

**PROJECT INFORMATION DOCUMENT (PID)  
APPRAISAL STAGE**

Report No.: 43582

<b>Project Name</b>	Niger Basin Water Resources Development and Sustainable Ecosystems Management Project
<b>Region</b>	AFRICA
<b>Sector</b>	General water, sanitation and flood protection sector (55%); Power (40%); Central government administration (5%).
<b>Project ID</b>	P093806
<b>Borrower(s)</b>	Benin, Guinea, Mali, Niger and Nigeria
<b>Implementing Agency</b>	NIGER BASIN AUTHORITY (NBA)
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**Regional context and key development issues**

1. The Niger River provides the economic mainstay for its nine riparian countries – Benin, Burkina Faso, Cameroon, Chad, Côte d’Ivoire, Guinea, Mali, Niger and Nigeria. It is Africa’s third longest river (4,200 km) with a basin area of nearly 1.5 million km<sup>2</sup>. Despite the Basin’s tremendous potential for development and investment, it still remains under-developed, limiting economic growth and the means to improve the livelihoods of its population. The potential to harness the water resources from the river for hydropower, irrigable lands, productive agriculture, fisheries and improved navigation to promote flow of goods and people across borders has still to be developed. To date, seven out of the nine Basin countries are among the bottom 20 poorest countries in the world<sup>1</sup>. Close to 85 percent of the Basin population lives in rural areas where food security and social well-being directly depend on the river and on the existing water resources. This heavy dependence on the use of the Niger River’s water resources places the Niger Basin Authority (NBA) at the center of any meaningful regional development process. The pressing issues facing the Niger Basin are:

- *Increasing population and vulnerable groups:* The Basin’s population is approximately 110 million with an average annual growth rate of 2.8 percent. The biggest share of the population is taken up by Nigeria with more than 80 million

<sup>1</sup> The Human Development Report, 2006, UNDP Human Development Index

people whose livelihoods directly depend on the resources of the rivershed. Women and children under the age of 15 represent more than half of this population. They remain vulnerable and deprived of their means of livelihood because of the degraded watershed and the inadequate level of development of water infrastructure in the river basin. With declining per capita income, poverty has reached critical levels in most of the Niger Basin countries, especially those in the Sahelian and landlocked areas. Furthermore, vulnerability to droughts and poverty has increased and most of the population lives without sustainable access to basic services such as potable water, health and adequate food. The Basin's rural poor represent a significant population in the riparian countries (63.8 percent in Mali, 40.2 percent in Cameroon, 40 percent in Guinea, 64 percent in Chad and 63 percent in Niger)<sup>2</sup>. Improving living conditions in the basin will require multifaceted interventions addressing infrastructure development, income generating activities, restoring the natural environment and strengthening the management of water and natural resources in the basin.

- *Degraded environment:* Poor land and water management practices coupled with high water variability basin-wide, contribute to severe ecosystems degradation in an already poverty-stricken environment. The increased needs for energy and limited access to electricity compel the Basin population to use wood and charcoal for domestic purposes. This over-exploitation results in deforestation and biodiversity loss. In Guinea, 67 percent of the forests in the Niger River headwaters are degraded while in the Niger Republic, more than three percent of the portion of the basin is annually deforested, mainly because of human activities and climatic effects. This process has resulted in land degradation, loss of fertility of agricultural areas and pasturelands for sustainable cattle grazing. Cumulatively, these factors are perpetuating a vicious cycle of environmental degradation which in turn directly threatens rural communities whose livelihood depends on these ecosystems. Over the years, these factors have further increased poverty and put severe pressure on land and water resources. Reversing the Basin's environmental degradation calls for concrete actions that will offset the poor land and water resources management practices which are holding back productive activities and the performance of the existing water infrastructure facilities.
- *Unutilized development potential:* The Niger River Basin is endowed with abundant natural resources. However, inadequate management and development of water resources have resulted in sub-optimal benefits. Therefore, optimizing benefits from the existing water infrastructure will improve both agriculture and livestock production - the primary sectors of the basin. Furthermore, adequate water resources development and management can facilitate incremental benefits associated with increased productivity and income. Current development opportunities in the Basin include: (i) 2.5 million ha of irrigable land of which only 20 percent are developed; (ii) 30,000 GWh of hydropower potential of which only 6,000 GWh are developed, mostly in Nigeria; (iii) 6,000 km of navigable waterways of which less than 200 km are currently exploited, mainly in the Niger Delta in Nigeria; and (iv) an annual river discharge of 200 km<sup>3</sup> or billion cubic meters (BCM) of which less than 30 km<sup>3</sup> is

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<sup>2</sup> Ibid

stored in water infrastructure. Additional opportunities for economic development in the basin include the development of fisheries, watershed management and ecotourism, all of which could provide incremental benefits associated with new and rehabilitated water infrastructure. It is of utmost importance for the riparian countries that immediate actions are carried out to assist the Niger Basin Authority and the countries develop a clear framework that will, in an integrated and optimized manner, tap into these opportunities.

- *Inadequate operation and maintenance of existing water infrastructure:* Insufficient water infrastructure and inadequate operation and maintenance are heavily overtaxing existing infrastructure by deferring maintenance resulting in sub-optimal utilization of water resources which might otherwise have generated multiple benefits. While it is clear that additional infrastructure is required to effectively mitigate the seasonal and annual variability of the Niger River, improved operation and maintenance of the existing ones will ensure greater efficiency in the use of the existing assets and ensure their long-term sustainability. Adequate operation and maintenance of existing large water infrastructure such as Kainji (15 km<sup>3</sup>), Jebba (3.8 km<sup>3</sup>) and Shiroro (6 km<sup>3</sup>) are constrained by multiple issues ranging from inappropriate maintenance, conflicting planning and lack of funding. The situation is similar for small water infrastructure. Funding is required to rehabilitate and upgrade existing infrastructure, establish a clear framework of interventions promoting sustainable management of valuable assets, and develop the existing water resources potential.
- *Competitive unilateral development and the NBA's inefficiencies:* The lack of sufficient robust legal instruments for effective cooperation among the Basin countries is the main reason behind the inclination of many countries for unilateral development of the river's resources. Over the last decades, this unilateral development has limited the NBA's ability to coordinate regional development. To optimize the Basin's opportunities, it is imperative for the Niger Basin riparian countries to empower the NBA by adopting key legal instruments and institutional mechanisms that promote cooperative development of major water infrastructure in the Basin, overall coordination, management and optimization of activities across the Basin.

### **Progress in revitalizing the Niger Basin Authority**

2. Established in 1963, the Niger River Commission (NRC) was commissioned to promote cooperation between the member states and to ensure integrated development, particularly in the areas of energy, water, agriculture, forestry, transportation, communication and industry. The revised convention of 1980 transformed the NRC into the Niger Basin Authority (NBA), and was further strengthened in 1987. It provided a powerful platform to promote, facilitate and coordinate water resources development in the Niger River Basin by empowering the NBA to play a lead role in assisting the riparian countries to coordinate the Basin's development. Despite this clear mandate, the NBA's performance was modest as the institution engaged in a variety of small projects and activities that allowed it to survive. During this period, the NBA moved away from its core mandate to

manage and strategically develop the river basin. Consequently, the institution underwent a severe crisis, until the end of the 1990s, when the Heads of States decided to revitalize the cooperative framework of the Niger Basin. The nine riparian countries acknowledged that planning for the use of water resources exclusively at the national level would prevent them from maximizing the opportunities the river could offer if developed cooperatively. Therefore, the development of a cooperative framework supported by joint actions promoting regional cooperation and growth became a high priority.

3. In outlining this process, the riparian countries agreed to revitalize the Niger Basin Authority. They also agreed to focus on concrete actions which pave the way for broad regional cooperation and investment across the Basin as described in the following political and technical milestones:

- February 2002, Abuja - the 7<sup>th</sup> Heads of State Summit acknowledged the danger of unilateral planning and committed to pursue a regional dialogue and seek support for cooperative, sustainable development of the Niger River. They agreed to develop a Shared Vision supported by a Sustainable Development Action Plan (SDAP) for the Basin. Subsequently, the Chairman of the Heads of State Summit requested the World Bank to support this cooperative initiative;
- January 2004, Yaoundé - the NBA's Council of Ministers (COM) agreed to undertake an institutional and organizational audit of the NBA with the World Bank and other donors' support;
- April 2004, Paris - the NBA's Heads of State signed the Paris Declaration launching the Shared Vision process supported by the Sustainable Development Action Plan (SDAP) and called upon donors to support concrete actions that pave the way for the preparation and implementation of the SDAP. They also approved the Niger Basin Partners Framework to foster harmonization of donors' interventions, and designated the World Bank as the lead agency;
- January 2005, Bamako - the NBA's COM approved the preliminary finding of the regional priority actions to be developed in the Basin and instructed the NBA to liaise with the World Bank and other partners for concrete initial actions on the ground;
- May 2005, Abuja - the NBA's COM approved the institutional and organizational reform of NBA, including the complete revamping of its human resources;
- February 2006, Fada Ngourma - the first Niger Basin Civil Society Forum reasserted the needs, aspirations and dynamics of stakeholders contributing to the cooperative development and management of the Niger Basin as a common heritage;
- September 2006, Niamey - the NBA's COM approved progress made in the SDAP and called upon the World Bank and other partners to speed up the preparation of a regional program as an initial step towards the implementation of the SDAP.

4. These decisions endorsed by the NBA's highest political level decision-makers and civil society organizations alike provide clear evidence of the nine riparian countries' ownership and readiness to undertake cooperative actions in the Niger Basin. This willingness to cooperate is also clearly confirmed by riparian countries' agreement to rehabilitate the Kainji and Jebba dams using regional resources within the Niger Basin Authority framework. It is also demonstrated by the funding of the preparatory studies of Kainji and Jebba dams and other relevant studies within the Basin through financing

incurred by the Niger Republic on behalf of the other countries. There is a clear recognition from the riparian countries that involving Nigeria, as the downstream riparian country, in the development of the program is critical to any collaborative efforts to manage the Basin's water resources given its population within the basin, the importance of its economy and its political clout in the Region. Furthermore, following its organizational reform, the NBA now has the technical and institutional mechanisms to adequately implement its mandate to the satisfaction of its local, national and regional constituencies. The strengthening of the NBA's capacity means it is increasingly viewed as an effective institution able to coordinate the development of the Basin's water resources.

## **Rationale for Bank involvement**

5. The project fits within the World Bank's Africa Region's strategy to provide support for regional integration efforts that: (i) have economic and social benefits going across country boundaries; (ii) present clear evidence of both country and regional ownership; and (iii) provide a platform for a high level policy harmonization among countries. The riparian countries' ownership and firm commitment are motivated by the successful reforms of the NBA, and by the World Bank's involvement, from inception, in the renewal of the new cooperative framework. The importance of the Niger Basin's water resources for a population representing more than half of the population of West Africa requires a coordinated and integrated approach for the management of these resources for the common benefit of all water users. The high variability of the Niger Basin's water resources and the chronic energy crisis has led to increasing competition for dams' development with the risk of triggering conflicts among countries in a volatile region which has already experienced armed conflicts in the last 15 years. A coordinated approach to dam development under a clear framework offers the best alternative to inefficient development of the common resources and their rapid degradation. The Bank, with its history and long standing involvement in the Basin, is well placed to move the regional integration process forward. The Strategic Framework for IDA's Assistance for Africa (SFIA) recognizes regional approaches as a means to increasing opportunities for poverty reduction, especially through the management of shared resources. The NBA and the riparian countries have identified regional priority issues consistent with the nine Country Assistance Strategies (CAS) and Poverty Reduction Strategy Paper (PRSP) goals for good governance and sustainable development. The identified interventions are closely connected with the World Bank's newly established Sustainable Development Network (SDN), and provide opportunities to consolidate synergies between water-infrastructure-energy and environmental sustainability. The First Phase Project of the Niger Basin Program qualifies for support from the special provision for selected regional integration projects approved under the International Development Agency (IDA) 14 Replenishment Agreement. Under this special provision, one-third of the total project resources come from each participating country's IDA allocation, while the two-thirds come from regional funding from the special provision.

6. The NBA's riparian countries have specially requested the Bank's assistance in financing this project based on its ability to gather other donors who can finance large investment needs. The Bank's experience in preparing and funding similar water resources management projects, and regional river basin organizations in the Region and worldwide

have been critical determinants in its selection as the lead agency under the donors' collaborative framework to support the NBA and for this project. In addition, the Bank has been active through different Global Environmental Facility (GEF) operations that have paved the way for the current institutional strengthening of the NBA.

#### Proven lessons for engagement

7. The First Phase Project of the Niger Basin Program design builds on multiple analytical works across the Basin to identify relevant and strategic priorities that demonstrate effective benefits of multi-country and multipurpose activities, promote economic development and regional stability. It also encapsulates lessons learnt from regional, national to local level experiences ranging from integrated multipurpose water resources development to ecosystems management and income generation activities associated with environmental protection. These lessons combined with the Bank's long term involvement in the Niger River Basin demonstrate that regional and coordinated approaches are crucial in the development of natural resources in international river basins. As such, the First Phase Project of the Niger Basin Program provides a unique opportunity to jointly develop the water resources, promote shared benefits and foster regional integration. In accordance with the New Partnership for Africa's Development (NEPAD), the Africa Action Plan (AAP), and the NBA's Donor Partners Framework (DPF), it will also contribute to the harmonization of donors' interventions.

#### Higher level objectives to which the project contributes

##### **Accordance with the Bank's regional integration, water sector, and country assistance strategies**

8. The First Phase Project of the Niger Basin Program will contribute to the objectives of the SDAP which promotes coordinated and cooperative development of the Niger Basin in order to achieve a sustainable increase in the overall productivity of water resources. It is anticipated that this will lead to an improvement in the livelihoods of people in the nine riparian countries. The riparian countries' commitment to cooperation is confirmed by their endorsement of the NBA's reform. The countries regard a strong NBA as essential to their strategy to collectively improve the living conditions of their population through the productive use of the Basin's natural resources. Improving the living conditions of their population by reducing poverty are embedded in the main pillars of the Basin countries' respective PRSPs. The Bank's Country Assistance Strategies (CAS) for each country advocates sustainable natural resources management, strengthening of governance and institutional capacity, and inclusion of youth and gender dimensions<sup>3</sup>.

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<sup>3</sup> Main PRSP pillars to which this program contribute: Nigeria: Improved environment and services for non-oil growth; Niger: Development of productive sectors, especially in rural areas; Mali: Development of infrastructure and support for key productive sectors; Benin: Strengthening the macro-economic framework over the medium-term; Guinea: Development of water resources and environmental protection; Cameroon: Develop basic infrastructures and natural resources; Chad: Ensuring strong and sustained economic growth; Burkina Faso: Accelerate growth based on equity; Côte d'Ivoire: Promotion of the private sector and rural development.

## **Youth, Gender and Poverty**

9. In the Niger Basin, poverty largely impacts groups (including women and youth) that are already deeply affected by the lack of concrete initiatives promoting income generating activities and addressing unemployment. This project will improve their livelihoods by promoting wide-ranging activities including the creation of economic activities that depends on a reliable power supply from rehabilitated infrastructure. It will restore degraded ecosystems and secure the main productive activities in fishing, irrigation and agro-forestry. It is also anticipated that this development will promote job creation, reduce the rural exodus and immigration of youth to the coastal countries and abroad. In addition, the involvement of women and youth in the overall management of the basin is crucial as they are the main users and the ones most affected. Their representation and the participation of fishermen, farmers, herders and other stakeholder associations is a critical step for civil society ownership as reflected in the Fada Ngourma Declaration.

## **Program Objective and Phases**

10. The overall Program development objective is to enhance regional coordination, development and sustainability of water resources management in the Niger River Basin. The expected outcomes would include: (i) improved institutional coordination for regional management and development of water resources in the Niger River Basin; (ii) improved performances of rehabilitated hydroelectric plants in targeted areas; (iii) improved irrigated agriculture in targeted areas; and (iv) improved watershed management in targeted areas.

11. The overall Program outcomes would be measured by:

- Percentage of activities implemented according to the Sustainable Development Action Plan,
- Hydropower capacity (MW) rehabilitated/installed throughout the Niger Basin,
- Increased hectares of irrigated surface,
- Percentage of watershed area within the Niger River Basin using agro-forestry, river bank stabilization, silt and sedimentation control.

12. The overall program is expected, after completion of the full implementation period, to have benefited 5 million people in the Basin and indirectly benefited approximately 10 million people.

13. The overall program cost is estimated at US\$747.2 million, for which IDA contribution is US\$500 million. The nine riparian countries agreed that the First Phase would focus on the five countries situated on the Niger River's main stem. A total of US\$186 million would fund the first phase and comprise three credits, and two grants. The proposed three credits are US\$9 million to Benin, US\$18 million to Mali, and US\$135 million to Nigeria. The two proposed grants are US\$9 million to Guinea, and US\$15 million to Niger. The second phase of the overall program would include the remaining four

countries (Burkina Faso, Cameroon, Chad and Côte d'Ivoire) and would thus contribute to the implementation of the SDAP in all nine riparian countries.

14. The First Phase would include three main components. Component 1 focuses on the institutional strengthening and capacity building of the NBA and the national structures involved in the project's implementation. Component 2 addresses the rehabilitation, optimization and development of regional infrastructure. Component 3 deals with the rehabilitation of small water infrastructure and the sustainable management of selected degraded ecosystems to manage "public goods" while providing incentives to communities through income generation activities. The multi-sector approach would broaden the range and scope of potential investments and generate and capture a wider range of direct and indirect benefits. It would also generate a spillover of benefits across countries due to more reliable energy supply deriving from the rehabilitated dams, the regeneration of ecosystems through better optimization of reservoirs and water resources across the basin and the management of "public goods" types of activities associated with afforestation, watershed management, erosion and sedimentation control activities. A carbon finance mechanism will be also considered to seek additional financing through the rehabilitation of the Kainji and Jebba hydropower plants.

15. Following consultations with the NBA's COM, the riparian countries have agreed on clear triggers to move to the Second Phase of the APL. The selected triggers are limited in number, and will aim at measuring progress by countries in meeting some of the key achievements essential to the sustainable management of the water resources of the Niger River Basin.

16. The policy, legal and institutional triggers constitute the endorsement and subscription by the NBA's member countries to the legal instruments and institutional mechanisms for the efficient water resources optimization and management at the regional level including: (i) a Niger Basin regional environmental code has been adopted by riparian countries; (ii) the legal instruments for the joint management and optimization of large infrastructure, dispute resolution and arbitration enforcement have been developed and adopted by riparian countries; (iii) the finalization of the Niger Basin Water Charter; and (iv) the creation of a Permanent Water Commission (PWC).

17. The technical trigger is that PHCN has met the expected output in terms of availability of the rehabilitated units 5, 6 and 12 of Kainji power plant.

18. The Second Phase would build on the completion of due diligence processes for planned water infrastructure and on the lessons learnt from the ecosystem management activities to scale up activities across the Basin including the four remaining riparian countries in the program. The activities already identified for the second phase include: (i) NBA institutional strengthening and capacity building; (ii) completion of the remaining activities on the rehabilitation of Kainji hydropower plant and eventually adoption of black Start facilities in Jebba hydropower plant; (iii) rehabilitation of Lagdo dam and Garoua River port on the Benue; (iv) master planning of the Benue sub-basin; (v) contribution to the financing of Fomi, Taoussa, Kandadji and Zungeru dams; and (vi) scaling up of income

generation activities associated with ecosystem management and mitigation measures for the development of additional water resources infrastructure. The on-going studies on the feasibility of dam sites would provide timely information for the selection of suitable sites to be supported in the Second Phase.

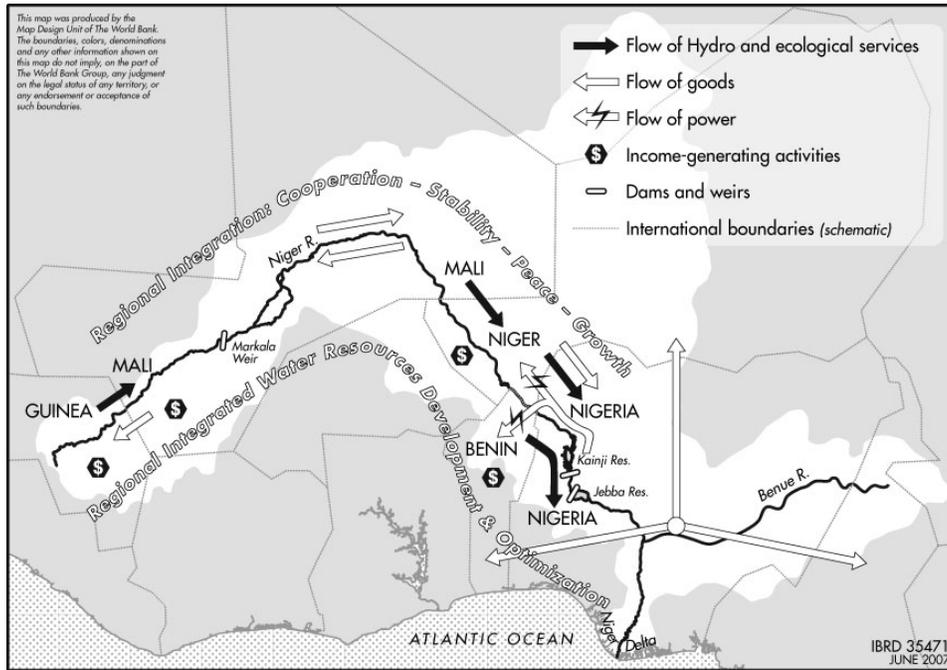
### **Proposed project development objective(s)**

19. The project development objective (PDO) is the same as the program objective: to enhance regional coordination, development and sustainability of water resources management in the Niger River Basin. However, the project outcomes are targeted to the five Niger Basin countries participating in the First Phase. The key project outcome indicators, accordingly, will be:

- Percentage of activities implemented according to the Sustainable Development Action Plan (SDAP);
- Hydropower capacity (MW) rehabilitated at Kainji and Jebba hydropower plants;
- Increased hectares of irrigated surface in Mopti region (Mali), Tillabéri region (Niger), Karimama and Malanville districts (Benin);
- Percentage of watershed area in Faranah region (Guinea), Mopti region (Mali), Dosso and Tillabéri regions (Niger) and Alibori region (Benin) using agro-forestry, river bank stabilization, silt and sedimentation control.

20. Figure B.1 summarizes the expected shared benefits across the five participating countries in the First Phase. The development of multipurpose activities will generate a range of benefits within and across the boundaries of the five participating countries. The proposed ecosystems management activities including watershed management, agroforestry, siltation and erosion control will provide locally and regionally ecological services, thus improving both the quality and quantity of the basin water resources. This, in turn, will enable the development of income generation activities, increased agricultural production and flows of goods across borders. Furthermore, increased water availability associated with the rehabilitation of Kainji and Jebba hydropower dams will augment the energy production with more reliable electricity supply to Nigeria in neighboring countries including Niger and Benin.

Figure B.1: Schematic flow of shared benefits in the First Phase Project



## **.Project components**

### **Component 1: NBA institutional strengthening and capacity building: (US\$7.77 million equivalent)<sup>4</sup>**

21. This component would enhance the capacity of the NBA and its National Focal Structures including other national institutions involved in implementing the First Phase Project of the Niger Basin Program. The key sub-components identified are:

- a) *Strengthening and capacity building of the NBA (US\$3.77 million equivalent)*. Key activities include: (i) reinforcing the NBA's administrative and management skills to set up an Overall Performance Evaluation system; (ii) strengthening the NBA's communication and practices for sharing information, knowledge and experience, implementing its communication's strategy and reinforcing the NBA's Information Technology; (iii) updating and implementing, jointly with other partners, the NBA's capacity building program; and (iv) supporting the project's management and supervision.
- b) *Strengthening and capacity building of national water resources management institutions (US\$1.16 million equivalent)*. This sub-component would strengthen the NBA's National Focal Structures including additional skills, resources and staff trainings for coordination with National Implementing Agencies (NIAs) and supervision of the Project's activities.
- c) *Institutional support and strengthening of regional water resources management and planning (US\$2.84 million equivalent)*. Activities under this sub-component would: (i) support the establishment of a Regional Consultative Group (RCG) to build a participatory consensus on water infrastructure development in the Niger Basin; (ii) prepare regional guidelines for the management of water infrastructure based on updated dams feasibility studies planned in component 2; (iii) provide an independent Panel of Experts (POE) to support the RCG with the "infrastructure management and optimization options" and "recommendations for coordinated regional infrastructure management rules" (iv) support the creation of a Permanent Water Commission (PWC) as a regulatory water management mechanism in the Niger Basin; (v) establish sub-basin commissions to apply the required subsidiary principles to implement the SDAP; (vi) prepare a Niger Basin regional environmental code; (vii) prepare legal instruments for joint management of water infrastructure, dispute resolution and arbitration enforcement; and (viii) support the implementation of the Niger Basin Water Charter. This sub-component also includes the Project Preparation Facility (PPF) studies that supported the preparation of the First Phase Project of the Niger Basin Program.

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<sup>4</sup> Total financing for Component 1 is expected to be approximately \$14.76 million inclusive of parallel donor financing from the European Union (EU), the French Development Agency (AFD) and the Canadian International Development Agency (CIDA).

## **Component 2: Rehabilitation, optimization and development of regional infrastructure (US\$138.45 million equivalent)<sup>5</sup>**

22. This component would focus on rehabilitating and upgrading the existing large<sup>6</sup> water infrastructure of regional relevance, and supporting the regional planning framework. The rehabilitation of regional infrastructure and the development of additional ones are central to the Basin countries' agenda. They would increase opportunities for improved multipurpose activities such as irrigation, fisheries and ecosystem regeneration with greater water storage capacity and adequate management. More critically these infrastructures would reduce the severe regional energy crisis with more reliable supply and increase power sharing between riparian countries. The Kainji and Jebba hydropower plants in Nigeria have the potential to increase the energy production at a low cost and to supply additional energy to Niger and Benin.

23. Several agreements are already in place to support the regional dimension and complement the benefits to be accrued from the dams and hydropower plants rehabilitation. These agreements include: (i) the 1972 bilateral agreement between Nigeria and Niger to provide 40 MW of firm power supply over a 20 year period from Kainji hydropower plants; (ii) the 1992 re-negotiated bilateral agreement to allow the export of an additional 30 MW to Niger; and (iii) the extension of the existing bilateral agreements to 2007. Those agreements will be further expanded and consolidated throughout the Basin in addition to the transmission lines to transport the generated electricity from these hydropower plants and other facilities through activities financed under the Northern Corridor to be included in the third phase of the West African Power Pool (WAPP-APL 3, CR 4092 GH- Nov. 1, 2005).

24. The subcomponents include:

- a) *Rehabilitation of Kainji dam and hydropower plant (US\$115.88 million equivalent)*. This subcomponent includes: (i) rehabilitation and harmonization of productive electromechanical equipments to restore the available capacity from the current 480 MW up to the total installed capacity of 760 MW; (ii) rehabilitation of auxiliary services; (iii) rehabilitation of the navigation lock; (iv) upgrading instrumentation and monitoring equipments; (v) improvement of the flood warning systems and development of a decision support and management system; (vi) implementation of the environmental action plan to mitigate potential impact of the rehabilitation of Kainji and Jebba sites; and (vii) operational support and reinforcement of PHCN and the National Focal Structure in Nigeria.

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<sup>5</sup> Total financing for Component 2 is expected to be approximately \$144.66 million inclusive of parallel donor financing from the European Union and the French Development Agency.

<sup>6</sup> The adjectives 'small and large' are not necessarily related to the geometrical dimensions of the water infrastructure. In the context of this note, the adjective 'small' is intended to designate complexity of water infrastructure that local communities (beneficiaries) can reasonably handle, possibly with some limited technical assistance by public and/or private entities. 'Large' water infrastructure, on the other hand, are those that, in the local context, require the intervention of specialized, external resources (planners, designers, contractors, suppliers, etc.).

- b) *Rehabilitation of Jebba hydropower dam (US\$11.67 million equivalent)*. This subcomponent consists of: (i) selected rehabilitation of electro-mechanical equipments to ensure the availability of the entire installed capacity of 578 MW; (ii) rehabilitation of auxiliary services; (iii) civil works for stabilization of the tailrace channel and rehabilitation of upper navigation lock; (iv) upgrading of instrumentation and monitoring equipment; (v) prevention of tree invasion; and (vi) reinforcement of the maintenance workshops.
- c) *Assessing optimization and management options for the development of regional water infrastructure (US\$10.90 million equivalent)*. This sub-component will support the strategic planning and development of regional multipurpose water infrastructure in the Niger River Basin by bringing all major potential infrastructure at the same level of technical assessment (at a detailed engineering design level including the relevant environmental and social requirements). Key activities will include: (i) complementary studies for Fomi dam in Guinea; (ii) complementary studies for Taoussa dam in Mali; (iii) complementary studies for Kandadji dam Niger; and (iv) feasibility and detailed engineering studies for Zungeru dam in Nigeria.

**Component 3: Sustainable management of selected degraded ecosystems and rehabilitation of small water infrastructure (US\$39.78 million equivalent)<sup>7</sup>**

25. This component would combine small water infrastructure rehabilitation and ecosystems management in order to support income-generating activities. The NBA and the riparian countries have agreed on the technical, social and political criteria to select areas where these activities would be implemented. The technical criteria are related to the severity of environmental degradation and locations' suitability for restoration and for maximum project impact. The social criteria are related to the degree of poverty and integration of vulnerable groups, including women and youth throughout the Basin. The political criteria are linked to countries' decision to re-balance development activities across the Basin to focus on regional cooperation and integration. The areas and related activities were selected in a participatory process in order to engage the communities for the sustainable management of the water resources. Selected areas include: the upper Basin in Guinea (region of Faranah); the headwaters tributaries in Benin (upper Alibori, Goungoun, Sota and Goroubi – Karimama and Malanville Districts); the Inner Delta in Mali (Circles of Mopti, Douentza, Djenne and Tenenkou); and the Niger River middle section in Niger Republic (regions of Tillabéri and Dosso). The selected activities are as follows:

- a) *Rehabilitation and diversification of small dams (US\$2.40 million equivalent)*. Key activities include: (i) rehabilitation 12 small dams in Benin and diversification of agricultural activities; and (ii) rehabilitation of two small dams in Niger including the development of horticulture, irrigated vegetables, livestock and their marketing.
- b) *Rehabilitation and extension of small irrigation schemes (US\$9.26 million equivalent)*. Key activities include: (i) rehabilitation of three irrigation schemes in Niger through

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<sup>7</sup> Total financing for Component 3 is expected to reach approximately US\$73.78 million inclusive of parallel donor financing from the African Development Bank.

drainage restoration and development of flood and silt protections; (ii) development of small irrigation schemes in Benin; and (iii) development of recessional agriculture in Mali and the marketing of agricultural production.

- c) *Support to the development of traditional fisheries (US\$4.91 million equivalent)*. Key activities in Mali and Niger will: (i) promote sustainable fishing practices and fish production processing; (ii) upgrade technology to enhance the livelihoods of fishermen (training and equipment such as nets, boats, ovens, processing and storage facilities); (iii) support co-management of fishery activities in selected areas; (iv) support institutional strengthening and capacity building for sustainable development of fishery activities; and (v) support development of local fishery management plans and marketing of fishery production.
- d) *Watershed Restoration and agro-forestry (US\$20.12 million equivalent)*.
- i. Integrated development of lowland areas (bas-fonds) – Key activities in Guinea include: (i) development of a watershed management plan; (ii) afforestation of key vulnerable and degraded areas; (iii) identification of key areas suitable for local income generation activities based on land suitability and water conditions; and (iv) training in appropriate agricultural practices for watershed management.
  - ii. River bank stabilization and erosion control – Key activities include: (i) river bank stabilization in Mali and sediment flow control in selected Koris in Niger; (ii) sand dunes stabilization in selected Dallos in Niger; (iii) restoration and afforestation of degraded slopes and plateaus in Niger; and (iv) training of communities.
  - iii. Restoration of pastureland ecosystems – Key activities in Mali will: (i) develop management plans for bourgou production and regeneration; and (ii) support community participation and management of bourgou including effective management of proceeds and provision of appropriate tools.
  - iv. Forestry protection and development of agro-forestry – Key activities in Benin and Guinea include: (i) design of community plans for sustainable development and management of forest and forestation activities; (ii) afforestation of degraded hot spots areas; (iii) introduction of seedling nurseries; and (iv) training of community organizations.
- e) *Operational Support to National Implementing Agencies (US\$3.09 million equivalent)*. This sub-component will aim at reinforcing and supporting NIAs towards successful implementation of components 2c. and 3 in Guinea, Mali, Niger and Benin.

26. The total project cost for the components, inclusive of donor parallel financing, is summarized in table 1:

**Table 1: Project cost and components**

Components	(million US\$)					
	IDA Project Costs	%	Donor Parallel financing	%	Total	%
Component 1. NBA institutional strengthening & capacity building	7.77	53	6.99	47	14.76	6
Component 2. Rehabilitation, optimization & development of regional infrastructure	138.45	96	6.21	4	144.66	62
Component 3. Sustainable management of selected degraded environments and rehabilitation of small water infrastructure .	39.78	54	34.00	46	73.78	32
<b>Total Costs</b>	<b>186.00</b>	<b>80</b>	<b>47.20</b>	<b>20</b>	<b>233.20</b>	<b>100</b>
Front-end Fee						
<b>Total Financing Required</b>	<b>186.00</b>	<b>80</b>	<b>47.20</b>	<b>20</b>	<b>233.20</b>	<b>100</b>

### Financing

Program Financing Data							
APL	Indicative Financing Plan				Estimated Implementation Period		Borrowers/ Recipients
	IDA US\$m	%	Others	Total US\$m	Start Date	Closing Date	
<b>APL 1</b> Credits/Grants	<b>186.00</b> 186.00	79.8	<b>47.20</b>	<b>233.20</b>	11/01/2007	01/31/2013	Republics of Benin, Guinea, Mali, Niger and Federal Republic of Nigeria
EU		1.5	3.54				
AFD		2.1	4.94				
CIDA		2.0	4.72				
AfDB		14.6	34.00				
<b>APL 2</b>	<b>314.00</b>		<b>200.00</b> <sup>8</sup>	<b>514.00</b>	12/03/2011	10/31/2018	Republics of Guinea, Mali, Niger, Benin, Burkina Faso, Côte d'Ivoire, Chad, Cameroon and Federal Republic of Nigeria.
<b>Total</b>	<b>500.00</b>	<b>100</b>	<b>247.20</b>	<b>747.20</b>			
<b>Responsible Agency:</b> Niger Basin Authority (NBA) P.O.BOX 729 Niamey							

<sup>8</sup> The US\$200 million co-financing for Phase II will vary based on donors' commitment with priorities as agreed to in the Sustainable Development Action Plan (SDAP).

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Program Financing Data							
APL	Indicative Financing Plan				Estimated Implementation Period		Borrowers/ Recipients
	IDA US\$m	%	Others	Total US\$m	Start Date	Closing Date	
<b>APL 1</b> Credits/Grants	<b>186.00</b> 186.00	79.8	<b>47.20</b>	<b>233.20</b>	11/01/2007	01/31/2013	Republics of Benin, Guinea, Mali, Niger and Federal Republic of Nigeria
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<b>Total</b>	<b>500.00</b>	<b>100</b>	<b>247.20</b>	<b>747.20</b>			

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## IMPLEMENTATION

### 1. Partnership arrangements

27. First and foremost, the NBA is a partnership between the riparian countries of the Niger River. The transformation of the Niger Basin Commission to a Niger Basin Authority further enhanced the ability of the institution to respond to the collective goal of addressing, regionally, the Basin's development challenges. The nine riparian countries are all signatories of relevant acts and decisions that govern the NBA since 1980. Second, the NBA's Donors Consultative Committee established in 2000 is the mechanism to coordinate donor support to the NBA and is led by the World Bank. The First Phase Project of the

<sup>9</sup> The US\$200 million co-financing for Phase II will vary based on donors' commitment with priorities as agreed to in the Sustainable Development Action Plan (SDAP).

Niger Basin Program builds upon the principles of this framework to further engage other partners in the cooperative development of the Niger Basin. The project complements activities funded by other partners such as AFD, CIDA, AfDB and EU and which support the finalization of the SDAP and the related Investment program (see Annex 2). It is expected that the adoption of the SDAP, in line with the assistance strategy of these partners, will result in their participation in the second phase of WRDSEM 2.

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

28. The NBA would be responsible for the overall implementation and coordination of WRDSEM 1 on behalf of the five riparian countries participating in the First Phase Project, namely the Republic of Benin, the Republic of Guinea, the Republic of Mali, the Republic of Niger and the Federal Republic of Nigeria. The legal arrangements of the First Phase Project would be similar to those put in place for the Senegal River Basin Multipurpose Water Resources Development Program (IDA 41820, IDA 41830, IDA 41840 and IDA H 2310 - March 14, 2007). The World Bank would enter into financing agreements with each of the five participating countries and into a project agreement with the NBA. The proceeds of the IDA financing would be made available to the NBA under subsidiary agreements between each of the countries and the NBA. Annex 6 details the overall coordination and implementation arrangements. Component 1, related to institutions strengthening and capacity building, would be regionally implemented by the NBA as a transversal activity. Components 2 and 3 would be executed by the National Implementing Agencies (NIA) identified during project preparation under services agreements signed between them and NBA. A capacity assessment of the NBA's human resources has been done and additional staff would be recruited and integrated into the NBA's technical department to ensure efficient and effective implementation of the First Phase Project.

29. The institutional setting for implementation, monitoring and evaluation of the WRDSEM 1 project is as follows:

- The NBA would anchor the First Phase Project at the regional level. Additional staff would be recruited and fully integrated to the existing organization in the NBA. These additional staff would complement staff (procurement, financial management and technical) previously working for ongoing projects like the Global Environment Facility's (GEF) Reversing Land and Water Degradation project, and the Silting Control projects funded by the AfDB. The NBA would sign service agreements with relevant NIAs. These agencies would execute the national activities in their respective countries, under the coordination and supervision of national focal structures.
- *Regional Steering Committee (RSC)*: This Committee established in 2004 by the NBA's Council of Ministers would maintain oversight of the WRDSEM APL program. The RSC would meet at least once a year to give overall guidance to the NBA and its National Focal Structures, formally review progress and approve annual project workplans.

- *NBA Observatory*: The Observatory was established in 2005 within the NBA to ensure effective monitoring and evaluation of the NBA's activities within the river basin. The observatory would handle data collection and all required tasks to track project indicators, in collaboration with national agencies.
- *West Africa Power Pool (WAPP)*: As the overall coordinating body for the power utilities in West Africa, the WAPP would liaise with the NBA to better coordinate the development of power-related infrastructure in the Niger Basin. The First Phase Project would promote a regional framework towards joint planning of hydropower production and electricity transmission. This approach would be specifically tested with the rehabilitation of the Kainji and Jebba hydropower plants to which the WAPP will participate to complement the NBA's limited expertise and experience in the power sector.
- *The NBA National Focal Structures*: The First Phase Project of the Niger Basin Program would build on national project teams created under the GEF's Niger Basin Reversing Land and Water Degradation project (TF 53233 – April 12, 2005). They have been transformed to National Focal Structures (NFS) to respond to the need of the riparian countries to have a permanent technical arm of the NBA. They would coordinate and assess progress of activities carried out in each country. The NFS<sup>10</sup> will handle the financial management of funds related to the coordination and supervision activities of the project in their national territory. This choice is the result of their positive handling of the financial management of the above mentioned GEF project. However, they would not be involved in the procurement of project activities. The national focal structures would be strengthened with additional staff when required.
- *National Implementing Agencies (NIAs)*: The National Implementing Agencies involved in the First Phase Project of the Niger Basin Program implementation are *DNGR* in Guinea, *AGETIER* in Mali, *DAERA* in Niger, *CeRPA/Borgou-Alibori* , in Benin and *PHCN* in Nigeria. These agencies will directly execute activities in their area of expertise and they will recruit private sector operators and NGOs to carry out some of the activities. They will be responsible for procurement. A detailed description of these institutions is provided in Annex 6.

### 3. Monitoring and evaluation of outcomes/results

30. The Project Development Objective's (PDO) performance indicators and the detailed list of result indicators for the components are provided in Annex 3. The scope and reach of this multi-sectoral regional project requires a Monitoring and Evaluation (M&E) system that is robust and decentralized to facilitate systematic data collection in each of the five participating countries. M&E capacity at the national level in the specific areas of intervention to track data to feed into the NBA's observatory will be strengthened. Data will be collected for each of the indicators identified in the Results Framework by country

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<sup>10</sup> In the case of Niger Republic, the NFS will have the overall financial management responsibilities because of the implementing agency weakness (DAERA) in this area.

through the National Focal Structures, aggregated at the national and then at the regional level by the Niger Basin Observatory. Surveys to collect socio-economic data were financed under the Project Preparation Facility (PPF). Monitoring progress associated with reaching the First Phase Project of the Niger Basin Program's triggers will be carried out as part of the overall M&E arrangements. The NBA's Observatory will have the overall responsibility for M&E and will report to RSC and to the NBA's Council of Ministers.

#### **4. Sustainability**

31. The overall Niger Basin Program is designed to foster ownership, enhance coordination and ensure long-term sustainability for water resources development and ecosystems management in the Niger Basin.

32. The First Phase Project would support institutional sustainability through the preparation of legal instruments and institutional mechanisms that promote effective planning and development of water infrastructure. At the regional level, the project would promote the establishment of the regional consultative group (RCG) to foster dialogue on the development of new regional water infrastructure in line with the principles of the Shared Vision. This RCG will be guided as needed by a panel of experts (POE) in agreeing on the major infrastructure to be built in the Basin. The project would also support the creation of a Permanent Water Commission (PWC), a consultative body to guide the NBA on the overall planning, management and optimization of the Basin's water resources. At the national level, improved capacities of and coordination with National Implementing Agencies will facilitate more effective management of the water resources and protection of degraded ecosystems within the Basin. At the local level, a decentralized and participatory approach, empowering key stakeholders in the design and decision making, will foster ownership and promote local level constituency. The First Phase Project would build on all relevant experiences accumulated by the participating institutions acting under the subsidiarity principles. The reporting to the NIA and the NBA will foster accountability and transparency of involved institutions in the project's implementation. Thematic exchanges are expected to drive performance enhancement at the institutional and organizational level, as well as on some technical issues (identification and dissemination of best practices).

33. Technical and environmental sustainability will be supported through the planned restoration and management of degraded environments (component 3). The technical packaging of these activities to generate income for local communities contributes to the medium and long term environmental sustainability. The First Phase Project will also support tailored capacity building of all participating institutions and involved communities across the Basin specifically to better address environmental matters.

34. Financial and economic sustainability will be assured with the PHCN's improved performance management. The First Phase Project would closely work with the on-going "Nigeria - Transmission Development Project" (Cr. 3559-UNI -May 31, 2002)) particularly on tariffs and cost recovery issues. Consequently, adequate resources will be mobilized to ensure effective operation and maintenance of the power plants and the two dams. Furthermore, the existing mechanism for the financial contributions of countries to the NBA

has been improved together with the payment of arrears on past contributions based on the renewed willingness of riparian countries to transform the NBA into a financially viable institution. At the local level and under Component 3, the use of participatory approaches, contribution of beneficiaries to the subproject's costs, and institutional and organizational strengthening of local stakeholders will support the sustainability of different sub-projects.

## 5. Lessons Learned from Past Operations in the Country/Sector

35. The proposed Niger Basin WRDSEM APL program was designed taking into account the lessons learnt from a decade of Bank engagement in river basins development in Africa and from regional projects such as the Niger Basin Reversing Land and Water Degradation project, the Niger Basin Institutional and Organizational Reform process, the Senegal River Basin Multipurpose Water Resources Development, hydropower rehabilitation projects in Zambia (IDA 30420 – March 2, 1999) and Ghana (Cr. 2109 GH – Sep. 11, 1999), and the Loess Plateau Watershed Rehabilitation in China (IBRD 4470- Dec-16, 1999). The four most pertinent lessons applying to this project are:

- *Coherence of approach and sustainability.* Aligning national and regional priorities is critical to ensure that ownership of regional operations is in place and that countries will avoid using unilateral approaches to achieve their development objectives. Regional operations require realistic implementation schedule and budget to take into account their complex nature and this requirement is even more important when dealing with power plant rehabilitation which requires extensive research and investigation followed by a proper design of the scope of work. The First Phase Project of the Niger Basin Program has been designed whereby that regional and national activities are developed consistently and complement each other in terms of generated benefits.
- *Institutions strengthening and capacity building.* Regional projects can only be effective and countries can only buy in regional operations when these are designed and managed by competent regional institutions with technical credibility and political back up. Consolidating the capacity of the Niger Basin Authority and enhancing the capacity of National Implementing Agencies are crucial to effectively achieve the stated results and ensure sustainability of the First Phase Project of the Niger Basin Program activities. The institutional reform of the NBA contributes to this objective by bringing together regional competence and promoting an environment of confidence in which riparian countries can engage simultaneously on national and regional development agendas. For this reason, the first component of the project focuses on institutional strengthening and capacity building at all levels. In addition, improving communication and information on the existing and planned infrastructure will enhance an environment of trust where the Regional Consultative Group and the Panel of Experts will foster regional endeavors.
- *Infrastructure development and climate variability.* Due to their dependence on the Niger Basin's water resources, the development of water infrastructure is central to the economic agenda of many riparian countries. Over the last decades, the

continuous climate variability has led to low economic performances with a magnitude of impacts going beyond national boundaries. This is particularly the case of the five countries located in the main stem of the Niger River where the extreme climatic events of droughts and floods have prompted the planning and development of water infrastructure. Ensuring sound operation and maintenance of existing infrastructure and maintaining a coherent vision for risks prevention is a pre-requisite to respond to climate variability and address the water storage gap. The creation of the Permanent Water Commission and Sub-Basin commissions will also contribute to regional water resources allocation and management.

- *Regional common goods and national constituencies.* In the Niger Basin, national agendas have until recently dominated regional ones. Consequently, regional common goods have not been fully experienced to yield appreciable benefits for the NBA's member countries, although Nigeria's water infrastructure provides significant benefits to neighboring Niger and Benin. The Shared Vision process, supported by the SDAP, constitutes a robust framework for optimal cooperation and coordinated water resources management. While countries' interests vary across the Basin, it is important to maintain a comprehensive approach of the development opportunities and achieve good compromises which result in fair benefits to all. In this process, local constituencies should be well rewarded as they are the primary caretakers of the Basin resources, but who, in most cases, are the last beneficiaries of regional common goods. The combination of ecosystems management and water infrastructure development provide leverage to consolidate national agendas and promote regional common goods approach. For example, afforestation of the upper sources in Guinea will benefit infrastructure in Mali. Similarly, erosion control and silt reduction in Mali and Niger Republic will have a positive impact on existing water infrastructure in Nigeria. Conversely, the support of Nigeria in regional infrastructure development and planning, and sharing some benefits (such as electricity) of its water infrastructure with upstream countries encourages the overall regional solidarity and common goods development. Nigeria will, therefore, have a strategic role as energy producer in the Basin but also as an advocate for a mix between hydro, thermal and regional power pooling to ensure the security of the energy supplied.

36. The design of the operation also builds upon the lessons and experiences from other regional infrastructure APL programs, such as the WAPP and the Senegal River Basin Multipurpose Water Resources Development (MWRD) Program. The main lessons applied to this program are:

- The design of APL programs which provides a regional umbrella for multi-faceted, multi-country infrastructure projects should focus on achieving regional program goals (and complement national activities) to ensure their effective implementation. Furthermore, regional project implementation should be as much as possible articulated with objectives assigned to regional institutions. Accordingly the WRDSEM 1 program is firmly grounded regionally within NBA's mandate to harmonize and coordinate across the Basin. In addition, subsidiary principles should

be applied for activities of national interest by using the most effective institutions of each beneficiary member states covered by the program. Consequently, national activities would be handled by experienced agencies such as *the Power Holding Company of Nigeria (PHCN)*, *Centre Régional pour la Promotion Agricole (CeRPA/Borgou –Alibori)* in Benin, *Direction Nationale du Génie Rural (DNGR)* in Guinea, *Direction des Aménagements et Equipements Ruraux Agricoles (DAERA)* in Niger and *Agence d’Exécution des Travaux d’Infrastructures et Equipements Ruraux (A GETIER)* in Mali.

- The generation of tangible benefits for the stakeholders is critical to maintain the full ownership and consensus-building among them during and beyond the First Phase Project implementation. Consistent with the Fada Ngourma Declaration, the First Phase Project takes into account the stakeholders expectations including those at local level, through a transfer of knowledge. Best practices in community participation and involvement in the design of technical activities which generate income were drawn from the Loess Watershed Rehabilitation Project in China.

## 6. Safeguard Policies (including public consultation)

<b>Safeguard Policies Triggered by the Project</b>	Yes	No
<a href="#">Environmental Assessment (OP/BP 4.01)</a>	[X]	[ ]
Natural Habitats ( <a href="#">OP/BP 4.04</a> )	[X]	[ ]
Pest Management ( <a href="#">OP 4.09</a> )	[ ]	[X]
Physical Cultural Resources (OP/BP 4.11)	[X]	[ ]
Involuntary Resettlement ( <a href="#">OP/BP 4.12</a> )	[X]	[ ]
Indigenous Peoples ( <a href="#">OP/BP 4.10</a> )	[ ]	[X]
Forests ( <a href="#">OP/BP 4.36</a> )	[X]	[ ]
Safety of Dams ( <a href="#">OP/BP 4.37</a> )	[X]	[ ]
Projects in Disputed Areas ( <a href="#">OP/BP 7.60</a> )	[ ]	[X]
Projects on International Waterways ( <a href="#">OP/BP 7.50</a> )	[X]	[ ]

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