adopted by the Parliament. The law covers the use of LMOs in contained conditions, small-scale field trials, import and commercial release, procedures for risk management, monitoring and evaluation, as well as public participation. The framework also proposes procedures and guidelines for the safe use and handling of LMOs. Included in the report is an action plan necessary for the development of biotechnologies such as in the areas on institutional capacity strengthening, formulating outreach programs, and strengthening scientific partnerships at the subregional and international level. Regarding human resources, Senegal is one of the strongest countries in Francophone Africa: 47 scientists are skilled in biotechnology; 5 of them are from the ISRA and work on transgenic crops; around 10 are working in the CERAAS on plants that are adapted to drought.

The Government of Senegal has supported the development of research on biotechnologies for more than 15 years, and a National Directoriat of Biotechnology was created under the Ministry of Scientific Research in 2001 (UNEP GEF, 2005). A National Center on Biotechnology Research has been proposed both to conduct research and to ensure the control and survey of GM crops (greenhouse, field trials, and commercial release). Research institutions in the country are applying biotechnological techniques in the development of forest tree varieties and improved cash crops. The application of genetic engineering for the production of animal vaccines is another ongoing research area taking place at the veterinary laboratories.

The main agricultural research institutions and areas of research are summarized below:

<b>Research institutions</b>	<b>Activities and expertise related to biotechnologies</b>
Laboratoire Campus de Biotechnologie Végétale (Université C. A. Diop)	Molecular biology, biodiversity, LMOs
URCI—Unité de Recherche Commune In Vitro (ISRA/IRD)	In vitro forest plants
MAGI—Laboratoire de Microbiologie Appliquée (Université C. A. Diop)	Food engineering biotechnologies
Laboratoire de biotechnologies appliquées (ITA—Institut de Technologie Alimentaire)	Food engineering biotechnologies
Laboratoire de microbiologie des Sols (IRD)	Molecular biology
CERAAS—Centre d'Etudes et de Recherches sur l'Amélioration de l'Adaptation a la Sécheresse, (CORAF )	Specialized drought resistance, no research in GM crops
ISRA—Institut Sénégalais de Recherches	

<sup>24</sup> Cadre National de Biosécurité, Mars 2005.

Agricoles, Centre de recherche micro-biologique	
LNERV—Laboratoire National de l’Elevage et des recherches Vétérinaires (ISRA)	Vaccines production, animal health
Laboratoire de Bactériologie Expérimentale (Institut Pasteur)	Human health
LAE—Laboratoire d’Analyse et d’Essais (Ecole Supérieure Polytechnique)	Food Safety, risk management
EISMV—Laboratoire de contrôle de l’Ecole Inter Etats des Sciences et Médecine Vétérinaires	
LSAHE—Laboratoire de Sécurité Alimentaire et d’Hygiène de l’Environnement	

### ***The World Bank portfolio***

The main projects potentially related to biosafety issues are as follows:

The **Agricultural Services & Producer Organizations Project**, to strengthen the core public institutions—namely, the main Senegalese Agriculture Research Institute (ISRA) and the Food Technology Institute (ITA) —in agriculture and rural development necessary for technology development and transfer in agriculture. The World Bank will continue to support agricultural research and extension services and producer organizations in the second phase of the APL for the Agricultural Services and Producer Organizations Project.

The **Agricultural Markets and Agribusiness Development Project** creates the conditions for rapid agricultural growth, driven by greater competitiveness in domestic and export market. The project will promote highest value-added crops and diversification of production, develops private irrigation, and revitalizes the groundnut sector.

The **Integrated Marine and Coastal Resources Management Project**, focusing on improved sustainable management of marine and coastal projects in three pilot areas.

The **Senegal River Basin Water and Environment Management Project** will promote the environmentally sustainable development of the Basin by strengthening local, national and regional institutional capacities.

Senegal will participate in the **West Africa Agricultural Productivity Program (WAAPP)** initiated by the NEPAD.

## **Benin**

### ***Country and sector background***

Cotton cultivation is one of the most important agricultural sectors in Benin. It provides a major source of employment, foreign exchange earnings, government revenue, and banking activity for the economy. The challenge for rural development is, among others, to accelerate productivity growth in the cotton and noncotton sectors through technology generation and application (CAS 2003).

Cotton production accounted for one third of Benin's exports during the period 1995 to 2000. Cotton is critically important to rural welfare, as its related activities employ about 45 percent of rural households. In the early 2000s, about 20 percent of the cultivated area in Benin was under cotton, particularly the Borgou province in the North. Since then, Benin has made major efforts to restructure and privatize the cotton sector. Management of the supply chain is largely in the hands of the industry stakeholder organizations. At the private level, three main bodies have been created: (i) The Cotton Interprofessional Association (AIC), comprising two entities—the producer organization (FUPRO) and the ginner's association; (ii) the Cooperative of Agricultural Inputs Procurement and Management (CAGIA) that has taken the responsibility for input supply; and (iii) the Center of Cotton Payment and Input Credit Recovery (CSPR), which operates as a clearinghouse for payments made from ginner to producers and the repayment of input credit by producers to distributors.<sup>25</sup>

Although the CAS made no specific mention about a biodiversity strategy, the priority of the environmental sector is to strengthen the national environmental agency, establish a sound monitoring and evaluation system, and continue support on training to environmental management for staff at the central and local levels. Specific investments will support the protection of the coast line and implementation of the municipal environmental action plans.

### ***Regulatory, policy, and institutional framework***

Benin signed the Cartagena Protocol on Biosafety in May 2000, and ratified it in March 2005. The country established a National Biosafety Framework under the UNEP GEF Program on July 2002.

Following a request from the Council of Ministers in 2001, the Institut National des Recherches Agricoles du Bénin (INRAB) organized a workshop on risk management of transgenic crops in agriculture. Following this meeting and under the pressure from the civil societies and NGOs, the Council of Ministers adopted a five-year national moratorium in 2002 on the import, commercial release, and use of LMOs in the country. This moratorium was put in place to identify the gaps and weaknesses in the current biosafety framework and take appropriate actions.

A National Committee on Biosafety was created in 2004<sup>26</sup> under the Authority of the MEHU (Ministère de l'Environnement, de l'Urbanisme et de l'Habitat) and includes various ministries, such as Agriculture, Health, Economy, and Finances, as well as representatives of the civil institutions and NGOs. A National Biosafety Framework has been installed<sup>27</sup> and includes procedures and guidelines for the safe use and handling of LMOs; an action plan has also been formulated for capacity building on biosafety, communication, and public involvement. In addition, a draft law on biosafety has been prepared by the Government of Benin.<sup>28</sup> The authority identified to implement the law is the Ministry of Environment.

The main laboratories, agricultural research institutions, and areas of research are listed in the table below:

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<sup>25</sup> Sources: UNCTAD, INFO COMM (Market Information in the Commodity Area), and the CAS for the Republic of Benin, Report No: 26054-BEN dated July 16, 2003.

<sup>26</sup> Décret No 2004-293 du 20 mai 2004 portant création, attribution et fonctionnement du Comité National de Biosécurité (CNBS).

<sup>27</sup> Cadre National de Biosécurité et plan d'actions du Bénin, undated document.

<sup>28</sup> Loi relative à la sécurité en biotechnologie moderne de la République du Bénin ; unfortunately, the law was not attached to the NBF.

<b>Laboratories</b>
• Laboratoire de Génétique et Biotechnologie de la Faculté des Sciences et Techniques de l'Université d'Abomey-Calavi (FAST/UAC)
• Laboratoire de Biochimie et Biologie Moléculaire (ISBA/FAST)
• Laboratoire de Biotechnologie Alimentaire (FSA/UAC)
• Laboratoire Multidisciplinaire du Centre Béninois de la Recherche scientifique et technique (CBRST)
• Laboratoire de la Station de Recherche sur le Palmier à huile à l'INRAB (SRPH/INRAB)
• Laboratoire de la Direction de l'Alimentation et de la Nutrition Appliquée (DANA/MAEP)
• Laboratoire Nationale de Santé Publique (MSP/DPED/MSP)
• Laboratoire de Toxicologie (ISBA/CBRST)
• Laboratoire de l'Institut International d'Agriculture Tropicale (IITA – Bénin)
• Laboratoire CREC (MSP)
• Laboratoire de Contrôle des Produits Pharmaceutiques (MSP)
• Service Protection des Végétaux (SPVC/DAGRI)

Benin also hosts a research station for the International Institute of Tropical Agriculture (IITA), which specializes in biological control of pests and plant diseases, in addition to fundamental biological research.

## **Togo**

### ***Country and sector background***

The economic base of Togo has traditionally depended on subsistence agriculture, small in scale and concentrated on the production of staple food crops (cereals, tubers, and legumes) and cash crops (cotton, coffee, and cocoa). These crops are vulnerable to the vagaries of weather and fluctuation of world commodity prices; these combination has subjected the farmers to unstable and insecure incomes. This situation was further compounded by a climate of political instability. Cotton exports form 60 percent of the total agricultural export and are the main source of its rural economy. A slight economic improvement occurred in 2003 when favorable weather conditions led to an increase in cotton exports and a GDP growth of 2.7 percent. Other sectors that contributed to growth were cement and phosphates, which experienced rehabilitated production.

The Country Re-Engagement Note of Togo<sup>29</sup> has identified agriculture, with a focus on the cotton sector, as the main engine for accelerating economic growth and reducing poverty at the national front. However, institutional reform of the state-owned company SOTOCO is required.

### ***Regulatory, policy, and institutional framework***

Togo signed the Cartagena Protocol on Biosafety on May 24, 2000, and ratified it on July 2, 2004. The country adopted the National Biosafety Framework (NBF) developed under the UNEP/GEF Program on December 6, 2004. The recommendations made in the NBF were

<sup>29</sup> "Country Re-engagement Note, A Joint framework for Strengthening International Assistance for the Republic of Togo," Report No. 30538-TO, dated November 11, 2004.

concerned with the development of a national biosafety framework, a system for risk assessment and management, and mechanisms for public participation and information sharing.

The application of biotechnology in Togo is limited to the production of beer and soft drinks and the processing of dairy products with imported raw materials. However, Togo is keen to take advantage and expand the scope of modern biotechnology application to the areas of agriculture, agro-industry, health, basic research, and forest production, despite its limited legal, institutional, technical, infrastructure, and equipment capacities.

The institutions and ongoing research programs are as follows:

<b>Institutions</b>	<b>Research Programs</b>
National Institute for Agronomic Research (ITRA)	Improvement of plant variety, improvement to processing techniques, artificial animal insemination, micro-propagation of plants, and in vitro culture.
High School of Agriculture (ESA)	Characterization of food crops viruses, research on aromatic plants and diseases, epidemiological study of plants, agronomic conversion of local resources.
High School of Biological and Food Techniques (ESTBA)	Processing and conservation of seasonal fruits, improvement of local traditional meat, conservation and production of herbal medicines, production of essential oil, quality of water, quality control of foodstuff and yogurt.
Faculty of Sciences of Universities	In vitro micro-propagation and improvement of tubers, medicinal plants, woody species, and vegetables; toxicity of plant drugs and foodstuff in animals or on cell cultures.
National Sanitary Institute (INH)	Study of chemicals and bacteria, quality of water, study of river blindness virus vectors, and program on the eradication of Guinea worm.

### ***The World Bank portfolio***

The socioeconomic instability in Togo since the 1990s was characterized by political crisis and failure of governance. Within the IDA funding, it has been in no accrual status since May 2002, but the World Bank has kept its engagement within the Low-Income Country Under Stress (LICUS) framework providing analytical and advisory services. A grant of US\$2.7 million for a **community-driven Emergency Program for Poverty Reduction (EPPR)** was made with the aim to halt extreme poverty and the deterioration of social services. Many of the Bank-financed projects were completed in 2003; for instance, the **National Agricultural Services Support Project, Lome Urban Development Project, Road Transport Project, and Public Enterprise Restructuring & Privatization project.**

**Table 1: Overview Summary (Cross-country Comparison)**

**1) Status of modern biotechnology development (especially plant and cotton biotechnologies)**

	<b>Mali</b>	<b>Burkina Faso</b>	<b>Senegal</b>	<b>Benin</b>	<b>Togo</b>
1. Existing activities	1. Field tests of GM cotton are about to start	1. Field tests of 2 GM cotton plantings started in spring 2003; assessment of biological effectiveness of GM cotton on targeted insects; lab tests in the USA to introduce the genes	1. None	1. None (Moratorium)	1. Limited application to production of beer, soft drinks, and dairy products
2. Names of institutions or private entities involved	2. <i>Potential main institutions</i> : IER, Sciences and Techniques Faculty	2. - INERA, Monsanto, Syngenta - Sofitex, UNPCB	3. Capacities in molecular biology (Cheikh Anta Diop University/ Plant biology labs, CERAAS)	2. -	2. None
3. Existing level of national capacity	3. Molecular biology skills (Sciences and Techniques Faculty)	3. Still few national researchers with molecular skills	4. Training of researchers and technicians on IPRs	3. Weak	3. There are no LMOs developed or used in Togo. Introduction is through indirect use in the process of agroindustry; for instance, on the handling of crops, yeast and animals.
4. Areas of capacity-building needs	4. Training in IPRs for researchers and technicians	4. Training of researchers and technicians on IPRs		4. Improve infrastructure and equipment for detection and identification	4. Technical, scientific, and equipment needed

**2) Risk assessment**

	<b>Mali</b>	<b>Burkina Faso</b>	<b>Senegal</b>	<b>Benin</b>	<b>Togo</b>
1. Existing Activities	1. None	1. Gene flows, impacts on bee behaviour, impacts on soil micro-organisms, impacts on auxiliary fauna, impacts on animal and human health	1. None (U.S. university proposals for training courses on biosafety risks assessments)	1. None	1. Low .
2. Names of institutions or private entities involved	2. -	2. INERA, Research institute on technological sciences, institute of health sciences	2. -	2. -	2. None.
3. Existing level of national capacity	3. Few scientists with risk assessment skills	3. Lack of independent experts	3. <i>To be further studied</i>	3. Weak	3. Do not have adequate structures, resources; existing laboratories are under- equipped or equipped with outdated or less operational machinery
4. Areas of capacity-building needs	4. Improve general knowledge of researchers and technicians from IER, and Sciences and Techniques Faculty on risk assessment methods and techniques; train scientists from relevant disciplines on risk assessment	4. Setting up of the National Scientific Committee: national scientists from relevant disciplines (biology, ecology, toxicology, epidemiology, etc.) should be trained in risk assessment procedures and methods, to provide independent advice on LMOs applications; training experts from the national institutes involved in risk assessment for the GM cotton field tests; assessment of socioeconomic impacts of GM cotton, possibility of coexistence with traditional and organic cotton	4. Increasing the knowledge of modern biotechnology practitioners (researchers, technicians, university professors, plant breeders, etc.) of methods, techniques, experimentation protocols, and guidelines for risk assessment; Training scientists in risks assessment (biologists, ecologists, virologists, etc.)	4. Improving the knowledge of modern biotechnology practitioners on methods, techniques, experimentation protocols, and guidelines for risk assessment	4. Technology and equipment are needed.

### 3) Regulatory development, and preparation of the NBF

	<b>Mali</b>	<b>Burkina Faso</b>	<b>Senegal</b>	<b>Benin</b>	<b>Togo</b>
1. Status of NBF	1. Draft NBF released, decree on LMOs test fields to be adopted by the government;	1. Draft NBF to be adopted by national stakeholder workshop, Decree “Règles nationales sur la sécurité en biotechnologie” (June 2004, “National Rules on Biotechnology Safety”), draft law on biosafety adopted by the Ministers Council in November 2005 will be discussed by the National Parliament beginning 2006, then approved by national stakeholder workshop	1. Draft law project under consideration by the relevant ministries; to be discussed and adopted by the National Parliament	1. Draft national framework released but not approved yet by the National Biosafety Committee; draft law under consideration by the Commission of Law Codification	1. NBF completed in December 2004
2. Institutional setup	2. National Biosafety Focal Point/ national project coordinator; legal support from USAID experts to draft the decree on LMO test fields	2. National Biosafety Focal Point; National Biosafety Agency; National Biosafety Committee; National Project Coordinator (who is also lawyer/ Legal Adviser to the Minister of Environment), INERA , CNRST/ANVAR	2. National Project Coordinator, National Biosafety Committee, including an environmental lawyer	2. Report made by two consultants from the CBRST and Sciences and Techniques Faculty	2. Outline of institutional setup provided
3. Existing legal capacities	3. Weak legal capacities	3. Legal skills (1 or 2 persons)	3. Legal skills (1 or 2 persons)	3. Vary	3. Poor legal capacity
4. Areas of legal capacity-building needs	4. Legal assistance to draft “application texts”	4. Setting up the National Scientific Committee: national scientists from relevant disciplines (biology, ecology, toxicology, epidemiology, etc.) should be trained in risk assessment procedures and methods so as to provide independent advice on LMOs applications; training experts from the national institutes involved in risk assessment for the GM cotton field tests; assessment of socioeconomic impacts of GM cotton, possibility of coexistence with traditional and organic cotton	4. Legal assistance to develop “application texts”	4. Improvement of the national regulation on biosafety and legal assistance	4. No mention of the preparation of law to address bio-safety issues

**4) Risk management, monitoring and enforcement, implementation of the NBF**

	<b>Mali</b>	<b>Burkina Faso</b>	<b>Senegal</b>	<b>Benin</b>	<b>Togo</b>
1. Existing Activities	<b><i>1. To be further studied</i></b>	1. Field tests in “research stations” isolated from cotton production areas; improvement of confinement measures since the beginning of the field tests; setting up buffer zones; setting up the National Biosafety Agency	<b><i>1. To be further studied</i></b>	1. None	1. Low.
2. Names of institutions or private entities involved	<b><i>2. To be further studied</i></b>	2. INERA, Monsanto, Syngenta	3. LMOs detection and identification capacities (CERAAS)	3. Very low	2. None
3. Existing level of national capacity	3. Detecting and identifying of capacities at the Sciences and Techniques Faculty (equipment provided by USAID)	3. Lack of human resources within the National Biosafety Agency, lack of labs to detect and identify LMOs	4. Improving cotton companies’ general knowledge of LMOs, esp. GM cotton and biosafety; strengthening cotton companies’ LMOs risk management and monitoring capacities	4. Improving infrastructure and equipment to detect and identify LMOs	3. Weak
4. Areas of capacity-building needs	4. Strengthening the institutional capacities of national biosafety institutions involved in handling LMOs application (cf. <b><i>USAID PBS</i></b> ); improving cotton companies’ general knowledge of LMOs, esp. GM cotton and biosafety; strengthening capacities of cotton companies on LMO risk management and monitoring	4. Strengthening institutional capacities of the National Biosafety Agency and development of human resources; improving general knowledge of LMOs and biosafety, procedures for handling LMOs applications, international and national regulations, risk assessment and management, information sharing and data management, etc.; setting up the National Scientific Committee and other national biosafety institutions; improving cotton companies’ general knowledge of LMOs, esp. GM cotton and biosafety; strengthening cotton companies’ LMO risk management and monitoring capacities			4. Setting up a national biosafety management body, training human resources;, procuring equipment, establishing appropriate research program at the national level, encouraging bilateral and multilateral programs

## 5) General public awareness

	<b>Mali</b>	<b>Burkina Faso</b>	<b>Senegal</b>	<b>Benin</b>	<b>Togo</b>
1. Existing Activities	1. Local radio emissions on LMOs, <b>[To supplement]</b>	1 Public debates, national workshops; TV programs; public restitution meetings on GM cotton field test results; consultation of major stakeholders for NBF development	1. Consultation of major stakeholders in the drafting of NBF and regulation; public debate; workshop	1. Action Plan on awareness raising and public participation adopted but not yet fully implemented; LMOs awareness raising campaign, newsletters, TV, and radio interviews	1. Primarily focusing on those engaged in research institutions or top management level of agencies dealing with issues relating to environment, agriculture, and human health.
2. Names of institutions or private entities involved	2. Malian Coalition for the Protection of African Genetic Heritage; RIBios (Swiss experts)	2. Public authorities, NGOs (CV-OGM, Inades-Formation), consumer associations; INERA/SOFITEX/Monsano/Syngenta/ UNPCB	2. National Project Coordinator; Senegalese Coalition for Protection of African Genetic Heritage; IDRC	2. Main activities undertaken by consumers and environmental NGOs	4. A general outreach program and program targeted for decision makers.
3. Existing level of national capacity	3. -	3. Lack of trainers	3. Weak	3. Few people able to relay information on LMOs and biosafety	
4. Areas of capacity-building needs	4. Training for trainers, development of human resources from mass media, local radios, NGOs, farmers' organizations on public information	4. Support NBA for implementing further public awareness activities; training for potential trainers	<b>4. [To be further studied]</b> Training for trainers	4. Implementing the public awareness [?] Action Plan	

## 6) Farmer and producer organization awareness

	<b>Mali</b>	<b>Burkina Faso</b>	<b>Senegal</b>	<b>Benin</b>	<b>Togo</b>
1. Existing Activities	1. Local radio programs on LMOs; <b>[To supplement]</b>	1. <b>[To be further studied]</b>	1. Some occasional workshops at local level; participation in the Biosafety National Committee	1. Not many awareness-raising activities; just at the preliminary stage; no advocacy activities	1. None
2. Names of institutions or private entities involved	2. - Malian Coalition for the Protection of African Genetic Heritage	2. <b>[To be further studied:]</b> UNPCB, FENOP, Confederation Paysanne du Faso	2. FONGS/ CNCR	2. FUPCRO	2. None
3. Existing level of national capacity	- AOPP, GSCVM	3. Only a few farmer leaders able to relay information on LMOs and biosafety	3. Weak	3. Very low level of farmer and producer organization involvement in the LMOs and biosafety debates; as a consequence, little knowledge	3. Has been listed in the target group where awareness program will be initiated
4. Areas of capacity-building needs	4. Bringing cotton producers "up to speed" on LMOs and biosafety <b>[To be further studied]</b>	4. Improve farmers' and especially cotton producers' general knowledge of LMOs and biosafety <b>[To be further studied]</b>	4. <b>[To be further studied]</b> Improving farmers' and especially cotton producers' general knowledge of LMOs and biosafety	4. Improve general knowledge to allow for a position to be defined; <b>[to be further studied]</b>	4.

## Annex 2: Major Related Projects Financed by the Bank and/or Other Agencies

### AFRICA: West Africa Regional Biosafety

Sector Issue	Country and Project		Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Bank-financed & Status	Implementation Progress (IP)	Development Objectives (DO)
Benin				
Agric. ext. & research; crops; agric. market & trade, agroindustry	Cotton Sector Reform Project (P072503)	IBRD/IDA (Active)	U	S
Benin –GEF				
Agriculture / fisheries / forestry	Community-Based Coastal and Marine Biodiversity Management Project (P071579))	GEF (pending)	-	-
Agriculture, fish, forest sector, sub-national government administration, central government administration, and other social services	Sahel Integrated Lowland Ecosystem Management (P070871)	GEF (Active)	S	S
Burkina Faso				
Agriculture, fisheries, forestry, general public administration sector; other social services: roads & highways; water; sanitation	Community Based Rural Development II (P098378)	IBRD /IDA (pending)	-	-
Agric. ext. & research, agriculture, fisheries, forestry, agric. market & trade, agro-industry	Agriculture Diversification and Market Development Project (P081567)	IBRD/IDA (pending)	-	-
Mali				
Agriculture, fisheries, forestry, sanitation; agric. market & trade	Rural Community Development Project (P040653)	IBRD/IDA (Active)	-	-
Agriculture, market, and trade; crops; fisheries; forest; roads; and highways	Agricultural Competitiveness and Diversification Project (ACDP) P081704	IBRD/IDA (Active)	-	-
Agricultural extension, central government administration, crops, animal production, and health.	Agricultural Services and Producers Organizations project (ASPOP) P035630	IBRD/IDA (Active)	S	S
Mali – GEF				

Agriculture / fisheries / forestry	Mali Sustainable Land Management (P099709)	GEF (Pending)	-	-
Agriculture, fisheries, forest services, central government administration, sub-national government administration, and other social services	Gourma Biodiversity Conservation Project P052402	GEF (Active)	S	S
<b>Senegal</b>				
Agric ext & research; Sub-national government administration; Agric market & trade	Agricultural Services & Producer Organizations Project 2 (ASPOP 2) P093622	GEF (pending)		
Agriculture, fisheries, forestry, central government administration, water, sanitation	Sahel Integrated Lowland Ecosystem Management (P070871)		S	S
Agriculture, fisheries, forestry, central government administration	Partnership for Natural Ecosystem Management Project P052400		S	S
<b>Senegal – GEF</b>				
Agriculture / fisheries / forestry, central government administration.	Integrated Ecosystem Management (P073011)	GEF (Active)	S	S
<b>Regional</b>				
Agric ext & research ; Agriculture / fisheries / forestry	West Africa Agricultural Productivity Program (WAAPP) (P094084)	GEF and IDA	-	-
<b>Other development agencies</b>				
USAID	Agricultural Biotechnology Support Program (ABSP II)	Coordinated by Cornell University to build capacity in agricultural biotechnology, selected bioengineered products, and the development of product commercialization packages.		
USAID	The Program for Biosafety System in Nigeria, Mali, and Ghana.	To address biosafety issues in the agriculture-led economic sector with the focus on trade and environment. The activities are on policy development, risk assessment, biotechnology, and biodiversity interface, facilitating regulatory approval and communication, public and food safety outreach, and capacity building.		

USAID	West African Regional Program (WARP) Initiative to End Hunger in Africa.	Support agricultural activities that transfer and disseminate productivity-enhancing technologies and information across borders. Launched education campaign to educate decision makers on the potential of biotechnology. Disseminated irrigation technologies and new drought-resistant crops to increase farmers' income.
USAID	Improved Policy Environment	Addressed constraints at the regional level and developed a coherent policy based on common interest to encourage regional trade. Support regional initiatives emanating from Permanent Interstate Committee for Drought Control in the Sahel (CILSS), WAEMU, and ECOWAS in the areas of agriculture, biotechnology, pest management, and food security.
USAID	West African Trade Hub	To develop capacity for better engagement in the multilateral trading system such as the WTO. To provide technical assistance to regional intergovernmental organizations and national ministries on trade-related issues.
French Development Agency - Benin	Support to the Cotton filiaire Reform of the cotton sector	
French Development Agency - Senegal	PACD Promotion of a sustainable and competitive agriculture	
UNEP (Regional) (Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger and Senegal) (2003)	Building Scientific and Technical Capacity for Effective Management and Sustainable Use of Dryland Biodiversity in West African Biosphere Reserves	
UNEP (Regional) (2001)	Community-Based Management of On-farm Plant Genetic Resources in Arid and Semi-arid Areas of Sub-Saharan Africa.	
UNEP (Regional) (2000)	Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa	
UNEP (Regional) (2001)	Conservation of Gramineae and Associated Arthropods for Sustainable Agricultural Development in Africa	
UNEP (Regional) (2005)	Reducing Dependence on POPs and Other Agrochemicals in the Senegal and Niger River Basins through Integrated production, pest and pollution management.	
UNEP/UNDP (Regional) 2001	Desert Margin Program-Phase 1.	

### **Annex 3: Confined field trials of transgenic cotton in Burkina Faso**

#### **AFRICA: West Africa Regional Biosafety**

Burkina Faso is the first country in West Africa to engage in field testing of transgenic crops. In 2003, driven by insect resistance to chemical pesticides and keen interest from the cotton-processing company SOFITEX to experiment with insect-resistant transgenic cotton, the National Environmental and Agronomical Research Institute (Institut National de l'Environnement et de la Recherche Agronomique, INERA) started field trials of transgenic cotton in two research stations; one is near Bobo-Dioulasso and another, near Fado N'Kourma. Two transgenic events, both conveying resistance to insect damage, are being tested: Monsanto's Bollgard II (expressing two *Bacillus thuringiensis* insecticidal proteins, Cry1Ac and Cry2Ab) and Syngenta's Vip Cotton (expressing another gene from *Bacillus thuringiensis* called vegetative insecticidal protein, Vip3, which has a similar mode of action to cry genes). The Vip3 protein is toxic to lepidopteran insects (e.g., cotton bollworm).

The mission visited the field trials at the INERA field station in Bobo-Dioulasso. The field area of the transgenic trial was about 0.6 ha, laid out in a randomized block design with three treatments: (1) transgenic variety, unsprayed; (2) local variety, unsprayed; and (3) local variety treated with a 6-spray regime of organophosphate and synthetic pyrethroid-based broad spectrum insecticides. Insect pressure and populations are monitored by frequent observations using insect traps for both cotton bollworm and for nontarget insects. To achieve reproductive isolation of the transgenic crop, it is surrounded by a 15 m guard row of conventional cotton planted at the perimeter of the trial. After harvest, all plant material of the transgenic cotton and the guard row is destroyed by burning except for grain samples taken for toxicological testing.

INERA provided the mission with data on the field performance of the transgenic varieties. According to INERA, pesticide applications can be reduced by approximately 80 percent, and the yield of the transgenic variety is between 20 and 30 percent better than the yield of a nontransgenic variety. The yield data have not yet been published. These field trials are used as venues for farmers and farmer organization representatives to observe the performance of the transgenic cotton and for training farmers in the technology.

The variety presently used in the trials is an American variety, Coker. However, integration of the insect-resistance trait into a local variety is being sought through two methods: crossing and transformation. INERA told the mission that a local cotton variety has been transformed with cry genes in Monsanto Laboratories in St. Louis. During the mission, a cotton breeder from INERA went to Monsanto to select the best transformants to be field-tested in Burkina Faso next season.

In 2002 initial presidential approval was received for the 2003 field trials. In September 2003, an interministerial committee was formed to develop a national biotechnology/biosafety policy and regulatory framework. That committee oversaw the conducting of the trials until February 2005, when the Ministry of Environment's Biosafety Agency began operation. The Agency has already made one request to INERA to test the impact of the transgenic variety on bees. As a response, the INERA team brought beehives to one of the experimental fields in Bobo-Dioulasso.

## Annex 4: Results Framework and Monitoring

### AFRICA: West Africa Regional Biosafety

#### Results Framework

<b>Project Global Environment Objective (GEO)/ Development Objective (PDO)</b>	<b>Outcome Indicators</b>	<b>Use of Outcome Information</b>
<b>GEO:</b> Regional biodiversity protected against the risks associated to introduction of LMOs that could be released in the environment	Satisfactory annual impact monitoring results showing that regional ecosystems are adequately protected especially on risks related to gene transfer to related and unrelated organisms, pest resistance and effect on non target organisms,. A scorecard will be used	YR1-YR2: Gauge compliance of countries with regional risk assessment and management guidelines YR3: Determine if guidelines need to be strengthened YR4: Feeds into broader regional program (ECOWAS)
<b>PDO:</b> Biosafety regulatory frameworks, which will ensure safe field trials and, if proven safe, commercial release of transgenic cotton and other crops in the beneficiary countries, implemented to accompany on-going LMOs development dynamic in the agriculture sectors	Percentage of cotton field trials using the new regional science-based risk assessment and management methods prior to implementation	YR1-YR3: Low level may flag either poor capacity or lack of regulator commitment to adopt science-based guidelines; information used to guide project focus YR4: Will inform development of regional regulations
<b>Intermediate Results by Component</b>	<b>Results Indicators for Each Component</b>	<b>Use of Results Monitoring</b>
<b>Component One:</b> Regional risk assessment and management methodologies designed and disseminated in the WAEMU region	<b>Component One:</b> % of application reviews using the new regional risk assessment and management handbook	<b>Component One:</b> YR2: handbook finalized and accepted by GEF YR3-YR4: Low level may flag poor training programs or lack of research institutes and regulators capacity
<b>Component Two:</b> Functioning national biosafety regulatory systems in the five beneficiary countries	<b>Component Two:</b> Number of timely <sup>30</sup> completed reports describing full application reviews % of field trials conducted in compliance with the approval requirements Number of written comments submitted by the public before regulatory decisions (law and regulations, guidance and LMOs applications)	<b>Component Two:</b> YR3: Biosafety systems in place and accepted by GEF YR4: Low level may flag governance issues  YR1-YR4: High number of public complaints may flag acceptance problems
<b>Component Three:</b> IPR and Biosafety frameworks are harmonized at WAEMU level  Functioning regional observatory	<b>Component Three:</b> Regional biosafety and IPR frameworks ratified by WAEMU Council of Ministers and implemented  Number and quality of environmental and socio-economic impact monitoring reports	<b>Component Three:</b> YR2: regional law in place and acceptable for GEF YR1-YR3: Slow progress may flag effectiveness problems YR4: feed into a regional program (ECOWAS) YR1-YR4: Low level may flag information gaps

<sup>30</sup> Timely means that the applicant will receive a response (approval or not, request of additional information) within [to be determined by regional and national rules] months

### Tentative arrangements for results monitoring

		Target Values <sup>31</sup>				Data Collection and Reporting		
Project Outcome Indicators	Baseline	YR1	YR2	YR3	YR4	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Project Development Objectives								
Percentage of cotton field trials using the new regional science-based risk assessment and management methods prior to implementation	0	While regional tools are not yet designed, ongoing field trials will be assessed case by case, and appropriate action taken	80	90	100	Quarterly	M&E system + Project implementation reports	WAEMU/Regional coordination NCAs/ National coordination
Global Environmental Objectives								
Satisfactory annual impact monitoring results showing that regional ecosystems especially against gene transfer to related and unrelated organisms, pest resistance and effect on non target organisms, are adequately protected. A scorecard will be used.	Baseline data to be gathered during preparation	Scorecard rate: satisfactory	Scorecard rate: satisfactory	Scorecard rate: Assessment highly satisfactory	Scorecard rate: Assessment highly satisfactory	Annually	Annual assessment	WAEMU/Regional coordination NCAs/ National coordination
Result Indicators for each component								
A1: % of application reviews using the new regional risk assessment and management handbook	0	While regional tools are not yet designed, ongoing field trials will be assessed case by case, and appropriate action taken	80	90	100	Quarterly	M&E system + Project implementation reports	WAEMU/Regional coordination NCAs/ National coordination
B1: % of application timely <sup>32</sup> processed	to be assessed during preparation (baseline data)	20	50	75	100	Quarterly	M&E system + Project implementation reports	WAEMU/Regional coordination NCAs/ National coordination
B3: % of field trials	0	While regional tools are	80	90	100	Quarterly	M&E system +	WAEMU/Regional

<sup>31</sup> Target values are indicative at preparation and may be revised during appraisal following discussions with the client countries.

<sup>32</sup> Timely means that the applicant will receive a response (approval or not, request of additional information) within [to be determined by regional and national rules] months

Project Outcome Indicators	Baseline	Target Values <sup>31</sup>				Data Collection and Reporting		
		YR1	YR2	YR3	YR4	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
conducted in compliance with the approval requirements		not yet designed, ongoing field trials will be assessed case by case, and appropriate action taken					Project implementation reports	coordination NCAs/ National coordination
<b>B4:</b> Annual increase of written comments submitted by the public before regulatory decisions	to be assessed during preparation (baseline data)	+30%	+50%	+100%	+100%	Annually	M&E system + Project implementation reports	WAEMU/Regional coordination NCAs/ National coordination
<b>C1:</b> Regional biosafety and IPR frameworks ratified by WAEMU Council of Ministers	0 (feasibility study during preparation)	In countries studies + stakeholders workshops	Regional workshops	Common regulation prepared	Common regulation adopted	Quarterly	WAEMU annual report, and Project implementation reports	WAEMU Regional coordination
<b>C2:</b> Number of annual environmental and socio-economic impact monitoring reports	0	Burkina (1) Others (0)	Burkina (1) Mali (1) Senegal (1) Togo (0) Benin (0)	Burkina (1) Mali (1) Senegal (1) Togo (1) Benin (1)	Burkina (1) Mali (1) Senegal (1) Togo (1) Benin (1)	Annually	WAEMU annual report, and Project implementation reports	WAEMU Regional coordination

## **Annex 5: Detailed Project Description**

### **AFRICA: West Africa Regional Biosafety**

The project will cover five beneficiary countries of WAEMU,<sup>33</sup> namely: Benin, Burkina Faso, Mali, Senegal, and Togo.

The precise components, activities, and implementation arrangements of the project will be defined through a set of preparatory studies that will be undertaken between pre-appraisal and appraisal with support from a GEF/PDF Block B Grant. This set includes but is not limited to: a stocktaking assessment within each country to identify the existing regulatory and institutional framework on biosafety and biotechnology and the level of capacities, a needs assessment on training needs and on intellectual property rights as related to biosafety, an institutional assessment within the countries and at the regional level, and a study on regional harmonization of national biosafety frameworks.

The grant was requested in September 2005, approved in November 2005, and will be effective once the grant agreement is signed by WAEMU on behalf of the five beneficiary countries. In order to prepare the GEF brief for the work program entry, an assessment, based principally on existing studies and documentation, has been launched with the help of an interim trust fund put in place by the ACCTF.

Under the project, GEF funds will finance only activities that fall under the Cartagena Protocol on Biosafety (CPB). Specifically, GEF funds will provide assistance to build necessary legislative and administrative frameworks, and for training in risk assessment and risk management.<sup>34</sup> Other needs such as risk assessment for food and feed safety and capacity building in IPR negotiation will be provided through other co-financing partners, and potentially a regional IDA allocation.

The project has three main components: (A) a technical and *scientific component* that will produce regional methodologies in the field of risk assessment and risk management; (B) a *regulatory component* that will implement National Biosafety Frameworks (NBFs) tailored to country needs; (C) an *economic and policy component* that will support WAEMU efforts to harmonize legislation on biosafety and intellectual property regimes on crop varieties and set up a regional observatory to monitor the impact of agricultural biotechnology introduction.

#### ***Component A: Adapt and Disseminate Regional Methodologies to Assess and Manage Risks*** – (estimated at US\$ 3.5 million of which GEF: US\$0.9 million)

Risk assessment is the process of identifying, evaluating, and selecting actions to prevent or mitigate risks associated with the use of LMOs. This will lead to procedures that must be undertaken in a scientific manner based on recognized risk assessment techniques, taking into account advice and guidelines developed by relevant international organizations and lessons learned through practical experiences developed worldwide, including the developing world, such as South Asia and Latin America.

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<sup>33</sup> In French, WAEMU is UEMOA, for *Union Economique et Monétaire Ouest Africaine*.

<sup>34</sup> GEF, 2005, Elements for a Biosafety Strategy.

This component will mainly support the development of operational and regionally harmonized methodologies for risk assessment and risk management of international standards for the handling, transporting, packaging, inspecting, and reporting of LMOs, and for conducting laboratory and greenhouse experimentation, confined field trials, and food and feed safety testing. These methodologies will include guidelines, technical documents, forms and checklists, training manuals, laboratory and field trial protocols, inspection, and monitoring procedures. Since experimentation on transgenic cotton has already been launched in the subregion, the project will focus first on this crop, but not exclusively. Other crop-specific tools (e.g., biology documents) might be created according to the development of plant biotechnology, involving both imports and research in the region, including transgenic rice or cowpea.

These instruments will enable the national biosafety committees, agricultural and environmental research institutions, enforcement agencies and other relevant stakeholders to make informed decisions on risks related to the import and use of LMOs and to effectively manage such associated risk.

More specifically, the component includes four subcomponents related to risk assessment: (i) establishment of a regional Biosafety Clearinghouse (BCH) website (in French, the official language of WAEMU) for easy access by the key stakeholders and the public of the participating countries. The BCH serves as a central portal through which available scientific documentation will be accessible; (ii) development of common environmental risk assessment and management tools; (iii) design of common risk assessment tools on food and feed safety; and (iv) dissemination of manuals enumerating on procedures for handling LMOs and carrying out risk assessment and management at a national level. The implementation of such components is supported through workshops and trainings.

***Component B: Implementation of the National Biosafety Regulatory Frameworks –***  
(estimated at US\$ 11.4 million of which GEF: US\$1.5 million)

The Cartagena Protocol on Biosafety (CPB) establishes an internationally binding framework of minimum biosafety standards for the national implementation in the field of transboundary movements of LMOs, including their safe transfer, handling, and use. For countries that have ratified the CPB, these standards must be translated into national biosafety systems or National Biosafety Frameworks (NBFs) that encompass a regulatory framework detailing the process and procedures in LMOs applications, institutional setup, and procedures for public awareness and participations. All the five beneficiary countries have benefited from the NBFs project funded by the Global Environment Facility (GEF) and implemented by the United Nations Environment Program (UNEP) but none has started their implementation.

This component will support the implementation of the NBFs in the five countries. The primary focus will be on transgenic cotton regulation. Burkina Faso, driven by insect resistance to chemical pesticides and by the rising transportation costs of agricultural inputs (partly because of the conflict in Côte d'Ivoire) is already engaged in field testing. All the five beneficiary countries are cotton producers and exporters. It is therefore highly likely that transgenic cotton field trials are going to spread throughout the cotton belt, the

basic weave of WAEMU economy, starting with Mali, probably followed by Senegal, and later on by Benin and Togo.

More specifically, this second component includes four subcomponents: (i) reviewing legislative work started with the help of the completed UNEP-GEF biosafety projects, including improved public participation; (ii) raising public awareness, especially of farmers, through information campaigns, communication, and training, all in the countries' vernacular languages; (iii) a) strengthening national biosafety agencies and related administration to improve their coordination function, increase their capacity to review biosafety assessments for transgenic crops, enforce the regulations, and conduct postrelease monitoring of LMOs and their impact on environment and food and feed safety; b) strengthening the coordination between ministries; and (iv) building risk assessment capacities of laboratories and regional institutions to undertake both basic testing and more complex analysis for biosafety research/analysis. The component will also strengthen the capacities of NARIs and regional research institutions in the development of strategies for managing and negotiating IPRs and in assessing the impact of IPRs on the plant breeding and seed sector.

***Component C: Set up Legal Frameworks for Biosafety and IPRs among Beneficiary Countries*** – (estimated at US\$ 9.4 million of which GEF: US\$3.0million)

WAEMU is currently engaged in the construction of an economical and political sphere where cotton plays a major and unifying role, especially regarding trade issues within the World Trade Organization (WTO). If WAEMU is able to harmonize national biosafety legislations and later to enforce a decision taken in one country in the other countries, it will drastically improve the investment climate in biotechnology for cash and food crops in the WAEMU area<sup>35</sup> because of the reduced number of administrative requests from private companies. Because the investment climate would have been improved, WAEMU might be able to help countries develop appropriate intellectual property regimes on crop varieties at the regional level. This action is geared to help farmers benefit from the adoption of biotechnology, both in cash and food crops, by combining access to new technologies and rising income.

The regional approach will be based on key WAEMU principles of subsidiarity where member states subjugate their power to WAEMU to achieve common objectives and progressiveness. For instance, the component will build on the experience of countries such as Burkina Faso and Senegal, which are keen to progress rapidly in their NBFs implementation, and establish a regional biosafety framework in which the member countries could fit in.

This component will support the regional harmonization of NBFs and the establishment of a regional biosafety framework, the development of a regional intellectual property rights framework on plant varieties and transgenes, and the subsequent negotiations on licensing agreements. Both processes aim at ensuring that environmental and human health considerations embedded in the CPB are taken into account as well as development considerations, particularly poverty alleviation.

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<sup>35</sup> By diminishing the cost of doing business in the region.

More specifically, the component includes three subcomponents: (i) setting up a regional coherent policy and regulatory framework on biosafety and IPRs; (ii) establishing a regional observatory on modern agricultural biotechnology to monitor the impact of such technology to the environment, food and feed safety and the socioeconomic considerations; and (iii) supporting the project management, monitoring, and evaluation unit.

According to the progress made in terms of regional harmonization, the observatory could potentially be responsible for activities first handled at the national level. During the mid-term evaluation of the project, an assessment will be done on these aspects to determine whether or not more resources should be allocated (from Component B) to Component C.

**Annex 6: Project Costs**  
**AFRICA: West Africa Regional Biosafety**

**To be finalized at appraisal**

**Annex 6**  
**West Africa Region**  
Proposed West Africa Regional Biosafety Project  
**Table E**  
**Components by Financiers - Totals Including Contingencies**  
(US\$ Million)

		GEF		IDA		Western Africa Region Governments**		Already invested		Identified* Financing		To be Financed		Total	
		Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
<b>A. Adapt and disseminate Regional Guidelines to assess and manage risks</b>															
1. Set up and implement a regional Biosafety Clearing House		0.4	27	0.4	27	-	-	-	-	-	-	0.7	47	1.5	6
2. Design shared risk assessment methodologies		0.4	27	0.3	20	-	-	0.4	28	0.4	23	0.0	2	1.5	6
3. Dissemination to research and regulation agencies		0.1	24	-	-	-	-	0.0	4	0.4	70	0.0	2	0.5	2
<b>Subtotal Adapt and disseminate Regional Guidelines to assess and manage risks</b>		<b>0.9</b>	<b>26</b>	<b>0.7</b>	<b>20</b>	<b>-</b>	<b>-</b>	<b>0.4</b>	<b>13</b>	<b>0.7</b>	<b>20</b>	<b>0.7</b>	<b>21</b>	<b>3.5</b>	<b>14</b>
<b>B. Implement national biosafety regulatory framework</b>															
1. Review and adapt national biosafety legislations		0.5	19	0.2	7	1.2	44	0.5	19	0.3	11	0.0	0	2.7	11
2. Strengthen institutional capacity, human resources and laboratory equipment		0.5	13	-	-	-	-	0.7	18	1.2	32	1.5	38	3.9	16
3. Public awareness building		0.5	10	-	-	-	-	1.3	28	2.5	52	0.5	10	4.8	20
<b>Subtotal Implement national biosafety regulatory framework</b>		<b>1.5</b>	<b>13</b>	<b>0.2</b>	<b>2</b>	<b>1.2</b>	<b>10</b>	<b>2.5</b>	<b>22</b>	<b>4.0</b>	<b>35</b>	<b>2.0</b>	<b>17</b>	<b>11.4</b>	<b>47</b>
<b>C. Set up a Regional biosafety and IPR legal framework among WAEMU countries</b>															
1. Set up and run a regional framework on biosafety and IPR		1.3	24	-	-	0.6	11	1.6	29	2.0	35	0.1	1	5.5	23
2. Set up and implement a regional observatory of biotechnologies impacts		1.0	50	1.0	50	-	-	-	-	-	-	-	-	2.0	8
3. Project management, monitoring and evaluation		0.8	40	0.5	25	-	-	-	-	-	-	0.7	35	2.0	8
<b>Subtotal Set up a Regional biosafety and IPR legal framework among WAEMU countries</b>		<b>3.1</b>	<b>33</b>	<b>1.5</b>	<b>16</b>	<b>0.6</b>	<b>6</b>	<b>1.6</b>	<b>17</b>	<b>2.0</b>	<b>21</b>	<b>0.8</b>	<b>8</b>	<b>9.5</b>	<b>39</b>
<b>Total Disbursement</b>		<b>5.5</b>	<b>23</b>	<b>2.4</b>	<b>10</b>	<b>1.8</b>	<b>7</b>	<b>4.6</b>	<b>19</b>	<b>6.7</b>	<b>27</b>	<b>3.4</b>	<b>14</b>	<b>24.4</b>	<b>100</b>

Note: Figures may not add up to total due to rounding

\* Including IDA at country level and contribution to other IDA projects, CROPLIFE, AFD

\*\* Including WAEMU

## **Annex 7: Implementation Arrangements**

### **AFRICA: West Africa Regional Biosafety**

#### **Partnership Arrangements**

The project will be implemented in partnership with national biosafety agencies and related administrative bodies, cotton producers and companies (biotechnology companies and other relevant industry groups), NGOs, and multilateral and bilateral donor organizations. Specialized biotechnology and biosafety organizations such as the AATF,<sup>36</sup> Rockefeller Foundation, RIBios,<sup>37</sup> ISNAR,<sup>38</sup> NGICA,<sup>39</sup> CGIAR, and CIRAD, will be close partners because some of them are developing transgenic food crops such as the cowpea, and others are starting biosafety and IPR-related capacity-building projects.

UNEP, through its Nairobi division for GEF coordination and its Geneva division for biosafety, will be a crucial partner due to their previous experience in handling NBFs and implementing 12 GEF projects on NBF implementation. The FAO will be a partner through its cotton, IPR, and biotechnology information and communication projects in the West Africa region. The United States will contribute through its ongoing biotechnology and biosafety programs and a forthcoming regional project with the Institut du Sahel (INSAH). France, through its capacity-building projects from the Ministry of Foreign Affairs, the French Development Agency, and the French GEF, will also provide support for project activities.

In May 2005, ECOWAS, a larger regional entity that includes all the WAEMU countries as members, as well as Cape Verde, The Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone, adopted a sub-regional initiative on biotechnology and biosafety with the support from USAID. Following a ministerial conference in June 2005 in Bamako, ECOWAS began to develop an action plan on agricultural biotechnology and biosafety. It identifies several priority areas for action on biotechnologies and biosafety. Regarding biosafety, it envisages the development of a harmonized sub-regional framework to minimize problems from trans-boundary movement of non authorized LMOs.

WAEMU, a smaller regional entity with eight francophone members will also work closely with ECOWAS. This is because WAEMU has a comparative advantage in the fast adoption of harmonized regulations and sector policies as apposed to ECOWAS's procedures. However, a common approach between WAEMU and ECOWAS will be favored by the project since trade of agricultural products is important between Anglophone and francophone countries in West Africa. Thus, it is expected that the project will have positive externalities over the entire ECOWAS area.

A close but not exclusive partnership will also likely be developed by WAEMU with the two regional institutions- WECARD and INSAH/CILSS. The project will complement the efforts on research and development of biotechnology undertaken by WECARD and regulatory harmonization undertaken by INSAH.

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<sup>36</sup> African Agriculture Technology Foundation

<sup>37</sup> Biosafety Interdisciplinary Network, [www.ribios.ch](http://www.ribios.ch)

<sup>38</sup> International Service for National Agriculture Research.

<sup>39</sup> Network for the Genetic Improvement of Cowpea for Africa, <http://www.entm.purdue.edu/ngica>

INSAH's involvement in biosafety is focused more on regulation harmonization issues because of its long experience with pesticide authorization regulations and phytosanitary measures. In 2003, INSAH released an inventory of regulations and guidelines for the authorization of LMO movements in the Sahel. Following this study, it launched a process in November 2004 to develop framework agreements defining a common regulation on conventional and GM seeds in and biosafety in the CILSS zone. These drafts have been submitted to the states for consideration and have been discussed in a stakeholder workshop in January 2006 in Niamey.

### **Implementation Arrangements**

*Project Implementation Period.* The four-year project will be implemented during fiscal years 2006-2010, completed by December 31, 2009, and closed by June 30, 2010.

*Executing Agencies.* As a part of the project preparation, a review of the institutional capacities of the main regional agencies involved in biosafety and biotechnology policies and activities (WAEMU, WECARD, and INSAH) will be undertaken, and the following implementation arrangements will be confirmed based on the review.

Given the technical nature of some aspects of the project (i.e., risk assessment) and the large number of participant countries, a Regional Coordination Unit, headed by a regional coordinator hired by the project, could be established within the rural and environmental department of WAEMU, the proposed implementation agency. The unit will be directly responsible for the overall coordination of the project and the implementation of Component C. The implementation of part or all of Components A and B could be subcontracted through a competitive process to regional research institutions such as WECARD and INSAH/CILSS, and/or other regional research institutions.

The regional coordination unit will also be accountable for ensuring that financial reporting and auditing requirements are met and that the World Bank procurement, disbursement, and financial management policies and procedures are followed. A financial management and procurement capacity assessment of WAEMU will be undertaken during the preparation of the project. The fiduciary responsibility of the project will most likely be under the administrative and financial department of WAEMU which has been proposed as follows, WAEMU will be the implementing agency with a designed account. Thereafter, WAEMU will sign management services agreements with executing agencies in the five beneficiary countries that undertake to implement the activities under Component A and B. This will enable the funds withdrawal from WAEMU to the executing agencies.

If needed, a procurement and financial management specialist will be recruited. WAEMU has been proposed as a suitable organization (WAEMU is already working with the procurement department of the World Bank on a procurement harmonization project) to host the project management unit.

In addition, a national project coordinator will be nominated in each of the countries to provide supervision and coordination at the interagency level and to ensure effective implementation of the NBFs. The national coordinator, if different from the GEF and CBP focal points, will communicate and coordinate with them to seek complementarities rather than duplication in biosafety management.

64. *Project Oversight.* A steering committee will be responsible for the overall monitoring of project implementation. The steering committee will include senior officials from the five beneficiary countries responsible for the environment or agriculture or both in each of the beneficiary countries, representatives of regional research institutions and major stakeholders such as regional producer organizations, consumer groups, private sectors and NGOs. The committee will meet as required, at least once a year physically and additional meetings would be conducted virtually.

## Annex 8: Stakeholder Participation

### AFRICA: West Africa Regional Biosafety

The identified multi-stakeholders mentioned in Section C3 and their training needs are detailed in the table below. By appraisal, a stakeholder participation action plan will be prepared to be finalized prior to negotiations.

Training Needs	Major Target Groups												
(Key Competencies-knowledge and skills required)	Decision/policy makers	Government regulators	Scientists/technical, advisors, and	Enforcement officials	Customs officials	Lawyers/judges	Economists	Data/information managers	Researchers & technicians	Graduate & undergraduate students	Interest groups (Consumer groups, industry farmers, NGOs Associations)	Mass media/extension workers	General public, politicians
General biosafety/biotech knowledge	+	+	+	+	+	+	+	+	+	+	+	+	+
Molecular biology skills			+						+	+	+		
Biosafety research/field trials techniques (e.g., buffer zone, isolation distance, etc.)			+						+	+	+		
Risk assessment and management			+	+				+	+		+		
Audit of risk assessment reports and risk management plans	+	+	+								+		
Safety requirements and procedures for intentional and unintentional LMO releases	+	+	+	+	+	+		+	+				
Tools for monitoring the handling, transport, packaging, and use of LMOs				+	+	+		+	+				
Compliance requirements under the Cartagena Biosafety Protocol	+	+	+	+		+	+	+			+	+	+
Harmonization of biosafety-related sectoral laws/policies, including international agreements.	+	+	+	+		+	+						
Regulatory training (legal, policy, enforcement, inspection, etc.)	+	+		+	+	+							
Preparation and presentation of LMO export or release applications/dossiers	+	+	+			+			+				
Review of applications and the accompanying dossiers		+	+	+		+					+		

**Annex 9: Financial Management and Disbursement Arrangements**  
**AFRICA: West Africa Regional Biosafety**

**To be finalized at appraisal**

## **Annex 10: Procurement Arrangements**

### **AFRICA: West Africa Regional Biosafety**

**To be finalized at appraisal**

## **Annex 11: Economic and Financial Analysis**

### **AFRICA: West Africa Regional Biosafety**

**To be finalized at appraisal**

## **Annex 12: Safeguard Policy Issues**

### **AFRICA: West Africa Regional Biosafety**

This process will be achieved through the implementation of the Cartagena Protocol on Biosafety (CPB) in the five beneficiary countries at the national level and at the regional under the umbrella of WAEMU. The approach will focus on strengthening the national competent authorities in charge of biosafety, training various stakeholders, and promoting public awareness. This process, which aims at identifying, evaluating, and selecting actions to prevent and reduce risks, will be undertaken in a scientific manner, taking into account guidelines developed by relevant international organizations. The project will also build a regional legal framework on biosafety and intellectual properties rights (IPRs) on modern biotechnologies and monitor the impact of their introduction. Ultimately, the project would benefit the West African sub-region in particular and serve as a possible model for other African sub-regions.

While transgenic cotton is a strong driver for developing the present project and for choosing the targeted countries, the project's goal is to strengthen and build the capacity of various stakeholders and improve intersectoral and interagency cooperation and coordination at the national and regional levels.

On the advice of the QER meeting on February 28, 2006, the project was categorized from "C" to "B" due to its dual focus. The first aspect emphasis on strengthening the capacity of various pertinent stakeholders in the process of establishing the National Biosafety Frameworks (NBFs). The second aspect is pertaining to the establishment of the NBFs that led to the diffusion of biotechnology in the five beneficiary countries. This diffusion warrants for the establishment of an instrument to safeguard the environment, human health and socio-economic considerations that have been the cornerstone of the Cartagena Biosafety Protocol.

The team was furthered advised to prepare an environment and social impact framework that would facilitate the five beneficiary countries to implement it at the national level. The proposed environment and social impact framework is appended to as annex 12A.

## **Annex 12A: Environmental and Social Impacts Management Framework for the proposed West African Regional Biosafety Project**

### **(A) Objectives of the proposed project**

Cotton is an important commodity in many West African countries and there has been a great effort to improve its productivity and competitiveness to address poverty reduction in the rural economy. Policy makers at various ministries and researchers from National Agricultural Research Institutions are keen to apply modern biotechnology with the initial introduction of transgenic cotton. In parallel, plant science industries are keen to invest in the diffusion and commercialization of transgenic cotton. However, both the national stakeholders and investors are hindered in their efforts by the absence of a regulatory framework for biosafety to address the safe handling, transfer and use of transgenic cotton.

To fill this gap the proposed regional biosafety project will facilitate the development of a regional regulatory framework with the final goal of promulgation of biosafety law originating from the West African Economic and Monetary Union (WAEMU) framework and to be implemented at the national level. The proposed project will build capacity for environmental, food safety and socio-economic risk assessment. These actions will facilitate safe access to agricultural biotechnology in the participating countries. It is envisioned that strengthened regulatory framework on biosafety will build confidence in a competent risk assessment process in the region. This is likely to increase the interest of international companies and organizations in Living Modified Organisms (LMOs) testing. For adequate protection of the natural and socio-economic environment and human and animal health, the project will apply the following guidelines and standards to assure quality of the risk assessment process.

### **(B) Internationally Agreed Standards on LMO Risk Assessment**

Risk assessment has been recognized by various international consensus documents such as the Cartagena Biosafety Protocol (Article 15 and Annex III) and other instruments developed by the Organization for Economic Cooperation and Development (OECD), the World Health Organization (WHO) and the Food and Agriculture Organization (FAO). All the foregoing instruments pointed to the development of effective risk assessment and management tools based on science that should be applied on a case-by-case basis.

The present project will apply the above established international standards on risk assessment and management for various stakeholders at the regional and national levels. The details regarding the principles, the prerequisite information and the practical guidance for risk assessment are outlined in the following text boxes A, B and C.

*Boxes A: Principles on risk assessment.*

Identification of any novel genotype and phenotype characteristic(s) of the LMOs; Evaluation of the potential adverse impact posed to the environment and human and animal health; Evaluation of the consequences if the adverse effect materializes; Estimation of the overall risk posed by the LMOs based on the evaluation for its consequence; Recommendation on the acceptable or manageable level of risk including a strategy for management; Finally, if there is uncertainty in the risk level, additional information may be requested or appropriate risk management strategies be developed to monitor the LMOs in its receiving environment.
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*Source: Cartagena Protocol on Biosafety, Annex 3*

*Box B: Prerequisite information needed for Risk Assessment*

Characteristic of the recipient or parental organisms;  
Donor organism/s;  
Vector;  
Genetic characteristic of the inserted rDNA and its function;  
LMOs- its characteristic and difference with the recipient or parental organism;  
Information relating to the intended use;  
Information on the receiving environment.

*Source: Cartagena Protocol on Biosafety, Annex 3*

*Box C: Features of the methodology for Risk Assessment*

Familiarity with the biological setup of the plant and the agriculture or silviculture practices applied;  
Specific monograph describing the biology of the species being reviewed including the taxonomic description of the plant, the consumption and uses of the crop plant, the national breeding, seed production and agronomic practices;  
The novelty of the introduced plants and their interaction with the environment;  
Changes in agricultural practices associated with the introduction of transgenic crops;  
The relevance of substantial equivalence (nutritional content compared to non-transgenic crop);  
Safety consideration for identification and evaluation of risks associated with the release and cultivation of transgenic crops, particularly on molecular characterization and stability of the genetic modification, gene transfer to related plants, gene transfer to unrelated organisms, weediness potential and secondary and non target adverse effect.

*Sources: FAO, WHO, OECD*

**(C) The introduction of BT cotton in the context of the Five Project countries in West Africa.**

While the project builds capacity for risk assessment of all transgenic crops, the initial focus is on Bt-cotton. According to certain stakeholders, the potential contribution of transgenic cotton to the West African economy is high and promising, and field trials have already been undertaken in Burkina Faso. The potential benefits of Bt-cotton are particularly important for poverty reduction through improved yields and farmer income; and for environmental sustainability and human health through decreased pesticide dependency, which lowers surface and ground water contamination. However, the introduction of Bt-cotton particularly in field trials deserves careful oversight and monitoring. This is because the in-depth impact of transgenic cotton to the local environment and socio-economic context has yet to be assessed empirically. Some of the envisioned key issues pertaining to the impact of transgenic cotton to the environment and socio-economic setting are highlighted below:

*Focus in environmental impact assessment:*

*Biodiversity:*

To evaluate the extent of pollen/ gene flow and likelihood of hybridization to other cotton varieties and wild relatives; also to evaluate the potential displacement of native strains or non-target plant species.

*Insect Resistance Management:*

The importance of bollworm damage as compared to other types of insects (leaf eating caterpillars and sucking insect<sup>40</sup>), this is important to guide pesticide applications for Bt-cotton, which only controls bollworm.

The issue of refugia for insect resistance management in West-African production systems

Capacity of the extension service to support farmers in agronomic practices of Bt-cotton

*Co-existence of different production systems:*

Some of the countries might be interested in organic cotton production. Capacity for allowing that through land use mosaics that assure sufficient isolation distance will be extended.

*Socio-economic considerations*

*Cost of Bt-cotton seed.*

The cotton sector is highly vertically integrated in West-Africa with only a few companies in a country controlling the production, processing and marketing of cotton. If the seed price is set very high, farmers' income will reduce and also the risk of saving seed and illegal seed trade might increase. This can be a risk to the quality of seed including the insect resistance trait. This issue will be observed and capacity built among extension service and farmer organizations to be aware of the technical and economic issues involved and to have a voice in the related negotiations and discussions.

*Farmers' dependency on a few suppliers and may be at risk of monopolistic price-setting*

*IPR licensing*

The insect resistance genes are the property of the international companies, while the varieties these are inserted in and grown in the region have been bred and released by the national breeding programs. Recently the West-African countries have adopted the UPOV Plant Breeders' rights regime. After the decrees in the countries come into force there will be one year for the countries to register the varieties now in production. Specific attention will be directed to follow this development and to support the countries in registering the varieties and in capacity to negotiate IPR licenses.

## **(D) Implementation Arrangements**

The overall responsibilities of safeguards compliance will be under WAEMU and the regional project coordinator at the regional level, and the National Competent Authority (Ministry of Environment or Ministry of Agriculture) of each of the country at the national level. The responsible ministry (MOA) will have to report to the National Competent Authority on a quarterly basis and deposit a copy of such report to the national focal point and regional observatory who will then disseminate and disclosed such report to interested stakeholders and the public.

Within the Bank, the TTL will ensure that safeguards are properly integrated into the implementation process, and associate, at least once a year, safeguard specialist in the supervision missions who will review arrangements for safeguards.

Risk assessment will be undertaken by the project at different levels and by various stakeholders as indicated below:

- In accordance with the laws that are in preparation and the requirements of the Cartagena Protocol, the risk assessments and management related to field trials and commercial releases

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<sup>40</sup> "Economic cost of non-adoption of Bt cotton in West Africa: with a special reference to Mali", Cabanilla. L.S. Abdoulaye. T, H.S.John, paper presented at the 7<sup>th</sup> ICABR International Conference on Public Goods and Public Policy for Agricultural Biotechnology, Ravello (Italy) 2003.

of transgenic cotton will be undertaken by the applicants, either the private sector or NARIs. The project will support through the component A, the production of regional tools and guidelines in order to ensure that these assessments are done in accordance with international standards,

- the National Competent Authorities, strengthened through the component B, will be responsible for the review of the applications including risk assessments and field trials and will provide relevant comments, recommendations and requests to the applicant, in accordance with the regulatory requirements
- At last, the regional observatory hosted by WAEMU and established under component C, will monitor and evaluate the impact of adoption of transgenic crops, and recommend appropriate actions (under Article 15(2) of the CBP the duty is rest upon the exporter, and in the local context it could be by NARIs or even private entities) for decision makers at the regional and national level.

However the management aspect including monitoring aspect should primarily rest with the Ministries of Agriculture (MOA) as the subject matter is transgenic cotton. The responsible ministry (MOA) will have to report to the National Competent Authority on a quarterly basis and deposit a copy of such report to the national focal point and regional observatory who will then disseminate and disclosed such report to interested stakeholders and the public.

### Annex 13: Project Preparation and Supervision

#### AFRICA: West Africa Regional Biosafety

	Planned	Actual
PCN review	October 06, 2005	October 06, 2005
Initial PID to PIC	October 15, 2005	
Initial ISDS to PIC	October 15, 2005	
Appraisal	July 04, 2006	
Negotiations	July 05, 2006	
Board/RVP approval	October 09, 2006	
Planned date of effectiveness	December 01, 2006	
Planned date of mid-term review	March, 2008	
Planned closing date	December 31, 2010	

Key institutions responsible for preparation of the project:  
WAEMU, CORAF, INSAH, Burkina Faso NBA.

Bank staff and consultants who worked on the project included (alphabetical order):

Name	Title	Unit
Suryna Ali	Consultant	AFTS4
Asha Ayoun	Sr. Procurement Specialist	AFTPC
Benjamin Burckhart	Consultant	AFTS4
Agadiou Dama	Agricultural Services Specialist	AFTS4
Jean-Christophe Carret	Natural Resources Economist	AFTS4
Salimata Follea	Operations Assistant	AFTS4
Denis Jordy	Sr. Agricultural Specialist	AFTS4
Ayi Klouvi	Sr. Agricultural Specialist	AFTS3
Song Li	Consultant, GEF	AFTS4
Philippe J. de Naurois	Adviser (Consultant)	FAO-CP
Ibrahim Nebie	Sr. Agricultural Extension Specialist	AFTS4
Eija Pehu	Adviser	ARD
Emmanuel Sene	Rural development Specialist	AFTS4
Fily Sissoko	Sr. Financial Management Specialist	AFTFM

Bank funds expended to date on project preparation: SPENT?

1. Bank resources: US\$97,000 (GEF Funds)
2. FAO resources: US\$22,000
3. Trust funds: TF PDF B grant has been approved for US\$700,000
4. Total: US\$819,000 Expended (as of March, 20 2006): US\$162,484.04

Estimated Approval and Supervision costs:

1. Estimated costs to approval: US\$110,000 MORE LIKE 500,000
2. Estimated annual supervision cost: US\$130,000

## **Annex 14: Documents in the Project File**

### **AFRICA: West Africa Regional Biosafety**

1. Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Montreal 2000.
2. CORAF/WECARD – Biotechnology and Biosafety Project Proposal, 2004.
3. GEF – Elements for a Biosafety Strategy. October 12, 2005
4. GEF – Final Draft of the Evaluation on GEF’s Support to the Cartagena Protocol on Biosafety. November 1, 2005.
5. GEF – Initial Strategy for Assisting Countries to Prepare for the Entry into Force of the Cartagena Protocol on Biosafety, November 2000.
6. ISAAA – Clive James – Global Review of Commercialized Transgenic Crops: 2001, Feature: Bt Cotton, 2002.
7. ISAAA – Clive James – Global Status of Commercialized Biotech/GM Crops: 2005, 2005.
8. ISNAR – Morven A. McLean, Robert J. Frederick, Patricia L. Traynor, Joel I. Cohen, and John Komen – A Conceptual Framework for Implementing Biosafety: Linking Policy, Capacity, and Regulation, March 2002.
9. Jeremy Carl (MC-MPA) and Teresa Caverio (MPAID) – Agricultural Biotechnology and Biosafety in Ghana, Mali, Senegal and Burkina Faso, January 2004.
10. Les Cahier du RIBios, Ezra Ricci, Legal adviser: Philippe Cullet –Biosafety Regulation: The Cartagena Protocol, March 2004.
11. Les Cahier du RIBios, Philippe Cullet – Food Security and intellectual property rights in developing countries, March 2004.
12. SIDA – A Tale of Three Countries – Structure, Reform and Performance of the Cotton Sector in Mali, Burkina Faso and Benin, 2004.
13. The World Bank - Agriculture & Rural Development. Biosafety Regulation: A Review of International Approaches, April 2003.
14. INSAH – Convention cadre instituant une réglementation commune biosécuritaire de prévention des risques biotechnologique dans l’espace CILSS, January 2006.
15. FSP mobilisateur – Renforcement de l’approche régionale dans le partenariat Europe-Afrique sur le coton, January 2006.
16. Gregory Jaffe – Regulating transgenic crops: a comparative analysis of different regulatory process, November 2003.
17. Gregory Jaffe – Implementing the Cartagena Biosafety Protocol through national biosafety regulatory systems: an analysis of key unresolved issues, 2005.
18. IFPRI, Gregory Jaffe – Comparative Analysis of the National Biosafety Regulatory Systems in East Africa, January 2006.
19. ECOWAS – Biotechnology and Biosafety Action Plan 2006-2010, 2005.
20. GRET - Assessing capacity-building needs on biosafety for West-African countries, 2006.
21. African Agriculture and Biotechnology – Assuring Safe Use While Addressing Poverty 2003

## Annex 15: Statement of Loans and Credits

### AFRICA: West Africa Regional Biosafety

Project ID	FY	Purpose	Original Amount (millions of US\$)				Cancel.	Undisb.	Difference between expected and actual disbursements	
			IBRD	IDA	SF	GEF			Orig.	Frm. Rev'd
P092473	2005	3A-Afr Emergency Locust Prj (FY05)	0.00	59.50	0.00	0.00	0.00	54.32	1.99	0.00
P080406	2005	3A-ARCAN SIL (FY05)	0.00	0.00	0.00	0.00	0.00	7.79	0.45	0.00
P075994	2005	3A-WAPP Phase 1 APL 1 (FY05)	0.00	40.00	0.00	0.00	0.00	38.85	0.00	0.00
P080413	2005	3A-HIV/AIDS Great Lakes Init APL (FY05)	0.00	0.00	0.00	0.00	0.00	19.55	1.07	0.00
P074850	2004	3A-HIV/AIDS Abidjan Lagos Trnspt (FY04)	0.00	0.00	0.00	0.00	0.00	10.84	1.67	0.00
P074525	2004	3A-WAEMU Capital Markets Dev FIL (FY04)	0.00	96.39	0.00	0.00	0.00	97.76	30.34	6.58
P070256	2004	3A-GEF Niger River Basin (FY04)	0.00	0.00	0.00	13.00	0.00	5.47	1.28	0.00
P082613	2004	3A-Regional HIVAIDS Treatment Prj (FY04)	0.00	0.00	0.00	0.00	0.00	49.70	16.70	0.00
P069258	2004	3A-Southern Afr Power Mrkt APL 1 (FY04)	0.00	178.60	0.00	0.00	0.00	184.88	84.59	0.00
P064573	2004	3A-GEF Senegal River Basin (FY04)	0.00	0.00	0.00	5.26	0.00	4.10	2.01	0.00
P072881	2003	3A-BEAC Reg Payment System (FY03)	0.00	14.50	0.00	0.00	0.00	8.13	1.43	0.00
P070252	2003	3A-GEF Lake Chad Basin (FY03)	0.00	0.00	0.00	2.90	0.00	2.37	2.51	0.70
P070073	2003	3A-GEF Nile Transbound Env Action (FY03)	0.00	0.00	0.00	8.00	0.00	12.66	7.52	0.00
P063683	2001	3A-Trade Facil SIL (FY01)	0.00	5.00	0.00	0.00	0.00	4.77	-0.31	0.00
Total:			0.00	393.99	0.00	29.16	0.00	501.19	151.25	7.28

### AFRICA STATEMENT OF IFC Held and Disbursed Portfolio (million of US\$)

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
1999	AIF	0.00	39.36	0.00	0.00	0.00	21.42	0.00	0.00
1999	AIF (Mgmt)	0.00	0.12	0.00	0.00	0.00	0.06	0.00	0.00
2003	AIFH	0.00	18.69	0.00	0.00	0.00	0.19	0.00	0.00
2001	AfrbnkCorp	0.00	0.00	2.10	0.00	0.00	0.00	2.10	0.00
2005	Afren	0.00	0.84	0.00	0.00	0.00	0.80	0.00	0.00
2002	Africap	0.00	1.67	0.00	0.00	0.00	0.67	0.00	0.00
2005	Celtel	40.00	11.83	0.00	0.00	0.00	11.83	0.00	0.00
	Kunene	0.00	0.67	0.00	0.00	0.00	0.67	0.00	0.00
2002	MTNN	120.00	15.00	0.00	0.00	40.00	14.56	0.00	0.00
2002	Osprey	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00

2001	PAIP	0.00	22.80	0.00	0.00	0.00	3.48	0.00	0.00
2002	SABCO	22.00	10.00	0.00	0.00	0.00	10.00	0.00	0.00
2004	Tullow	0.00	28.79	0.00	0.00	0.00	28.79	0.00	0.00
Total portfolio:		182.00	149.78	2.10	0.00	40.00	92.48	2.10	0.00

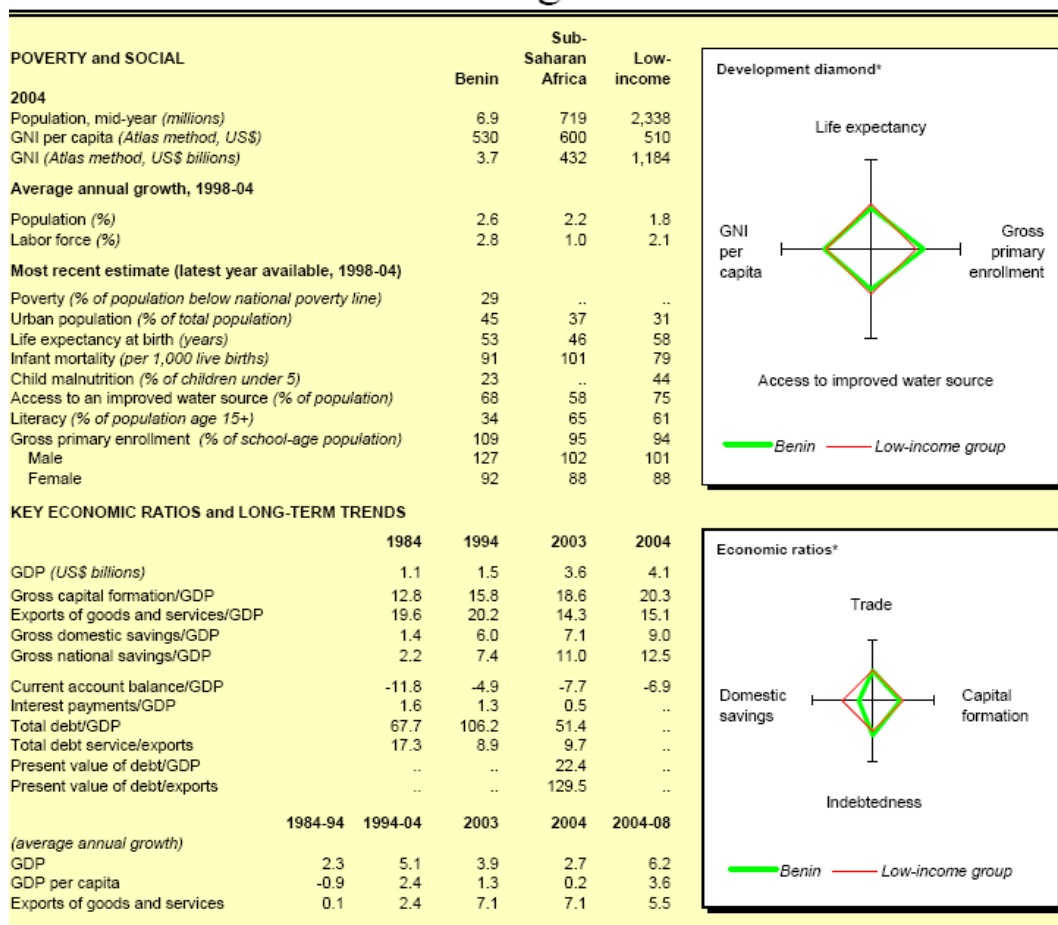
FY Approval	Company	Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic.
2004	Bus Partners	0.00	0.00	0.00	0.00
2003	African Lakes	0.00	0.01	0.00	0.00
Total pending commitment:		0.00	0.01	0.00	0.00

## Annex 16: Country at a Glance

### AFRICA: West Africa Regional Biosafety

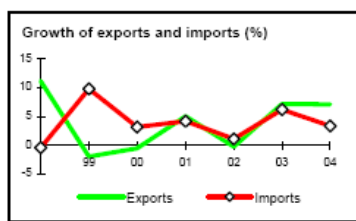
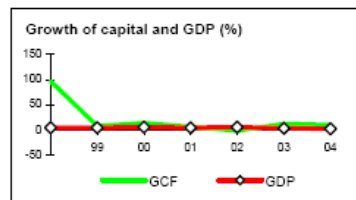
## Benin at a glance

8/24/05



#### STRUCTURE of the ECONOMY

	1984	1994	2003	2004
(% of GDP)				
Agriculture	33.3	33.5	35.1	36.9
Industry	17.1	14.7	14.1	14.9
Manufacturing	7.9	8.7	8.8	9.2
Services	49.6	51.8	50.8	48.2
Household final consumption expenditure	84.9	83.9	80.3	77.4
General gov't final consumption expenditure	13.6	10.1	12.6	13.6
Imports of goods and services	30.9	29.9	25.8	26.4
(average annual growth)	1984-94	1994-04	2003	2004
Agriculture	4.9	5.7	5.0	6.9
Industry	3.1	5.2	5.5	6.0
Manufacturing	6.1	5.9	4.6	5.4
Services	0.4	4.4	2.3	-2.4
Household final consumption expenditure	2.2	1.8	0.6	-2.5
General gov't final consumption expenditure	-2.1	8.7	4.6	8.4
Gross capital formation	4.7	17.1	12.2	10.3
Imports of goods and services	-0.6	4.8	6.2	3.3

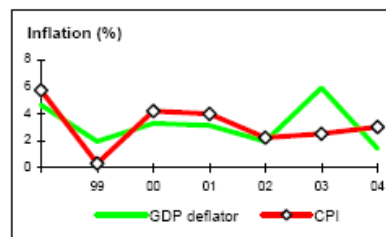


Note: 2004 data are preliminary estimates.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

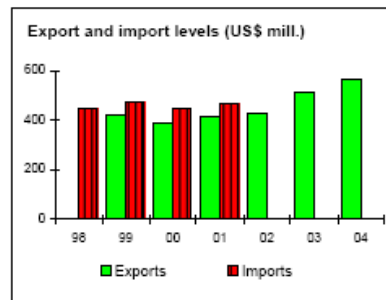
## PRICES and GOVERNMENT FINANCE

	1984	1994	2003	2004
<b>Domestic prices</b>				
(% change)				
Consumer prices	..	38.5	2.5	3.0
Implicit GDP deflator	2.0	33.5	5.9	1.4
<b>Government finance</b>				
(% of GDP, includes current grants)				
Current revenue	..	12.8	17.0	17.7
Current budget balance	..	-0.5	3.5	3.4
Overall surplus/deficit	..	-7.0	-4.3	-4.9



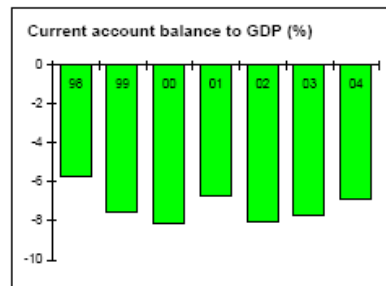
## TRADE

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Total exports (fob)	170	175	514	568
Ginned cotton	..	133	168	201
Crude oil	..	13	..	..
Manufactures	..	..	..	..
Total imports (cif)	..	279	..	..
Food	..	85	..	..
Fuel and energy	..	27	66	63
Capital goods	..	156	..	..
Export price index (2000=100)	..	..	121	124
Import price index (2000=100)	..	..	101	101
Terms of trade (2000=100)	..	..	119	123



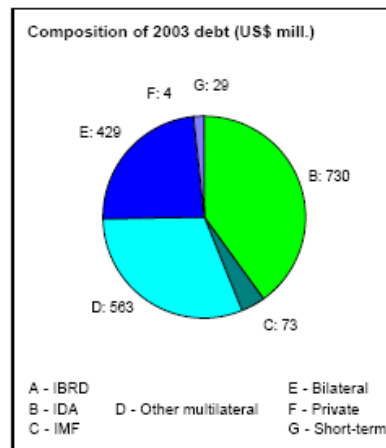
## BALANCE of PAYMENTS

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Exports of goods and services	235	411	503	554
Imports of goods and services	367	505	910	968
Resource balance	-132	-94	-407	-414
Net income	-30	-35	-30	-29
Net current transfers	38	55	164	161
Current account balance	-124	-73	-274	-282
Financing items (net)	132	148	318	327
Changes in net reserves	-8	-75	-45	-46
<b>Memo:</b>				
Reserves including gold (US\$ millions)	..	..	283	286
Conversion rate (DEC, local/US\$)	437.0	555.2	581.2	528.3



## EXTERNAL DEBT and RESOURCE FLOWS

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Total debt outstanding and disbursed	712	1,589	1,828	..
IBRD	0	0	0	..
IDA	100	464	730	..
Total debt service	47	41	60	..
IBRD	0	0	0	..
IDA	1	6	9	..
<b>Composition of net resource flows</b>				
Official grants	27	108	183	..
Official creditors	24	84	28	..
Private creditors	-8	0	0	..
Foreign direct investment (net inflows)	0	14	51	..
Portfolio equity (net inflows)	0	0	0	..
<b>World Bank program</b>				
Commitments	49	43	0	..
Disbursements	14	29	28	..
Principal repayments	0	3	4	..
Net flows	14	26	23	..
Interest payments	1	3	5	..
Net transfers	13	23	19	..



# Burkina Faso at a glance

8/24/05

POVERTY and SOCIAL	Burkina Faso	Sub-Saharan Africa	Low-income
<b>2004</b>			
Population, mid-year ( <i>millions</i> )	12.4	719	2,338
GNI per capita ( <i>Atlas method, US\$</i> )	360	600	510
GNI ( <i>Atlas method, US\$ billions</i> )	4.5	432	1,184
<b>Average annual growth, 1998-04</b>			
Population (%)	2.4	2.2	1.8
Labor force (%)	1.8	1.0	2.1
<b>Most recent estimate (latest year available, 1998-04)</b>			
Poverty (% of population below national poverty line)	45	..	..
Urban population (% of total population)	18	37	31
Life expectancy at birth ( <i>years</i> )	43	46	58
Infant mortality ( <i>per 1,000 live births</i> )	107	101	79
Child malnutrition (% of children under 5)	38	..	44
Access to an improved water source (% of population)	51	58	75
Literacy (% of population age 15+)	..	65	61
Gross primary enrollment (% of school-age population)	46	95	94
Male	53	102	101
Female	39	88	88

Development diamond\*

Life expectancy

GNI per capita

Gross primary enrollment

Access to improved water source

Burkina Faso

Low-income group

KEY ECONOMIC RATIOS and LONG-TERM TRENDS	1984	1994	2003	2004	
GDP ( <i>US\$ billions</i> )	1.5	2.0	4.2	4.8	
Gross capital formation/GDP	14.2	19.3	18.7	19.1	
Exports of goods and services/GDP	11.0	12.4	8.5	8.6	
Gross domestic savings/GDP	-3.6	7.0	3.9	4.8	
Gross national savings/GDP	2.6	17.8	5.8	..	
Current account balance/GDP	-8.7	-1.8	-11.6	-9.8	
Interest payments/GDP	0.4	0.7	0.4	0.3	
Total debt/GDP	28.1	57.6	42.8	41.6	
Total debt service/exports	8.0	12.2	10.6	12.5	
Present value of debt/GDP	..	..	15.8	..	
Present value of debt/exports	..	..	142.4	..	
	1984-94	1994-04	2003	2004	2004-08
( <i>average annual growth</i> )					
GDP	3.2	4.5	6.5	3.9	5.0
GDP per capita	0.8	2.0	4.1	1.6	2.8
Exports of goods and services	2.0	4.4	10.1	2.4	4.1

Economic ratios\*

Trade

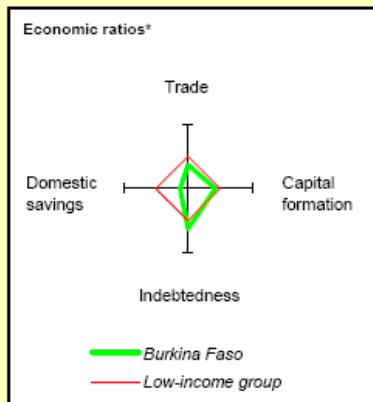
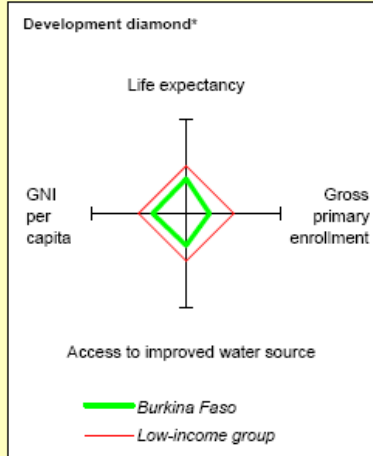
Domestic savings

Capital formation

Indebtedness

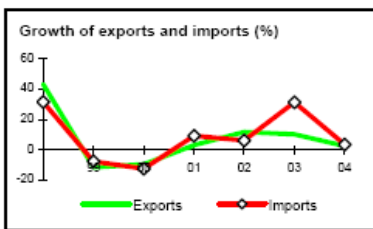
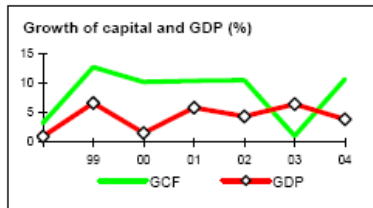
Burkina Faso

Low-income group



## STRUCTURE of the ECONOMY

	1984	1994	2003	2004
(% of GDP)				
Agriculture	28.5	31.3	31.0	30.8
Industry	20.0	16.8	18.9	19.9
Manufacturing	15.1	11.9	12.9	13.5
Services	51.5	51.9	50.1	49.4
Household final consumption expenditure	90.6	76.9	83.4	82.2
General gov't final consumption expenditure	13.0	16.1	12.8	13.0
Imports of goods and services	28.8	24.7	23.4	22.9
	1984-94	1994-04	2003	2004
( <i>average annual growth</i> )				
Agriculture	4.6	3.5	0.0	18.2
Industry	1.8	3.4	0.0	..
Manufacturing	1.3	0.9	0.0	..
Services	2.9	6.8	12.1	26.3
Household final consumption expenditure	3.1	4.0	14.0	..
General gov't final consumption expenditure	2.6	-1.7	2.7	..
Gross capital formation	1.5	10.8	1.1	10.8
Imports of goods and services	0.6	6.2	31.3	3.5

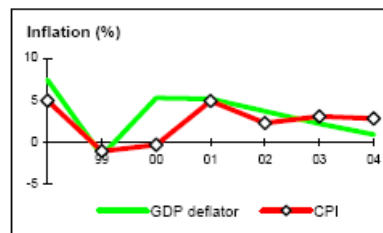


Note: 2004 data are preliminary estimates.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

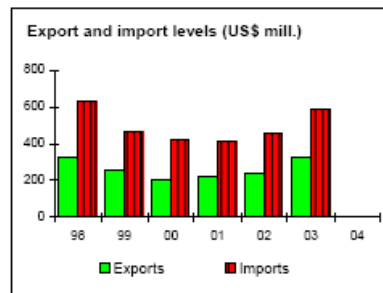
## PRICES and GOVERNMENT FINANCE

	1984	1994	2003	2004
<b>Domestic prices</b>				
(% change)				
Consumer prices	4.1	24.8	3.1	2.8
Implicit GDP deflator	6.5	19.0	2.2	0.9
<b>Government finance</b>				
(% of GDP, includes current grants)				
Current revenue	..	14.0	15.1	..
Current budget balance	..	2.0	4.1	..
Overall surplus/deficit	..	-6.3	-6.9	..



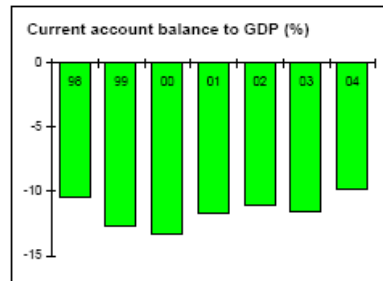
## TRADE

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Total exports (fob)	..	191	324	..
Cotton	..	58	210	..
Livestock products	..	61	34	..
Manufactures	..	..	..	..
Total imports (cif)	..	355	592	..
Food	..	62	86	..
Fuel and energy	..	45	139	..
Capital goods	..	81	243	..
Export price index (2000=100)	..	96	98	..
Import price index (2000=100)	..	83	95	..
Terms of trade (2000=100)	..	115	102	..



## BALANCE of PAYMENTS

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Exports of goods and services	179	248	408	..
Imports of goods and services	397	495	973	..
Resource balance	-218	-247	-564	..
Net income	-5	-14	-3	-3
Net current transfers	95	227	84	..
Current account balance	-127	-35	-483	-473
Financing items (net)	221	153	435	..
Changes in net reserves	-93	-119	48	..

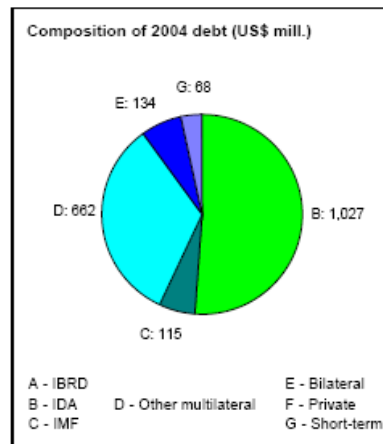


## Memo:

Reserves including gold (US\$ millions)	..	..	..	..
Conversion rate (DEC, local/US\$)	437.0	555.2	581.2	528.3

## EXTERNAL DEBT and RESOURCE FLOWS

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Total debt outstanding and disbursed	410	1,135	1,790	2,006
IBRD	0	0	0	0
IDA	124	518	861	1,027
Total debt service	22	44	49	65
IBRD	0	0	0	0
IDA	1	6	8	11
<b>Composition of net resource flows</b>				
Official grants	81	212	268	..
Official creditors	41	80	94	171
Private creditors	0	0	0	0
Foreign direct investment (net inflows)	2	18	11	..
Portfolio equity (net inflows)	0	0	0	..
<b>World Bank program</b>				
Commitments	7	91	75	70
Disbursements	13	79	55	132
Principal repayments	0	3	3	4
Net flows	13	76	52	129
Interest payments	1	3	5	7
Net transfers	12	73	48	121



# Mali at a glance

8/25/05

## POVERTY and SOCIAL

### 2004

	Mali	Sub-Saharan Africa	Low-income
Population, mid-year (millions)	11.9	719	2,338
GNI per capita (Atlas method, US\$)	370	600	510
GNI (Atlas method, US\$ billions)	4.4	432	1,184

### Average annual growth, 1998-04

Population (%)	2.4	2.2	1.8
Labor force (%)	2.0	1.0	2.1

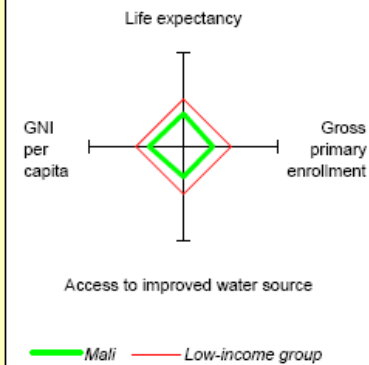
### Most recent estimate (latest year available, 1998-04)

Poverty (% of population below national poverty line)	64	..	..
Urban population (% of total population)	33	37	31
Life expectancy at birth (years)	41	46	58
Infant mortality (per 1,000 live births)	122	101	79
Child malnutrition (% of children under 5)	33	..	44
Access to an improved water source (% of population)	48	58	75
Literacy (% of population age 15+)	19	65	61
Gross primary enrollment (% of school-age population)	58	95	94
Male	66	102	101
Female	50	88	88

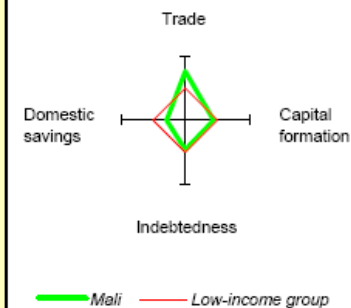
## KEY ECONOMIC RATIOS and LONG-TERM TRENDS

	1984	1994	2003	2004	
GDP (US\$ billions)	1.3	1.8	4.3	4.9	
Gross capital formation/GDP	12.3	27.3	23.9	19.7	
Exports of goods and services/GDP	17.8	23.0	27.1	28.0	
Gross domestic savings/GDP	-2.7	7.5	15.0	11.5	
Gross national savings/GDP	0.8	19.1	16.2	10.8	
Current account balance/GDP	-9.9	-8.3	-5.1	-4.5	
Interest payments/GDP	0.6	1.4	0.4	..	
Total debt/GDP	94.4	152.9	72.0	..	
Total debt service/exports	12.2	17.7	5.8	..	
Present value of debt/GDP	..	..	31.6	..	
Present value of debt/exports	..	..	104.3	..	
	1984-94	1994-04	2003	2004	2004-08
(average annual growth)					
GDP	2.5	6.1	7.4	2.2	5.9
GDP per capita	-0.2	3.6	4.9	-0.3	3.3
Exports of goods and services	5.5	11.8	-11.8	-5.0	5.5

### Development diamond\*



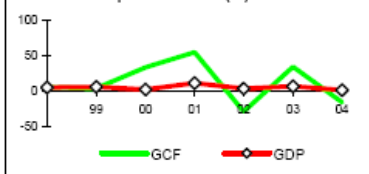
### Economic ratios\*



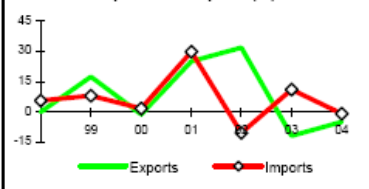
## STRUCTURE of the ECONOMY

	1984	1994	2003	2004
(% of GDP)				
Agriculture	44.2	46.4	38.0	35.6
Industry	14.5	18.9	25.6	25.9
Manufacturing	6.8	7.7	2.8	3.4
Services	41.3	34.6	36.4	38.5
Household final consumption expenditure	92.1	81.2	76.5	78.3
General gov't final consumption expenditure	10.6	11.3	8.5	10.1
Imports of goods and services	32.8	42.9	35.9	36.2
	1984-94	1994-04	2003	2004
(average annual growth)				
Agriculture	5.2	3.0	17.7	-4.7
Industry	3.3	8.4	-9.4	-0.3
Manufacturing	5.2	-3.2	-5.5	20.9
Services	0.9	4.8	9.1	9.1
Household final consumption expenditure	1.5	3.2	-1.1	7.0
General gov't final consumption expenditure	3.7	7.4	133.8	16.6
Gross capital formation	3.7	9.5	35.2	-15.2
Imports of goods and services	2.6	7.1	11.1	-0.8

### Growth of capital and GDP (%)



### Growth of exports and imports (%)



Note: 2004 data are preliminary estimates.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

## PRICES and GOVERNMENT FINANCE

## Domestic prices

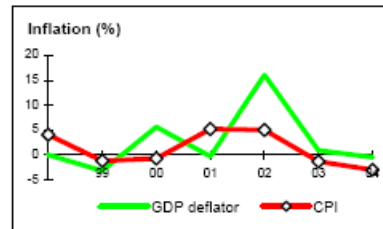
(% change)

	1984	1994	2003	2004
Consumer prices	..	24.7	-1.3	-3.0
Implicit GDP deflator	11.3	27.9	0.9	-0.5

## Government finance

(% of GDP, includes current grants)

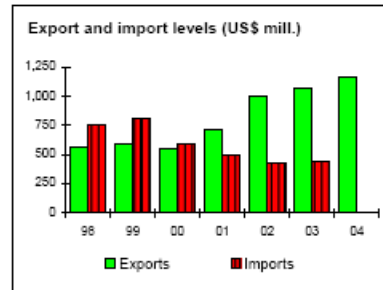
	1984	1994	2003	2004
Current revenue	10.8	16.9	17.3	17.6
Current budget balance	-1.3	3.4	4.7	3.8
Overall surplus/deficit	-1.6	-10.4	-3.7	-6.0



## TRADE

(US\$ millions)

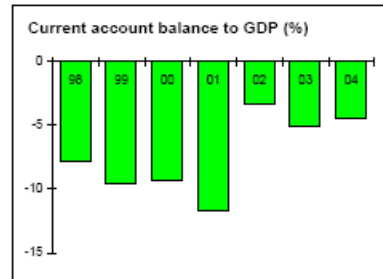
	1984	1994	2003	2004
Total exports (fob)	192	337	1,064	1,168
Cotton	98	153	291	408
Gold	..	50	604	561
Manufactures	..	..	..	..
Total imports (cif)	368	629	438	..
Food	131	86	..	..
Fuel and energy	62	52	..	..
Capital goods	80	193	..	..
Export price index (2000=100)	95	102	109	113
Import price index (2000=100)	63	89	97	98
Terms of trade (2000=100)	150	114	112	114



## BALANCE of PAYMENTS

(US\$ millions)

	1984	1994	2003	2004
Exports of goods and services	233	406	1,317	1,445
Imports of goods and services	430	756	1,591	1,703
Resource balance	-198	-350	-274	-258
Net income	0	-23	-157	-163
Net current transfers	68	228	210	182
Current account balance	-130	-145	-221	-217
Financing items (net)	164	232	218	322
Changes in net reserves	-34	-87	3	-104



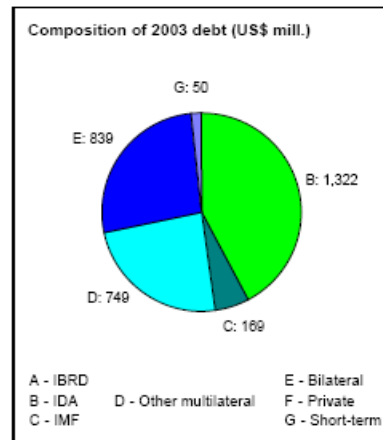
## Memo:

Reserves including gold (US\$ millions)	33	229	909	1,019
Conversion rate (DEC, local/US\$)	437.0	555.2	581.2	528.3

## EXTERNAL DEBT and RESOURCE FLOWS

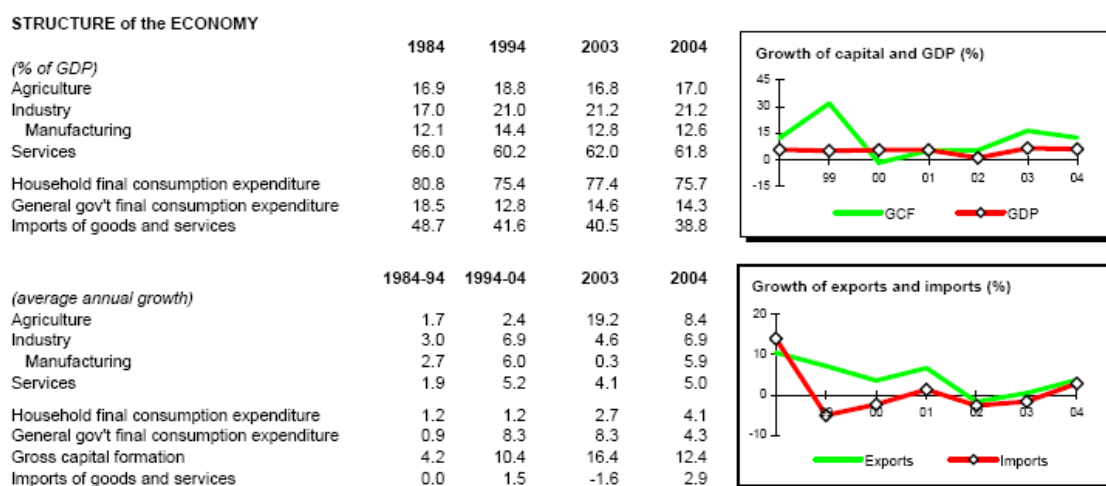
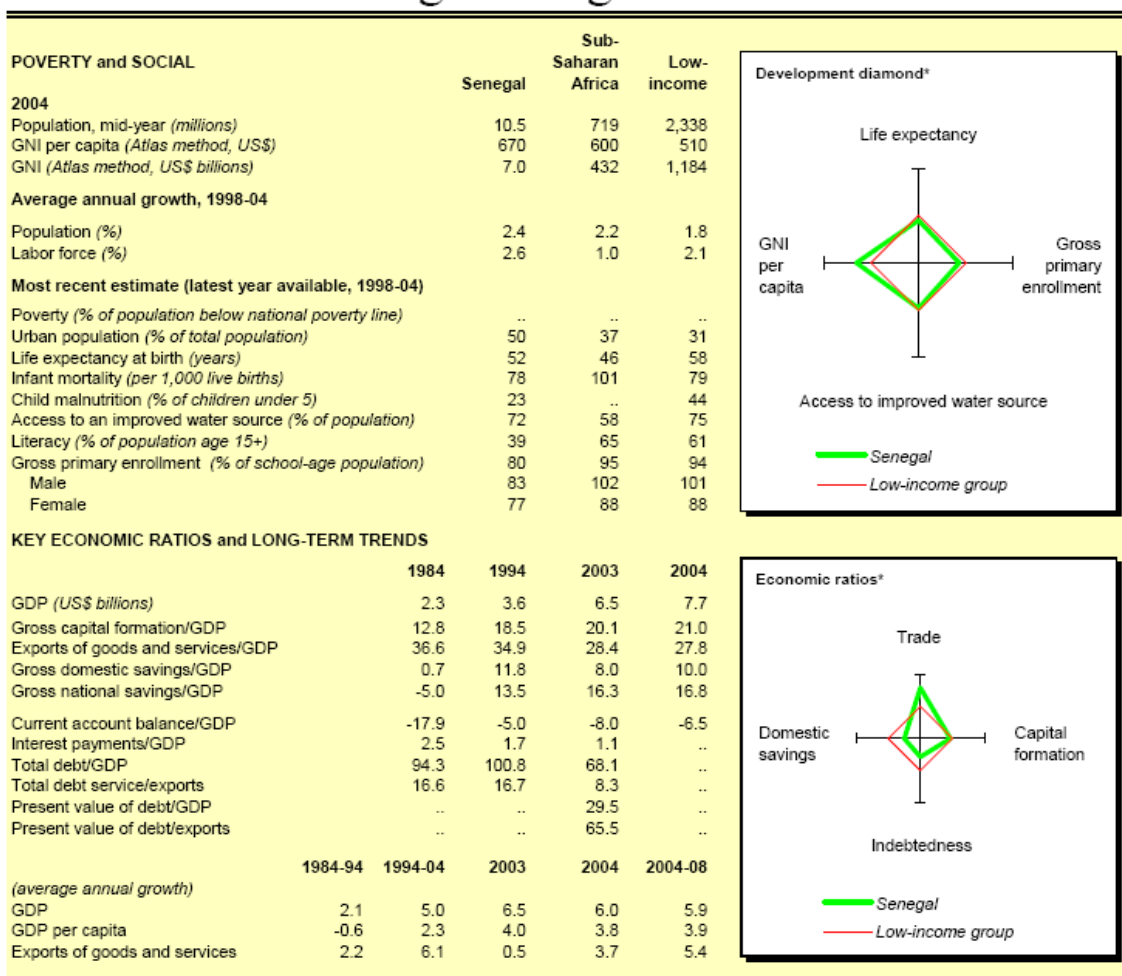
(US\$ millions)

	1984	1994	2003	2004
Total debt outstanding and disbursed	1,237	2,695	3,129	..
IBRD	0	0	0	..
IDA	191	770	1,322	..
Total debt service	31	88	77	..
IBRD	0	0	0	..
IDA	2	12	13	..
Composition of net resource flows				
Official grants	125	221	294	..
Official creditors	104	69	159	..
Private creditors	2	-1	0	..
Foreign direct investment (net inflows)	10	17	129	..
Portfolio equity (net inflows)	0	0	0	..
World Bank program				
Commitments	61	120	0	..
Disbursements	21	93	95	..
Principal repayments	1	6	5	..
Net flows	21	87	90	..
Interest payments	1	6	8	..
Net transfers	19	82	82	..



# Senegal at a glance

8/25/05

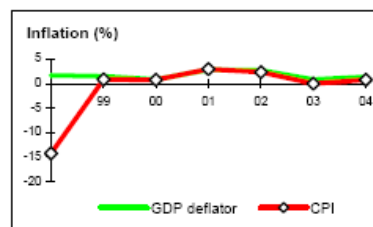


Note: 2004 data are preliminary estimates.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

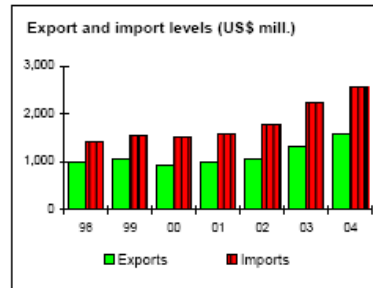
## PRICES and GOVERNMENT FINANCE

	1984	1994	2003	2004
<b>Domestic prices</b>				
(% change)				
Consumer prices	12.3	32.0	0.0	0.8
Implicit GDP deflator	12.6	27.8	0.9	1.4
<b>Government finance</b>				
(% of GDP, includes current grants)				
Current revenue	19.1	18.3	19.6	19.4
Current budget balance	-1.0	2.6	5.5	5.6
Overall surplus/deficit	-5.0	-2.7	-3.0	-4.4



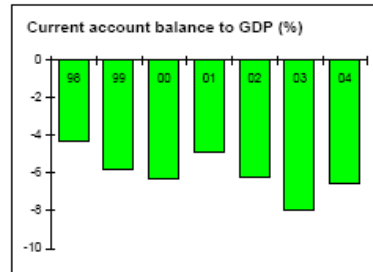
## TRADE

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Total exports (fob)	598	791	1,332	1,580
Groundnut products	125	89	61	72
Phosphates	56	117	168	205
Manufactures	181	201	304	343
Total imports (cif)	931	1,161	2,247	2,574
Food	252	293	410	473
Fuel and energy	258	142	387	421
Capital goods	108	154	325	378
Export price index (2000=100)	73	107	99	99
Import price index (2000=100)	58	100	93	89
Terms of trade (2000=100)	125	107	107	112



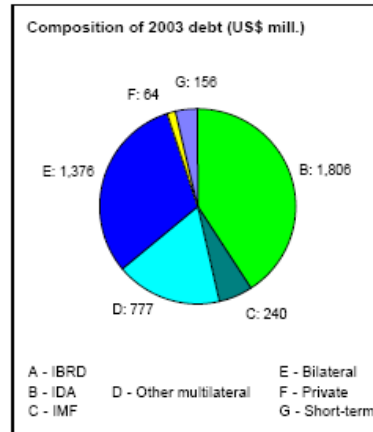
## BALANCE of PAYMENTS

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Exports of goods and services	908	1,272	2,137	2,159
Imports of goods and services	1,193	1,515	3,110	3,147
Resource balance	-285	-243	-973	-989
Net income	-127	-142	-174	-139
Net current transfers	-7	204	629	628
Current account balance	-418	-181	-517	-500
Financing items (net)	416	256	526	321
Changes in net reserves	2	-75	-9	179
<b>Memo:</b>				
Reserves including gold (US\$ millions)	13	190	832	855
Conversion rate (DEC, local/US\$)	437.0	555.2	581.2	528.3



## EXTERNAL DEBT and RESOURCE FLOWS

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Total debt outstanding and disbursed	2,203	3,673	4,419	..
IBRD	76	44	0	..
IDA	199	1,005	1,806	..
Total debt service	162	234	244	..
IBRD	10	15	0	..
IDA	3	13	24	..
<b>Composition of net resource flows</b>				
Official grants	126	476	156	..
Official creditors	167	17	104	..
Private creditors	-6	-9	1	..
Foreign direct investment (net inflows)	29	67	78	..
Portfolio equity (net inflows)	0	1	0	..
<b>World Bank program</b>				
Commitments	34	32	46	..
Disbursements	29	54	107	..
Principal repayments	6	16	13	..
Net flows	23	38	95	..
Interest payments	8	12	12	..
Net transfers	16	26	83	..

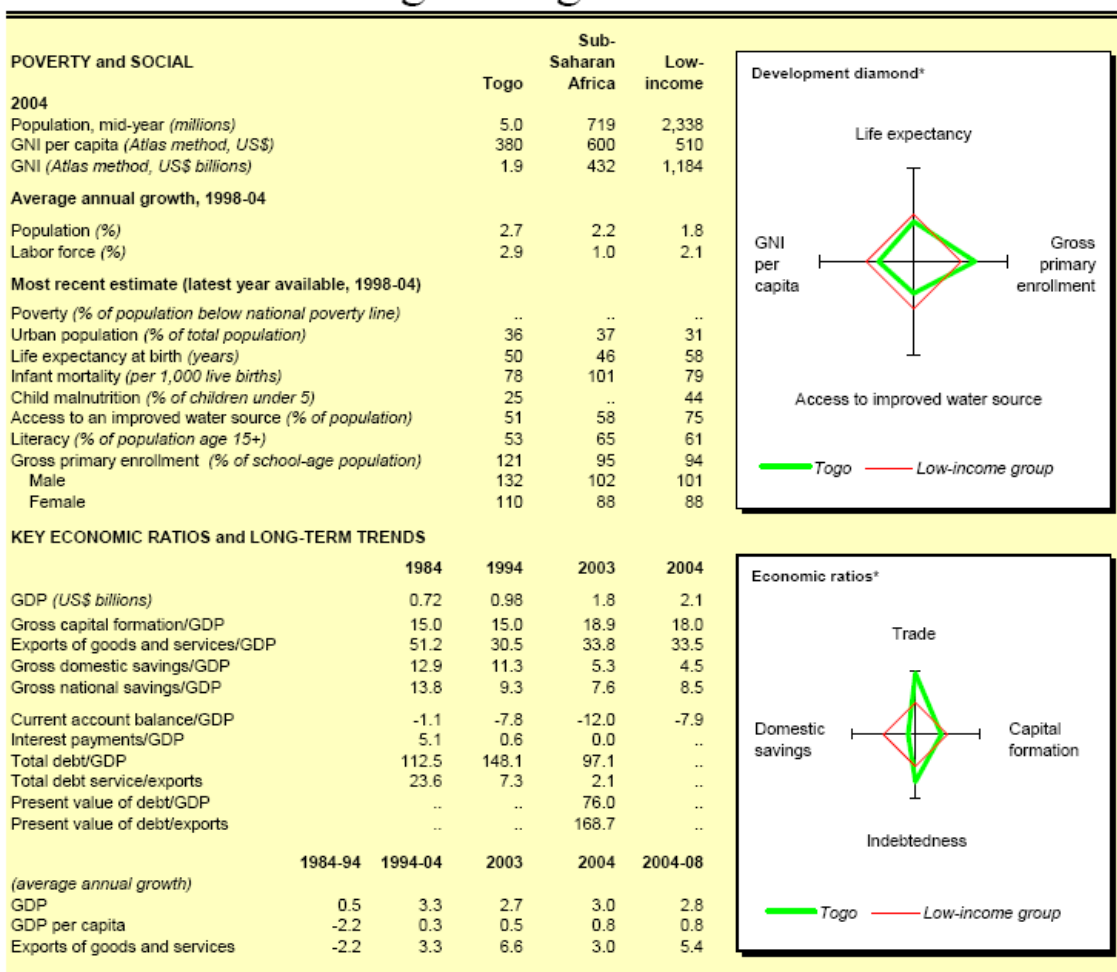


The World Bank Group: This table was prepared by country unit staff; figures may differ from other World Bank published data.

8/25/05

# Togo at a glance

8/25/05

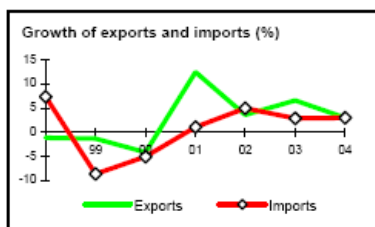
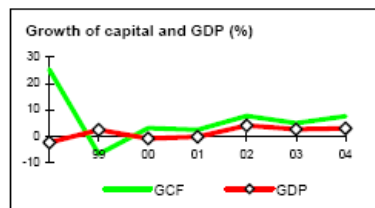


## STRUCTURE of the ECONOMY

	1984	1994	2003	2004
(% of GDP)				
Agriculture	33.5	34.9	40.8	41.2
Industry	20.2	21.2	22.2	22.8
Manufacturing	6.4	9.1	9.3	9.4
Services	46.3	43.8	37.1	36.0
Household final consumption expenditure	71.3	75.5	84.8	85.8
General gov't final consumption expenditure	15.7	13.2	9.8	9.7
Imports of goods and services	53.3	34.3	47.4	47.0

	1984-94	1994-04	2003	2004
(average annual growth)				
Agriculture	3.2	2.7	-0.9	3.2
Industry	0.8	3.4	14.0	7.3
Manufacturing	3.7	6.3	6.3	6.6
Services	-1.9	3.7	0.6	0.5
Household final consumption expenditure	1.1	3.5	-1.7	1.8
General gov't final consumption expenditure	-0.6	1.6	17.1	2.7
Gross capital formation	-6.1	5.7	5.0	7.6
Imports of goods and services	-4.6	4.4	2.9	3.0

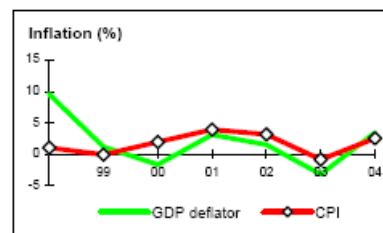


Note: 2004 data are preliminary estimates.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

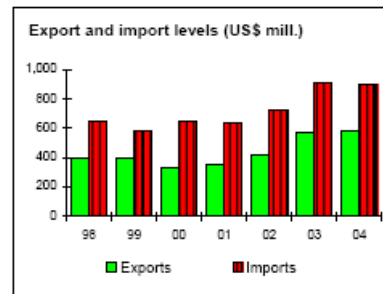
## PRICES and GOVERNMENT FINANCE

	1984	1994	2003	2004
<b>Domestic prices</b>				
(% change)				
Consumer prices	..	35.3	-0.9	2.5
Implicit GDP deflator	1.9	35.8	-3.2	3.4
<b>Government finance</b>				
(% of GDP, includes current grants)				
Current revenue	29.6	12.7	15.8	14.7
Current budget balance	5.2	-10.1	2.6	1.7
Overall surplus/deficit	-5.4	-12.3	1.4	0.0



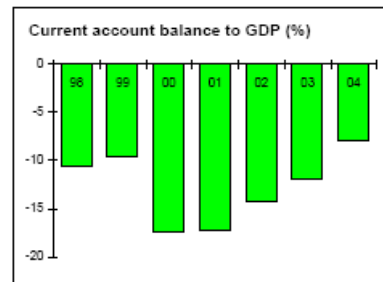
## TRADE

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Total exports (fob)	285	226	568	580
Phosphates	105	66	68	88
Cotton	17	52	77	87
Manufactures	34	60	184	138
Total imports (cif)	306	269	914	894
Food	93	75	339	339
Fuel and energy	30	22	151	104
Capital goods	49	41	103	152
Export price index (2000=100)	..	132	140	139
Import price index (2000=100)	..	112	130	123
Terms of trade (2000=100)	..	118	108	113



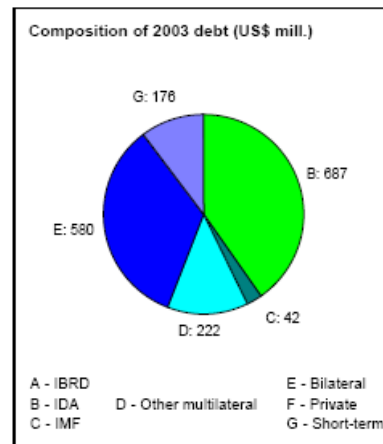
## BALANCE of PAYMENTS

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Exports of goods and services	363	300	655	673
Imports of goods and services	376	357	954	920
Resource balance	-14	-57	-299	-248
Net income	-39	-52	-9	-20
Net current transfers	45	32	97	105
Current account balance	-8	-77	-210	-163
Financing items (net)	53	38	230	192
Changes in net reserves	-45	39	-20	-30
<b>Memo:</b>				
Reserves including gold (US\$ millions)	..	..	..	..
Conversion rate (DEC, local/US\$)	437.0	555.2	581.2	528.3



## EXTERNAL DEBT and RESOURCE FLOWS

	1984	1994	2003	2004
<b>(US\$ millions)</b>				
Total debt outstanding and disbursed	808	1,456	1,707	..
IBRD	19	0	0	..
IDA	123	513	687	..
Total debt service	91	23	16	..
IBRD	4	0	0	..
IDA	1	7	0	..
<b>Composition of net resource flows</b>				
Official grants	35	73	33	..
Official creditors	27	34	3	..
Private creditors	-12	0	0	..
Foreign direct investment (net inflows)	-10	15	20	..
Portfolio equity (net inflows)	0	0	0	..
<b>World Bank program</b>				
Commitments	15	0	0	..
Disbursements	25	28	0	..
Principal repayments	4	3	0	..
Net flows	22	25	0	..
Interest payments	1	4	0	..
Net transfers	20	21	0	..



## **Annex 17: Incremental Cost Analysis**

### **AFRICA: West Africa Regional Biosafety**

#### **1. Broad Development Goals and the Baseline**

The project's beneficiary countries development goal is to introduce modern biotechnologies in their agricultural sector, both to improve competitiveness of cash crops such as cotton and food security in subsistence sectors. The way chosen by the countries is to reach this development goal by implementing field trials to test the agronomic performances of the transgenic crops and their impacts on the environment.

Under the baseline scenario, it is anticipated that the WAEMU region will progressively adopt transgenic cotton and probably other transgenic crops as a result of activities financing scientists' capacity building and end users' LMOs acceptance. However, this approach will not guarantee that adequate risk assessment and management safeguards, of international standard, are applied for field trials prior to commercial release.

Thus, the baseline scenario would result in potential high risks of contamination of local biodiversity by genes that would originate from the LMOs, due to the lack adequate safeguard guidelines, lack of driveness and coordination in adopting a regional biosafety legal framework and the absence of monitoring and evaluation tools at the different stages of development of the LMOs. In the baseline scenario, the socio economic impacts on farmers of LMOs introduction are not anticipated to be monitored.

Total expenditures under the baseline scenario are estimated at some US\$7 million, dominated by already invested and forthcoming investments from the private sector in field trials and LMOs acceptance campaigns and from bilateral donors in capacity building in the general field of biotechnology and biosafety.

#### **2. Global environmental objective**

The global environment objective of the project is to protect regional biodiversity against the risks associated to introduction of LMOs that could be released in the environment. This will be achieved through the development of common science-based, and in compliance with international standards, risk assessment and management methods in the approval process of modern biotechnologies of LMOs.

#### **3. Alternative**

Under the GEF alternative scenario, the five beneficiary countries (Mali, Burkina Faso, Senegal, Togo and Benin) will be able (i) to define common risk assessment and management procedures of international standards in order to mitigate environmental and food/feed safety risks associated with transgenic crops and eventually other crops such as maize, tomatoes, cassava and cow pea, (ii) to undertake application review using these procedures under an harmonized legal biosafety framework and (iii) to monitor the impact of LMOs introduction on biodiversity, and their socio-economic impacts.

Under the alternative, the countries will be able to: (i) reach their development objectives (that is to safely introduce modern biotechnologies in their agricultural) at a lower economic cost compared to the baseline scenario because they will build and use a regional legal framework; and also (ii) reach the global environmental objective because they will have developed and

adapted regional science-based in compliance with international standards risk assessment and management methods.

The domestic benefits of the proposed alternative and the baseline will differ: they will be more important in the first option. Under the alternative, farmers' organizations will be better informed and also more closely associated to commercial negotiations between the cotton industry and the plant science industry regarding the level of the technology fee that is going to be paid each year for the transgenic seeds. As a result of capacity building activities, the technology fee would probably be lower in the alternative scenario than in the baseline scenario and thus, the introduction of LMOs in the cotton sector will benefit farmers more in the alternative scenario than in the baseline scenario. From a distribution point of view, it will imply a gain in income for the farmers compared to the baseline scenario that might be neutral from the farmer's point of view he will pay as much for the transgenic seed than for the conventional seed plus the pesticide).

Total expenditures under the GEF alternative scenario are estimated at US\$24.3 million.

#### **4. Scope of the analysis**

The activities related to the development of common science-based risk assessment and management methods in the approval process of modern biotechnologies of LMOs and the setting up of an enabling regulatory environment to meet the requirements of the Cartagena Protocol on Biosafety (CPB), and building the regional observatory would not take place without the GEF alternative. The capacity building and public outreach activities are largely baseline activities and the GEF will allocate limited funding for these, focusing on the activities designed to create the regional plan and strengthen regional collaboration.

Domestic benefits in addition to those in the baseline include reductions in risks of damage to agro-biodiversity that provide employment, foreign exchange, and food for country nationals, through the export and subsistence agricultural sectors. Additional domestic benefits will also arise from the increased efficiency of national review processes faced by the science plant industry that want to invest in the region. Countries will also benefit from the reduced cost of adopting risk assessment and management procedures that will not anymore be designed at national levels but at the regional level avoiding thus the financing of the same activities in the five beneficiary countries.

#### **5. Incremental costs**

The difference between the cost of the baseline scenario (US\$7.1 million) and the cost of the GEF alternative (US\$24.3 million) is estimated at US\$17.2 million. This represents the incremental cost for achieving global environmental objectives. Of this, about 32 percent or \$5.4 million is requested from the GEF. The remaining support will come from beneficiary countries governments and WAEMU primarily in form of in-kind, IDA, bilateral donors such as USAID, SDC, French cooperation and AFD, primarily in the form of grants and from the international industry and nongovernmental organizations representing the science plant industry.

**Table A: Incremental Cost Summary**

	<b>Costs (US\$M)</b>	<b>Domestic Benefit</b>	<b>Global Environment Benefit</b>
<b>Baseline</b>			
A. Adapt and disseminate Regional Guidelines to assess and manage risks.	0.4	Limited coordination among Burkina Faso, Mali, and Senegal.	Imperfect "regulatory" field trial procedures.
B. Implement national biosafety regulatory framework.	3.8	Slow adoption of Bt cotton in Burkina Faso and Mali.	Trials are imperfectly monitored and could result in environmental contamination.
C. Set up a Regional biosafety and IPR legal framework among WAEMU countries.	2.9	No harmonization of legal frameworks, low protection of local varieties and farmers benefits.	Impact of LMOs on biodiversity is not well monitored and evaluated.
<i>SUBTOTAL</i>	<i>7.1</i>		
<b>Alternative</b>			
A. Adapt and disseminate Regional Guidelines to assess and manage risks.	3.5	Lower the cost of adoption of a common risk assessment framework.	Science-based risks assessment procedures established.
B. Implement national biosafety regulatory framework.	11.4	Speed up the review process for adoption and commercialization of modern biotechnologies in Mali, Burkina Faso and Senegal	Trials are properly monitored and evaluated and risk of contamination is reduced.
C. Set up a Regional biosafety and IPR legal framework among WAEMU countries.	9.4	Scale up the safe adoption of modern biotechnologies in the region including for farmers' benefits	Impact of LMOs on biodiversity is properly monitored and evaluated.
<i>SUBTOTAL</i>	<i>24.3</i>		
<b>Increment</b>			
A. Adapt and disseminate Regional Guidelines to assess and manage risks.	3.1		
B. Implement national biosafety regulatory framework.	7.6		
C. Set up a Regional biosafety and IPR legal framework among WAEMU countries.	6.7		
<i>SUBTOTAL</i>	<i>17.2</i>		
<b>GEF Grant</b>	<b>5.4</b>		

**Annex 18: STAP Roster Review**  
**AFRICA: West Africa Regional Biosafety**

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General comments

*Overview of project.*

The proposed activities focus on developing an approach to regional capacity building and participatory process regarding risk assessment and risk management (and to some extent communication) linked to introducing an LMO (in this case transgenic cotton) into cotton producing countries (or potentially cotton producing countries) in West Africa. The approach is presented as a future model for subsequent introduction of LMOs into this region.

The introduction of any LMO into a new region is associated with potential controversies (for example, relating to environmental or human and animal health impacts, or effects on the rural economy). Given the potential controversies associated with LMO introduction, with different views being presented by a broad range of stakeholders and end-users, the process demands systematic and unbiased analysis of credible data relating to potential benefits and risks, (environmental, health, and impact on regional economic factors). The data (and their interpretation) must be addressed in the process of risk/cost benefit assessment and management, and included as part of the process of stakeholder and end-user participatory processes and communication of LMO introduction to the broader community. For these reasons it is essential that a *credible* and *unbiased* approach to introduction, which takes due account of existing data regarding risk assessments, and the potential for local differences in environmental impact and risk management, is in place prior to introduction. Systematic, transparent and independent evaluation of decision-making and participatory processes is essential if this credibility is to be developed and maintained.

A primary objective of the proposed activities relates to localized capacity building regarding the development of regulatory activities designed to optimize both environmental protection and food safety, and socio-economic impact factors, (including those related to the potential effects of IPR and novel transgenics), on regional rural economics. The issue of introduction of any LMO into a new region is associated with potential controversies (for example, relating to environmental or human and animal health impacts, or effects on the rural economy), is also addressed within this framework.

*Abbreviations and acronyms.*

My understanding is that LMO, as defined by the Cartagena Protocol, generally refers to “living modified organism”. Clearly there are profoundly different implications for environmental release of LMOs to GMOs in terms of the impact on biodiversity, particularly in a transboundary

and other potentially controversial factors. In the abbreviation glossary LMO is described as a “genetically modified organism”. Whilst the CPB states that LMOs are usually considered to be the same as GMOs (Genetically Modified Organisms), in this case clarification is needed. Of less importance is the use of the abbreviation “ppp”, which may refer to public/private partnerships, or Public Participation Panels. I wonder if the latter is meant here. If the former, please note broadly accepted abbreviation.

In terms of potentially problematic issues regarding environmental introduction of any LMO, it is important to consider risk assessments related to health (human and animal) and potential for negative environmental impact. Socio-economic risks relate to the potential impact on local and national economies, (including compromised export capacities) and, increasingly, bioethical issues. Localisation of an effective risk assessment process is contingent on identification of local expertise in key areas, with local knowledge (for example, regarding the vulnerability of the local ecology to the toxic effects of increased pesticide use). Capacity building is contingent on both training of such expertise, as well as discussion regarding what local issues need to be addressed.

The major issues for community discussion relate to potential transboundary issues associated with LMO release, potential impacts on biodiversity and the environment, and the possible socio-economic or societally transformative consequences of its introduction (IPR and rural farming practices, or adoption of novel farming practices to include effective risk management of LMOs). Human health effects may be related to the introduction of novel food allergens into the human food chain, or potentially allergenic pollens into the environment. The inclusion of antibiotic resistance marker genes in transgenic cotton plants is also the focus of international debate regarding potential development of microbial resistance.

The benefits of adoption relate to implementation of more effective farming practices in the cotton producing countries (or potential cotton producing countries) involved in the project, which, according to the proposal, should ultimately lead to reduction in poverty in these countries involved. The literature is somewhat equivocal regarding potential environmental impacts of transgenic cotton. A systematic evaluation of potential positive impacts (for example, reduced use of pesticide ensembles) needs to be made, and evaluated against potential negative effects (increased total usage of pesticides). Due consideration of these data should be made as part of the stakeholder consultation. I am not able to comment on potential impact of on local biodiversity in this area, but I assume this information would be supplied by regional research Institutes with the relevant expertise in this field as a consequence of capacity building activities.

#### Scientific and technical soundness of the project

Scientific and technical soundness does not only refer to the question whether the project has a sound “natural science” basis but also to the social science “technical” issues. Usually, social science issues, such as tenure systems, local technical knowledge, local leadership on conservation measures, enforcement and monitoring are as important as ecological aspects of biodiversity conservation in sustainable use projects and therefore deserve the same amount of attention in technical reviews. Some of the social science issues can also be dealt with under “the degree of involvement of stakeholders”.

Questions that **could** be raised under this issue are:

1. Is there sufficient ecological and technical information available to give the project a sound scientific base?

There is a reasonable set of data available regarding the introduction of LMO cotton in other regions which can contribute to the local development of a risk assessment and management strategy. However, regional factors may be influential (for example, variations in local biodiversity and / or farming practices). I assume that these factors will be systematically analysed as part of the proposed activities. Potential transfer to other crops (in particular non-transgenic cotton) should be considered with due regard to local farming practices.

The expertise identified as contributing to the risk assessment process itself is generally drawn from natural science. Local capacity building in the areas of economics is needed if a cost- benefit analysis is to be made. Further comments regarding implementation and evaluation of the social science activities are made later in this review. Risk assessment regarding the probability of occurrence of potentially hazardous events needs to be contextualized by information regarding local farming practices. For example, the potential impact of pesticide application on local biodiversity will be dependent on methods of application, as well as local meteorological conditions. Both of the latter will be contingent interactions between the variabilities associated with farming practices and prevailing weather conditions.

The proposed activities include improving public knowledge and communication. I assume social science expertise will be included in the steering group in order to optimize best practice in this area.

2. Have all the threats to the ecosystem been considered?

This is contingent on implementation of an effective risk assessment strategy, which also needs to take account of local capacity in the area. I assume this will be a consequence of the proposed activities, and needs to be evaluated as part of the monitoring process.

In particular, the following need to be considered.

- Potential for gene transfer to local plants
- Potential for increased use of pesticides (or a specific broad range pesticide) ecosystems (for example, insect or fish populations).
- Development of effective assessment methodologies given that some ecotoxicological effects may be difficult to measure (for example, insect or populations with a habitat at a physically high level in the ecosystem)

Given the controversy associated with (in particular) different methodological approaches to ecological risk assessment (for example, probabilistic *versus* deterministic approaches) discussion of methodology should be included in the stakeholder consultation. Training

local experts in emerging eco-risk assessment methodologies may need to be considered as part of the capacity building activities. .

3. Does the type of ecosystem management proposed require further research?

This is outside my area of expertise, and is contingent on specialist knowledge regarding regional biodiversity. I have been assured that this will be provided by world bank personnel as well as local research institutes and local knowledge.

4. Is there a need to develop indicators to achieve the objectives?

Yes. Key performance indicators primarily relate to the documentation associated with risk assessments. Risk management monitoring implicitly involves some assessment of regional harmonization regarding the activities of the national competent authorities. The effectiveness of the participatory processes themselves, and effectiveness of communication practices, are not included explicitly in terms of evaluative activities (please see comments regarding participatory processes below).

5. Will appropriate monitoring be put in place?

The evaluation of the impact on biodiversity and human health will be a consequence of regional harmonization of risk assessment activities, and implementation of effective risk management systems.

6. Will the approach taken in the project proposal achieve the objectives of conserving biodiversity?

This is contingent on the success of the proposed activities, and depends on the development of appropriate risk assessment methodologies, capacity building in risk assessment and risk management practices, and local adoption of risk management strategies. Effective communication between the authorities and local farmers is key to successful implementation.

7. What are the risks and constraints associated with the approach?

Successful operationalisation is contingent on the development of a successful regional strategy to assess and manage risks, and of course potential benefits. One issue that needs to be considered is the credibility of the participatory process itself, particularly in a potentially controversial area, which is why independent evaluation is required.

8. Is there any area weakness or gap in the project?

A systematic and structured approach to the participatory approaches discussed below needs to be identified. Specific comments are raised below.

Whilst capacity building, particularly in the risk assessment area, requires considerable investment in terms of training and other knowledge transfer activities, the proposed approach appears satisfactory in this respect. I am, however, less certain that the budget is adequate to cover all of the proposed activities, and reassessment may be required. However, I am not an expert research costing regarding activities in this region.

9. Are there any controversial aspects about the project?

In my opinion, there are clearly controversial aspects associated with the introduction of any LMO into a new environment where there is potential for impact on health, biodiversity, and socio-economic changes. The proposed activities do not, however, focus on environmental introduction of transgenic cotton *per se*, but rather the process capacity building, stakeholder and end-user consultation regarding the introduction of an LMO.

I am somewhat concerned that the text is ambiguous with regard to the issues associated with conducting the regionalized risk assessment itself, and developing the capacity to so do. The proposed activities appear to be adequate regarding the development and implementation of the framework (for example, regional policy harmonization), but are not explicit regarding what inputs from which areas of are required in order to obtain a satisfactory risk assessment in the broader sense of the term which includes technical risk assessments (for example, introduction of allergens into the human food chain, potential for local populations to develop pollen allergies, ecotoxicity) as well as socio-economic impact potential, and systematic analysis of bioethical issues. In particular, issues such as genetic differentiation in human potentials for allergic response to pollen may be prone to regional differences, and clearly the possible impact of horizontal gene transfer or increased use of a specific pesticide is contingent on local ecological systems.

Specific issues include the following:

1. Health impacts

- The food chain (human and animal) including allergic responses
- Respiratory effects (transgenic pollen)
- Long-term and transgenerational effects
- Antibiotic resistance in micro-organisms resulting from inclusion of marker genes in transgenics.

2. Economic effects

- Impact of using monocultures and single varieties which are potentially vulnerable to localised changes in the environment.
- Increased cost of specific pesticides
- Impact of IPR associated with seed repurchases on rural economy.
- Negative impact on export markets resulting from the introduction of LMOs into a particular region.

10. Does the project introduce incentives that may lead to over-harvesting (in the case of a sustainable use project) or contribute to the reduction of genetic diversity (for instance in the case of gene –flow, invasiveness of the introduced plant)?

These issues need to be discussed as part of the risk assessment process, particularly in the context of potential gene-flow (for example, to non-transgenic cotton) or impact of increased pesticides on the local biodiversity. Over harvesting is not an issue relating to this specific introduction.

11. How will the drops in revenue as a result of conservation measures be compensated?

Not applicable at this stage.

12. Are there legal instruments aspects that should be dealt with?

In particular, harmonization of biosafety / IPR in WEAMU framework will be a deliverable of the proposed activities.

13. How will the model of sustainable use outlined in the project be developed?

The approach adopted emphasizes capacity building and localisation of risk management (but see response to 15 below).

14. How effective will the proposed model be in the local situation?

The proposed activities appear to be highly effective for the region which is targeted. It is important that, as part of the participatory process and communication activities, viable alternatives for GMOs which are the result of traditional breeding, are also considered, in particular if there are also benefits to the regional economy or to local biodiversity.

15. Is there evidence that the project offers the best long-term solutions?

Any initiative designed to facilitate localized risk assessment practice, harmonized regulation, and risk management will provide the optimal solution for long terms developments in this area, providing that initial activities are supported by sustainable risk analysis practices which are also amenable to any changes in global regulation which may occur in the future. The interdependence of the 5 economies which will benefit from the proposed activities implies that the process will only work if regulatory regional harmonization is achieved.

#### Identification of global environmental benefits

The purpose of the GEF is to provide funding for the agreed incremental costs of measures to achieve global environmental benefits in the area of biodiversity. This is one of its key operational principles for the development and implementation of its work programme. Actions to achieve sustainable development at the national level can be complemented and supplemented by other efforts aimed at securing global environmental benefits. The additional costs on

countries beyond the costs of achieving national development goals can be borne by GEF. Guidance on eligibility is provided by the COP of the CBD.

In other words, what are the global benefits for the conservation of biodiversity as interpreted by the COP of the CBD that will result from the intervention? Also, does the area of intervention have a global importance in terms of ecosystem and or key species?

Some issues which may be potentially problematic regarding the introduction of transgenic cotton are also discussed under the issue of controversial aspects of introduction.

Very generally, an assessment of (social, environmental, and health) risks and benefits of potential introduction of any transgenic crop into a new region need to be considered. The potential effects on local biodiversity (positive or negative) need to be addressed, and, although extrapolation can be made from other regions where GM cotton has been introduced, the impact on the local case must be considered in detail.

Environmental issues which must be include systematic assessment of (increased) pesticide use as a consequence of horizontal gene transfer to weeds, and subsequent pesticide resistance, impacts on biodiversity (gene transfer and increased pesticide use), impact of pollen on local insect (and human) populations. Capacity training and knowledge transfer activities also need to consider these factors. The credibility and independence of data sources and, their interpretation is an important part of this process. As a general rule, it is useful to consider both significant and non-significant effects, providing methodologies have been scrutinised as part of the process of peer review. The World bank itself has suggested that the development of an prepares an Environmental and Social Risk Assessment (ESRA) would be helpful, from the perspective of identifying what should be included in a risk assessment, (as well as setting the stage for capacity building and knowledge transfer).

#### How does the project fit within the context of the goals of GEF

Operational programs detail the strategic considerations in the focal area and outline the type of activities and approaches GEF supports to maintain biodiversity and diversity of biological resources in the four ecosystems. Assuming this question requires the knowledge of the Operational Strategy and Operational Programmes.

The proposed activities are broadly in line with the recommendations provided by the Cartagena protocol on biosafety, specifically aiming at assessment and management of potential risks associated with the environmental introduction of an LMO (transgenic cotton) into in five West African counties, either at present cotton producers, or those being encouraged by international bodies to be cotton producers. The issue of risk-benefit communication is also addressed, although this is not operationalised in a formal way in the proposal.

The project aims to build on specific recommendations arising from the CPB regarding the implementation of localized national regulatory frameworks, stakeholder (and implicitly end-user) involvement in decision-making processes regarding risk assessment and management activities, and (less formally) promoting public awareness and participation. The focus of the project is not to conduct a formalized risk assessment per se, nor to make specific

recommendations regarding risk management activities, but rather to operationalise regional activities directed towards effective risk assessment and risk management

### Regional Context

This question addresses the importance of the area of intervention from a conservation perspective in the region and may also refer to the transboundary aspects of an intervention in a single country. For example, if the ecosystem extends over two or more countries, there may be a need to establish a management link between the regional and the national entities for the management of the contiguous parts of the ecosystem.

The project extends over WAEMU countries, specifically taking steps to establish the implementation of a regional observatory regarding “environmental, food and feed safety and socio-economic impact of agricultural biotechnology”. Assuming appropriate risk assessment measures with respect to local biodiversity are implemented, the issue of transboundary risks in this specific regional context should be well addressed.

### Replicability of the project

Refers to the scope for replication of the intervention. If successful, could the intervention be replicated elsewhere on the basis of experience and learning?

The proposed activities focus on developing best practice regarding regional introduction of transgenic crops. If successful, there is good potential for subsequent replication, potentially adjusted according to the outcomes of the present proposal (but see comments regarding sustainability below). However, replication is dependent on successful “auditing” of participatory activities, for example.

### Sustainability of the project

**What is the potential for continuation of the changes the project aims to achieve? How will the project activities and impact be sustained after the completion of the project?**

The proposed activities to improve best practice in biosafety through greater inclusivity of stakeholder involvement in risk assessment and management regarding the introduction of an LMO into a new environment., as well as capacity building activities which are relevant to harmonization of local regulations regarding risk assessment and risk management activities. As I understand the presentation of issues in the proposal, successful stakeholder participation applied to transgenic cotton may form the basis for future stakeholder consultation regarding the introduction of further transgenic crops in the region under consideration. That is, the procedures adopted in the proposed activities, if successful, may constitute a “model” for best practice, or provide information regarding improvements on existing practices. I assume that successful implementation of such an activity will also provide the basis for public consultation regarding other activities in the area.

## **Secondary issues**

### Linkage to other focal areas

Efforts must be made to design projects that are consistent with the operational strategies of the other focal areas and avoid negative impacts in focal areas outside the focus of the project. One of the strategic considerations in the Operational Strategy is that where feasible and cost-effective, activities will be designed to contribute to global environmental benefits in other focal areas and in the cross-sectoral area of land degradation.

For example, actions to sequester carbon and minimize land degradation may offer opportunities for biodiversity conservation, while international waters activities may offer opportunities for integrating aquatic biodiversity components. The question is then whether the project has taken into consideration impacts on other focal areas.

This is contingent on the extent to which the proposed activities successfully implement regulatory harmonisation outside of the WAEMU countries, which, in turn, will be dependent on the successful implementation of the project itself.

### Linkage to other programmes and action plans at the regional or subregional level

GEF activities are to be coordinated with past, ongoing and prospective work of the Implementing Agencies and other bodies.

Are adequate links established with relevant ongoing regional or subregional programs and action plans? Is there evidence that the GEF intervention will be considered with other ongoing initiatives?

Yes.

### Other beneficial or damaging environmental effects

For example, other areas managed by the executing national entities may indirectly benefit from a project; or the management of a protected area may yield other ecosystem services to the region and to local communities.

The potential impacts on the local economy and environment of the countries are discussed elsewhere in this review. In particular, the potentially controversial aspects of LMO introduction need to be considered.

Negative impacts may be the result of eco-tourism, or the use of and harvesting of biological resources.

Ecotourism or bio-harvesting are not an issue in this particular proposal.

### Degree of involvement of stakeholders in the project

Stakeholder involvement is considered of central importance in the operational programs. GEF activities are supposed to promote community-based management of biodiversity, the co-management of resources, through contracts or negotiations with governments that define each stakeholder's responsibility in managing the resource, and the devolution of management to local groups and NGOs. Local participation in resource management should be ensured from the start.

Project proposals should clarify the conditions of cooperation between the various groups of stakeholders and contain transparent mechanisms to ensure the active participation of relevant stakeholders in the development, implementation and monitoring of project activities. Partnerships with stakeholders should be appropriate to local conditions and based on local expertise.

The question should be asked whether the project contains adequate mechanisms for participation and influencing the management of the project?

1. Are there provisions for the establishment of appropriate lines of communication?

From the information provided, the establishment of such lines of communication are an integral part of the proposed activities. More transparency regarding how these are to be operationalised would be helpful.

2. Is there a plan for facilitating the flow and exchange of technical information between communities and stakeholders?

Yes, but clarification regarding the communication process is needed, particularly in those WAEMU countries with low capacity in risk assessment and management. For example, who are the relevant stakeholders under these circumstances.

3. Are the participatory schemes adequate?

In general, the structure of the participatory activities in ANY area of consultation examining potentially controversial agri-food activity should systematically address issues of potential risk and benefit in all countries affected. Local variation (for example, in the context of biodiversity and local economic conditions) may need to be systematically analysed as part of the national consultation process. Discussion of risks and benefits should be included in communication with local stakeholders.

I do, have some concerns about the participatory process which could usefully be addressed in the project proposal. These relate primarily to the evaluation of the process and outcome of the stakeholder consultation (see for example, "Evaluating public participation in policy making, 2005, OECD Publishing, Paris"). An important goal of the stakeholder activities will be to identify local concerns regarding potential risk management activities (particularly at the level of farm management).

The issues to be included on the agenda for the consultative exercises have not been systematically addressed in the proposed activities. I assume that the agenda for participatory activities will be developed by the steering committee, and localised according to community needs.

1. Promoting public awareness and participation is presented as a important element of the proposal. However, it is not clear how this will be operationalised outside of the stakeholder *fora*. Presumably community networks etc would be useful in this context. An expert in communication, who has specific expertise in any local factors which may have influence on the effectiveness of the process, might usefully be added to the steering group.
  2. The key performance indicators include “multi-stakeholder for contributing to biosafety policy development”. How would this actually be measured? Against what criteria will stakeholder participation be assessed (for example, it may be useful to apply a set of criteria relating to the process itself (features of the activity which ensure that it takes place in an effective way) and acceptance criteria (features of the method which make it acceptable to those involved, and to a broader public). This would also facilitate the comparison of the outputs of stakeholder consultation in different countries, where some cross-cultural variation on process and acceptance might occur.
  3. Independent evaluation of the stakeholder consultation process itself, as well as the acceptability of the process to stakeholders, would increase the credibility of the results of the activity, and resulting communications with the broader public. Such independent evaluation is particularly important in a potentially controversial area (which, at present, is likely to include any introduction of LMOs into the environment).
  4. Further clarity regarding the procedures and goals of the stakeholder participation would be useful. For example, is it information dissemination and outreach activities to end users, or are the proposers seeking input from stakeholders regarding effective biosafety assessment and management. If risk management on the part of farmers is required, how is best practice spread through the relevant communities who are not involved in the stakeholder for themselves? Will this again be conducted through community networks? If so, what mechanisms will be put into place to facilitate this?
4. How conflict issues are being dealt with?

*Resolution of conflict in participatory processes.*

Resolution of majority and minority consensus conflicts which might arise as a consequence of participatory processes, in terms of implementing a specific strategy such as introduction of LMOs into a specific environment, will always be potentially problematic. The current recommendation is to provide information to interested stakeholders, end-users and the broader community regarding WHY a particular decision has been made, as well as what the outcome of the decision is.

### *Resolution of conflict regarding introduction of transgenic cotton into international commodity chains*

This is not specifically addressed in the proposal, and in my opinion is “out of scope” of the proposed activities. However, I suspect those most likely to be affected by the introduction of transgenic crops in these regions will be small farmers. These producers who may be vulnerable to even small changes in demands for their crops, as well as increased dependence on large multi-national companies. The introduction of GM cotton into the global commodity chain has not resulted in the same level of consumer negativity as, for example has been the case with genetically modified foods and ingredients in Europe and some other countries. However, it is not generally recognized by European consumers that cotton seed oil is used as a food stuff (particularly in the international fast food industry), which may have a negative impact on consumer acceptance of transgenic food oils at a later date.

### Capacity building aspects

One of the activities GEF is funding is supporting capacity building efforts that promote the preservation and maintenance of indigenous and local communities, knowledge, innovation, and practices relevant to conservation of biodiversity with their prior informed consent and participation.

Examination of table 1 indicates that, with the exception of Burkina Faso, risk assessment expertise is low. Thus capacity building in risk assessment for LMO is a critical part of the proposed activities.

One of the outputs of GEF projects should be stronger institutions and well-trained staff to address these issues.

1. Has adequate attention been paid to capacity building aspects?

Capacity building represents the core of the proposed activities.

### *Community inputs into the conservation of biodiversity*

A specific framework for how this might be conducted is not presented. Generic methodologies (stakeholder participation) are discussed but not formalized.

### *Training needs*

It is useful to distinguish stakeholder consultation (what are the local demands for risk assessment) and knowledge transfer (what are the training needs if effective risk assessment is to be applied within local regulatory frameworks). I assume similar arguments apply to the risk management aspects. As far as I can tell from my reading of the proposed activities, communication and informed choice is developed from the consultation exercises, but the issue of local expertise in this area has not been explicitly addressed. Perhaps clarification would facilitate the success of the proposed activities.

2. Is there sufficient human capacity to tackle the issues addressed in the project?

This is not explicitly addressed in the proposal. The identification of local research Institutions has been identified, although core competencies are not listed. The local community networks (e.g. farmers organizations) required for risk management of LMOs have not explicitly been listed.

#### **World Bank Team response to STAP Review**

1. The World Bank West African Biosafety Team consulted the STAP Reviewer, Dr. Lynn Frewer, to evaluate the proposed project as required by the GEF funding requirements.
2. On the whole, Dr. Frewer supports the World Bank initiative on the West African Biosafety Project. She particularly emphasized that the proposed project is not primarily focusing on the introduction of transgenic cotton per se, but took a larger initiative to provide and strengthen the capacities of various stakeholders (policy makers, enforcement officials, scientists) and end users (farmers) in risk assessment and management of LMOs with the initial focus on transgenic cotton. This is in her view consistent with objectives embodied in Article 22 of the Cartagena Biosafety Protocol and also the goals of the GEF.
3. On the proposed regional effort through WAEMU framework, Dr Frewer is supportive of such approach, particularly on the establishment of the regional observatory that could serve to operationalise the harmonized risk assessment and management that addresses transboundary movement of LMOs within the specific regional context.
4. Other concerns highlighted by Dr. Frewer and the Team's replies to the concerns are summarized in the table below:

<b>Issues raised STAP Reviewer, Dr. Frewer</b>	<b>Replies of the World Bank Team</b>
1. The introduction of transgenic cotton may pose environmental (gene transfer, pesticide resistance, impact to local biodiversity), economic (cost benefit analysis, rural economy ), human (allergy) and animal health ( cotton oil in animal feed) issues in the West African countries.	The first component of the project is to help the participating countries build capacity to assess and manage potential risks relating to environment, human and animal health. In addition, the Team with the guidance from the Safeguard Specialist in the Africa region has developed an Environmental and Social Impact Framework in Annex 12 to handle the issues expressed by the Dr. Frewer.
2. Indicators for measuring the outcome of the project should not be measured by the tools development for risk assessment. The effective assessment and management of risks by the national competent authorities and other stakeholders must also be measured and tested. The output must take cognition of the local African context.	The Team with the support from the AFTQK team has developed a revised set of outcome indicators in Annex 4 of the project brief for each activity under the three components. The proposed project is not primarily concern with the development of tools but also the capability of the NCA and various stakeholders including end users at the national and regional level in handling and managing risks posed by transgenic cotton. For instance, an outcome indicator

	will measure the percentage of field trials and commercial release using science-based risk assessment and management methods prior to implementation
3. Training of various stakeholders including end-users. The concerns expressed were related to the proposed methods to include eco-risk assessment methodologies by the NCA and various stakeholders, the lack of information on the capacity of local stakeholders except for Burkina Faso and also the capacity of local research institutions including farmers' organizations.	<p>A list of various stakeholders has been developed in Annex 8 to the Project Brief that begs for further deliberations on their level of needs and the type of trainings required for each category of stakeholders.</p> <p>A detailed training need assessment will be undertaken in the preparatory phase of the project, that will identify the needs of the local experts and design a training program on risk assessment methodologies and management that tailored to their needs .</p>
4. The need to operationalize the risk/benefit communication aspect of the proposed project.	The Team will engage a Communication Specialist to assist the team in developing a communication strategy to address issues relating to the line of communication from the regional level (WAEMU) to the national competent authorities, including inter-agencies communication strategy. Also to act as a liaison between the project and the external stakeholders like NGOs, civil societies and farmers' organizations.
5. The need to address issue relating to the degree of involvement of stakeholders	The stakeholder participation is essential in a biosafety regulatory system and is the key element for project success. The project has further improved to reflect the Stakeholder Participation and a stakeholder participation plan is scheduled to be prepared with the participating countries. The plan will identify all major stakeholders, assess their needs in information and training, and propose actions to improve their participation in decision making In addition, the project Team has used two special missions to the participating countries, other WB related missions, and participation in the regional meetings to consult with stakeholders during the project preparation. The stakeholders that met the Team so far

	include: government officials from different ministries/agencies, academics, cotton producers, farmers, bilateral agencies working in these countries, NGOs, regional organizations, and UNEP.
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**Annex 19: Maps**  
**AFRICA: West Africa Regional Biosafety**