

## SUMMARY ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

<b>Project Title</b>	:	<b>CONSTRUCTION OF THE TRANS-GAMBIA BRIDGE AND CROSS BORDER IMPROVEMENT: PHASE I</b>	
<b>Country</b>	:	<b>GAMBIA/SENEGAL</b>	
<b>Project Number</b>	:	<b>P-Z1-DB0-046</b>	
<b>Department</b>	:	<b>OITC</b>	<b>Division: OITC.1</b>

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### 1) **Introduction**

This document is a summary of the Environmental and Social Impact Assessment (ESIA) of the River Gambia Bridge Construction Project. This summary has been prepared based on the guidelines and procedures of the African Development Bank for environmental and social impact assessments for Category 1 projects.

The project description and justification are presented first, followed by the legal and institutional framework of the Republic of Gambia and the Republic of Senegal. A brief description of the main environmental conditions in the project area is then given, highlighting the physical, biological and human (social, cultural and economic) components. The variants are compared in terms of technical, economic, environmental and social feasibility factors, including public concerns. This summary also describes the most significant positive and negative impacts of the project on the bio-physical and human (socio-economic) environment, and the inevitable impacts identified. The description covers the expected impacts during the road preparation, construction and operational phases. This is followed by the mitigation and enhancement measures proposed to increase the benefits and/or prevent, minimize, mitigate or compensate for the negative impacts, as well as the monitoring programme. The public consultations held during the ESIA on the River Gambia Bridge are also presented, as are the additional project initiatives, such as the special action plan for relocation and support for ferry staff and income restoration for project-affected persons (SAP/RSIR), which is necessary.

### 2) **Project Description and Justification**

The Trans-Gambia Road Transport Corridor is an economic and strategic link connecting the northern and southern parts of both The Gambia and Senegal, and by extension ECOWAS countries through the corridor between Dakar and Lagos. The construction of the bridge will allow free traffic flow between the Northern and Southern parts of both The Gambia and Senegal. The project will therefore reduce travel time, boost trade and reinforce cohesion among communities which were previously isolated. The project will facilitate the transportation of agricultural products to markets reducing post-harvest losses and boosting socio-economic activities. The project will be implemented into two phases. Phase 1, the subject of this project includes the construction of the Trans-Gambia Bridge and two (2) One Stop Border Posts (OSBP). Phase 2 will include the rehabilitation of 137 km of Senoba-Ziguinchor road in Senegal and pavement/strengthening of 24 km of Farafenni –Senoba road in The Gambia.

### 3) **Policy, Legal and Administrative Framework**

#### 3.1) **Policy Framework**

##### 3.1.1) *For Gambia*

The Gambian Government places a high premium on the protection of natural resources and their sustainable use. It is from this perspective that a national environmental protection policy was developed in the mid-1990s. In addition to the January 1997 Constitution, the poverty reduction policy document, and the national biodiversity strategy documents, one of the leading documents of this policy is the National Environmental Management Act (NEMA) of 1994. As stated in the preamble of the text, the Gambian people recognize the importance of sound environmental

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management to safeguard the health and well-being of all persons living in Gambia. It is in NEMA, Chapter V, sections 22-25, that the bases for the use of environmental assessment and management are defined.

### **3.1.2) For Senegal**

The existence of a Ministry of the Environment and Protection of Nature responsible for implementing government policy on the environment and developing environmental protection strategies is a concrete expression of the country's commitment to protect the environment. Cognizant of the link between the environment and poverty, strategic objectives have been identified in the Poverty Reduction Strategy Paper (PRSP) to address the major environmental challenges: (i) development of forest resources, (ii) preservation of the environment and combating desertification, (iii) protection of fauna and flora, (iv) protection of the marine and coastal environment, (v) meeting the needs of the population and maintaining biodiversity, (vi) improvement of rural and urban living conditions, etc. The environmental policy is based on a renovated institutional and legal framework.

## **3.2) Legislative and Regulatory Framework**

### **3.2.1) For Gambia**

The environmental legislative framework is based on: (i) The National Environment Management Act (NEMA) of 1994, which replaces all other acts of Gambia on the environment and creates the legal framework for operations of the National Environmental Agency; (ii) Environmental Protection Act of 1988; (iii) Environmental planning, standards and quality; (iii) Wildlife & Biodiversity Act of 2003; (iv) The Forest Act of 1998; (iv) Forest Regulations of 1978; (v) Fisheries Act of 1991; (vi) Fisheries Regulations of 1991; (vii) Minerals Act of 1953.

The regulatory framework for expropriation of property for public use is governed the State Lands Act of 1990 and the Land Acquisition and Compensation Act, 1990, which takes care of land tenure and property rights. This collection of legislation covers regulation for the key aspects of land occupation and use in Gambia. Also covered in the regulation are the various situations of land acquisition.

### **3.2.2) For Senegal**

The legislative framework is based on: (i) Law No.2001-01 of 15 January 2001 relating to the Environmental Code; (ii) Decree No.2001-282 of 12 April 2001 implementing the Environmental Code; (iii) Law No. 81-13 of 4 March 1981 on the Water Code; (iv) Ministerial Decree No. 9469 MJEHP-DEEC of 28 November 2001 on the organization and functioning of the Technical Committee; (vi) Ministerial Decree No. 9470 MJEHP-DEEC of 28 November 2001 defining the conditions for granting approval for the conduct of Environmental Impact Assessments; (vii) Ministerial Decree No. 9471 of 28 November 2001 on the contents of the Terms of Reference for Environmental Impact Assessments; (viii) Ministerial Decree No. 9472 of 28 November 2001 on the contents of the Environmental Impact Assessment report.

## **3.3) Institutional and Administrative Framework**

### **3.3.1) For Gambia**

The Ministry directly involved in the project is the Ministry of Works through the NRA, for this first phase of the project. At the institutional level, the Ministry of the Environment and Protection of Nature, through its Environmental Impact Assessment and Pollution and Nuisance Prevention Division, is institutionally responsible for the evaluation of ESIA's in Gambia.

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Other Ministries involved in the project include: (i) the Ministry of Health and Social Welfare, (ii) the Ministry of Interior, the Ministry of Agriculture, (iii) the Ministry of Natural Resources, (iv) the Ministry of Local Government and Lands, (v) the Ministry of Information, Communication and Technology, (vi) the Ministry of Tourism and Culture, and (vi) the Ministry of Higher Education, Research, Science and Technology.

### **3.3.2) For Senegal**

The Ministry directly involved in the project is the Ministry of Public Works. In its capacity as Project Owner, it is not very involved in the first phase of the project, but will be more involved in phase 2. Institutionally, the Department of the Environment and Classified Institutions (DEEC) of the Ministry of the Environment and Protection of Nature, through its Environmental Impact Assessment and Pollution and Nuisance Prevention Division, is responsible for EIAs. Other Ministries involved in the project are: (i) the Ministry of Health, (ii) the Ministry of Interior, (iii) the Ministry of Urban and Regional Planning, (iv) the Ministry of Local Government and Decentralization, (v) the Ministry of Health and Medical Prevention, and (vii) the Ministry of Information and Communication.

### **3.4) Environmental Policy of the Bank**

The ADB's policy on the environment aims to: (i) promote a long-term vision of economic and social development; (ii) halt, or even reverse, impoverishment in Africa by significantly improving access by the poor to environmental resources; (iii) assist Regional Member Countries to build their human capacity and raise policy makers' awareness of environmental issues in order to bring about institutional changes needed to achieve sustainable development; and (iv) strengthen partnership with international agencies and networking with international, regional and sub-regional organizations to coordinate interventions in environmentally sustainable development.

## **4) Description of Project Environment**

### **4.1) Project Area**

The environmental impact area is defined in such manner as to facilitate the inclusion of all aspects of the environment that may be affected directly or indirectly by the construction works and operation of the bridge and its access roads. In this regard, it can be divided into two areas:

- A direct impact area which, in addition to the access roads to the bridge, also covers the River Gambia bridge area. A width of 15 m on either side of the access road was taken into consideration, corresponding to an area of 30 m where vegetation, water courses, shops and houses will be directly affected by the works (deforestation, land clearing, excavation, site installation, etc.). It also includes borrow pits, quarries and their immediate periphery;
- An indirect impact area extending to all localities and regions affected by the positive and/or negative socio-economic and environmental impacts. The bridge, which plays a key role in supplying Gambia and Senegal with manufactured goods and agricultural and livestock products, will have significant impact and provide considerable socio-economic benefits to the two countries and even other OMVG member countries of the sub-region.

### **4.2) Physical Environment**

- **Climate:** The climate of the project area is tropical, with the alternation of two seasons – a hot, rainy season between June and November, and a cooler dry season from November to May. Annual rainfall ranges between 900 mm and 1,400 mm, with an increasing gradient

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from east to west. The rainy season is dominated by the Monsoon winds, while the dry season is dominated by cold and dry winds;

- **Relief, rainfall:** The project area is generally flat (the average altitude is 60 m), and consists of: (i) an inter-tidal zone with gentle slopes; (ii) the river valley, and (iii) the valleys of the tributaries. The area covered by the assessment was created in vast marshy areas with branches cutting deep into the land. River Gambia is one of the major navigable rivers in Africa. It meanders over more than 600 km through Gambia before entering Senegal. The river's tributary cuts deeply inland. It contains a number of islands of considerable size. Its water is brackish to saline over 200 km upstream from the estuary;
- **Geology, Geo-technical characteristics and hydro-geology:** The geological conditions of the bridge area stem from a series of quaternary fills caused by a lowering sea level phenomenon, deepening of the ria, and significant clogging of the estuary by deposits of sand and clay. These fills include recent silt and more or less sandy sediments. The layer of silt is about 25 m thick, beneath which are sandy clay sediments 50 m thick. The bedrock of River Gambia is about 80 m deep.

### 4.3) Biological Environment

**Vegetation and natural ecosystems:** There is significant variability in the salinity of the waters of the floodplain, both in time and space. As a result of this, there are species that are physically and physiologically adapted to these special conditions, and which form an ecosystem, namely the mangrove forest. It is made up mainly of mangroves extending along the river up to the perimeter of the saline incursion, and which can be estimated to stretch up to 200 km inland. It consists of the following vegetation: *Rhizophora racemosa*; *Avicennia africana*, *Rhizophora mangle*; *Pragmites karka*; *Sesuvium portula castrum*; *Diplachne fusca*, *Sporolus* and *Paspalum vaginatum*.

**Wildlife:** Wildlife trends near the river seem to be characterised by impoverishment and trivialization. The increasing population and agricultural pressure is causing a decline in natural environments and their diversity. The mangrove is home to two mammals: (i) the manatee: an aquatic mammal (*Trichechus senegalensis*), which is protected in Gambia and the countries bordering the river (Senegal and Gambia). It is classified as vulnerable by IUCN. Its habitat and area of nutrition is the mangrove; (ii) the sitatunga: a protected antelope in Gambia (*Tragelaphus spekei*). It is considered rare, but has not been classified or registered internationally. Its habitat is the swamp, and is currently found between Jali Point and Georgetown. The presence of warthogs, baboons, pata and green monkeys is linked more to crops than the river. River Gambia is also home to two particular species such as the hippopotamus and the Nile crocodile, which are found in small numbers in Gambia. Gambia's avifauna is very rich and diverse. There are over 560 bird species in Gambia living in six (6) protected areas covering 40,000 ha.

### 4.3 Human Environment

#### 4.3.1 Administrative Division and Population as of 2010

The bridge and access roads cover two administrative regions in Gambia: Lower River Region, with Soma as the administrative capital, and the North Bank Region with Kerewan as the administrative capital.

Region	Population	Men	Women
Lower River Region (Soma)	72,546	34,762	37,784
North Bank Region (Kerewan)	172,806	83,269	89,537
Total	245,352	118,031	127,321

### 4.3.2 *Socio-Economic Activities*

Gambia's economy is dominated by agriculture (mainly groundnut growing), the tourism industry, fisheries and re-export trade around the port of Banjul:

- **Agriculture accounts** for 23% of GDP and employs 75% of the working population. In agriculture, groundnut production represents 5.3% of GDP, other crops 8.3%, livestock 4.4%, fisheries 1.8%, and forestry 0.5%. Industry accounts for 12% of GDP, and the manufacturing sector 6%, a low figure due to the sector's dependence on agricultural activities (for example, groundnut processing, bakeries, breweries and tanneries);
- **Tourism and Handicrafts:** After groundnut exports, most of the country's foreign exchange earnings come from tourism. This explains the role of the Gambia tourism industry, which is divided into three categories. The first category is conventional holidays associated with the warm climate and the beautiful beaches. The second is for bird watching and hunting;
- **Ferry-related activities:** The primary purpose of the ferry is to convey users across River Gambia. The following facilities were therefore built to enable it operate: two jetties located on either side of the riverbank. There are three different spatial units on each side of the river: The two jetties (Bambatenda and Yellitenda) are located in fenced areas, each with a concrete platform on the bank for the docking of the ferry, that allow access only to vehicles and passengers holding tickets. Ferry employees control access to the area, and tickets are sold by an office to passengers and vehicles. The hours of operation require different work teams, who provide crossing services from 7:30 a.m. to 8:30 p.m., or for 13 hours.

### 4.3.3 *Gender*

The status of women in the project study area is no different from that of the rest of Gambia. The action of decentralized government departments, NGOs and civil society in the regions has an impact on women's traditional representation, status and productive and reproductive role. Notwithstanding the numerous efforts made by the Government and NGOs to stop excision and female genital mutilation in general, the practice is still common in the project area. In any case, it should be noted that the success of such an initiative is a long-term process, and despite the slight progress made, women's social reproductive status has not really changed. The various forms of discrimination (access to land and property, access to education, etc.) and violence against women (physical abuse, forced marriages, prostitution, etc.) are still present. Moreover, this situation is in flagrant violation of the Convention on the Elimination of All Forms of Discrimination against Women, ratified by Gambia in 1992.

### 4.3.4 *School Infrastructure*

As regards education in the country, the gross enrolment ratio for primary education was 85.2% in 2005. The gross enrolment ratio is much higher for boys than for girls in the country. With regard to literacy, programmes are provided by the Ministry of Basic and Secondary Education to adults so they can acquire some knowledge that is useful to them in everyday life. The literacy rate of persons over 15 years was 59.2% in 2005. Again, the gender gap is in favour of men.

Localities	Primary School	Secondary School	Technical School	Higher Education Institution
Soma	4	1		
Massa Konko	4	1	4	
Farafenni	3	1	2	2

### 4.3.5 *Health Status*

The prevalence of diseases of the health district of Farafenni and Massa Konko is similar to those of the health districts of the two administrative regions of the project area. Diseases that recorded a slight increase between 2000 and 2006 are HIV/AIDS and other STIs. They represent a very small

proportion. In the case of HIV/AIDS, this is due to an under-reporting of cases. All these diseases are covered by the National Action Plan for Health. The HIV prevalence rate among adults aged 15 to 49 years was 2.5% in 2006<sup>1</sup>. The number of AIDS orphans between the ages of 0 to 17 years was 3,800 over the same period. Women and children are more vulnerable because of breastfeeding, early marriage of girls without sex education and risk behaviour.

### **5) Project Alternatives**

#### **5.1 “No Project” Situation**

The “no project” situation would require leaving the road section in its current state and continuing to use the ferry as the only means of crossing, with the attendant inconvenience to users and residents. The following environmental effects would occur: (i) soil pollution from the discharge of oils and hydrocarbons due to the prolonged parking of vehicles on the two river banks, (ii) air pollution from the exhaust fumes of trucks during the numerous stops and starts as they queue, and dust in the dry season that may affect the health of the population, as well as persisting reduced access, (iii) river pollution from the discharge of hydrocarbons, degassing of the ferry and direct dumping of wastewater, and (iv) persisting diseases and STIs. The “no project” situation is not consistent with the policy of the Government of Gambia or with that of the country’s socio-economic development. Thus, the current situation is not in line with the spirit and principles for improving the transport system and road infrastructure in Gambia.

#### **5.2 Project alternatives**

For optimum development, taking into account the various constraints related to the physical environment and the investment cost, three (3) crossing sites, combined with five (5) variants or construction options were analyzed. The options are as follows:

Concerning site selection, the 1997 study examined three sites, which are: (i) the site perpendicular to the passage of the ferry at the time, and which corresponds to the site selected in the 1974 study; (ii) site II, located about 500 m downstream of the ferry and corresponding to the choice made for an anti-salt dam project, and (iii) site III, located about 4,500 m downstream of the ferry, near Balingho village.

As regards the bridge construction option, five types were studied and compared: (i) cantilever bridge built by successive segments made of pre-stressed concrete, (ii) composite steel and concrete bridge of constant height, (iii) access viaduct made of prefabricated pre-stressed beams and a central viaduct with a composite steel and concrete frame, (iv) a metal Warren-type truss bridge, to limit the height of the access embankments, and (v) a drawbridge.

#### **5.3 Solution Adopted**

The constraints taken into account to determine the length and the vertical alignment of the bridge are: (i) the position of the navigable waterway, which was set to obtain a trajectory for vessels that is as natural as possible, based on the bathymetric levels defined; (ii) release under the central span a navigation clearance of 70 m x 16.50 m; (iii) limit the incline of access routes to 5%; (iv) limit as much as possible the height of access embankments, which must remain stable and not collapse during use.

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<sup>1</sup>According to the Report on the Global AIDS Epidemic 2006 and Education for All Global Monitoring Report 2006

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The application of these constraints resulted in a 942 m long bridge, measured from the axes of the abutment support lines. The left bank (Soma side) and right bank (Farafenni side) abutments are located at 60 m and 210 m respectively from the bank of the riverbed. In the final analysis, for technical and practical reasons (conservation of the navigability of the ferry during construction) in terms of cost, minimizing the length of the bridge access routes, minimizing the destruction of the mangrove ecosystem on both sides of the river, the 1997 study selected site II option, and it was confirmed. This option led to: (i) maintaining and not disrupting the operation of the ferry during construction, and (ii) obtaining the best connections possible with the existing road alignment. The type of bridge chosen was a pre-stressed concrete bridge with successive cantilever segments, with a main span of variable height and other spans of constant height.

### **6) Potential Impacts and Mitigation and Enhancement Measures**

The project activities and source of impact are as follows:

- a) During the works period: (i) Bridge construction (foundations, spread footing, pier abutments and deck); (ii) Development of access roads to the bridge and connections; (iii) Operation of temporary borrow pits and diversions; (iv) Construction of support facilities; (v) Supply of goods and services; (vi) Presence of temporary labour.
- b) During the operational period: (i) national and transnational transportation of passengers and goods; (ii) animal-drawn transport; (iii) pedestrian, two-wheel vehicle and transhumant animal traffic on the infrastructure; (iv) cross-border activities and procedures; and (v) road and bridge maintenance.

### **6.1 Negative Impacts**

#### **6.1.1 No Project' Situation**

Currently, the existing road does not attract a lot of traffic because of the major constraint of waiting times at the ferry jetty. The population of the project area, who suffer the inconvenience of having to rely on the ferry for travel, are maintained in a state of limited mobility that affects their development efforts. Due to its bimodal but unbalanced nature, the river and its banks are currently being polluted by waste generated by users.

Because of the inevitable increase in the number of vehicles using the ferry and the dilapidated state of the ferries, the waiting times will increase and cause major losses to ferry users. Transportation costs will also rise. Hygiene around the ferry will be deplorable, leading to the resurgence of diseases related to poor environmental hygiene. Thus, if the current trend continues, coupled with the decrease in rainfall, the accelerated degradation in vegetation will lead to a decline or stoppage of some major activities for the population and local development. These activities include fishing, rice cultivation, firewood and herbaceous plant collection, and livestock rearing, which will be seriously affected by the degradation and disappearance of the plants around the mangrove.

These negative changes are occurring exponentially and stem not only from known climate change factors, but also and especially from demographic and anthropogenic factors (exponential population growth for declining natural resources) and extensive resource-intensive economic exploitation patterns and systems (agricultural, pastoral and fishery). On the other hand, in case of increased rainfall, the opposite phenomenon may occur if the human pressure does not negate the benefits that would be derived from this renewed general recovery of productivity in the primary production sectors.

### **6.1.2 Site preparation phase**

The preparation phase is important for installations such as the site facilities, manufacturing areas, site camps and mobilization of machinery of moving elements, etc. The initial physical impacts on the physical, biological and human environment are recorded during this phase, followed by those of the construction phase.

#### **a) Biological and physical environment**

i) **Plant cover:** Development of the bridge access roads, roads rehabilitation, operation of new borrow pits and construction of support infrastructure and buildings such as parking lots, a commercial area and a hotel are all activities likely to have a major impact on the plant cover. Although the bridge area is still home to most of the wooded savannah and mangrove species, it has been under significant pressure. Trees will be felled within the right-of-way of access roads to the left and right banks of the bridge, especially the mangrove area. The total area likely to be affected is 3.9 hectares (990 m x 40 m/10,000).

ii) **Fragmentation of wildlife due to physical barrier:** The project area has little wildlife because of noise and nearby human settlements. Only procreative wildlife will be affected.

iii) **Disturbance and mortality of wild animals due to increased traffic and over-speeding:** Increased traffic and over-speeding will increase mortality caused by collisions. This risk will be ongoing (the sparse wildlife notwithstanding) and could disappear with time once the habitat is completely degraded as a result of buildings and farms along the road. This impact on the rare or protected wildlife species gives it only an average importance.

iv) **Reconstitution of natural selection of aquatic wildlife:** This concerns species that rely on the environmental factors of the habitat like mud and turbidity. The species include amphibians and some fish species that thrive in murky habitats, in particular catfish, eels and other detritivores (*Herobranchus bidorsalis*, *O. niloticus*, *S. galilaeus*), tolerant and ubiquitous species (*Bagrus docmac niger*, *Bagrus bayad bayad*, *Labeo coubie*, *Clarias gariepinus*, etc.) in the immediate vicinity of the bridge and its piers. The other species living in clear water will become rarer in these parts. These impacts are limited to less than 150 metres on both sides of the bridge, and will not fundamentally disrupt the ecology of the river's fish species. They are of minor importance. This selection will take place once the foundation piling is completed. It will continue thereafter until the construction and operations are completed.

#### **b) Human environment**

i) **Disruption of activities:** During the site preparation and project implementation phases, some activities carried out in the right-of-way and immediate surroundings of the project will be disrupted. Indeed, property may even be destroyed, with fruit trees such as shea, mango and hazel being affected, as well as less than one hectare of rice paddy on the right of the access road at the exit of Jenio village. Cereal crops in the borrow pit area will also be affected. Activities will slow down or halt altogether, leading to loss of jobs and direct incomes.

ii) **Disruption of traffic, access and networks:** The works will significantly disrupt vehicle and pedestrian traffic, and could cause accidents due to: (i) movement of worksite heavy equipment and vehicles, with the bypasses getting choked or flooded during the rainy season; and (ii) vehicles parked along the road, especially at the Bambatenda and Yellitenda weighing stations and jetties. The National Water and Electricity Company (NAWEC) power transmission line crossing

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the river from the jetty to the bridge site is exposed to risks of damage from collision with barges and construction equipment.

iii) Noise: The impact will be relatively high during the works. Sound pollution from the pile driving machines, earthworks, transport, stripping and asphaltting will all cause temporary and localized disruptions for a few local residents, and mainly in Gambia, for ferry services and traders in Bambatenda and Yellitenda.

iv) Deterioration of the living environment and health: The piling up of debris from excavation residues and backfills, rubble and debris from road works and tube cuttings, concrete reinforcing bars and casings will be an additional nuisance to the people. The works will generate relatively high amounts of fine dust on the sites and surrounding areas. The dust may affect the local residents, leading to risks of respiratory diseases.

v) Land use and soil solidification with the repeated passage of heavy-duty vehicles and installation and operation of site facilities and clearing of the land following clearing and cutting of the plant cover in areas where the project will be built. The soil is likely to get polluted following possible oil spills, poorly stored road construction materials and abandoned organic or inorganic waste. However, the site facilities of the temporary installations and surfaces affected could be rehabilitated after the works.

vi) Soil erosion: Working the existing borrow pits may aggravate soil erosion. Non-rehabilitated borrow pit areas are prone to water logging and breeding of disease vectors, such as mosquitoes. The risks of erosion are also due to disruptions to water drainage systems during earthworks. On account of this, it is recommended that the works should be carried out during the dry season. However, upon the completion of the project, the structures, gutters and drainage ditches built will improve storm drainage and help curb gully erosion along the road. This is a positive post-works impact.

i) Pollution: Coating installations can also pollute the air through dust and combustion emissions. The site facilities could also cause pollution in terms of waste water or poor waste management.

### **6.1.3 Operational Phase**

#### **a) Biological and physical environment**

i) As indicated earlier, the impacts relating to reconstitution of the natural selection of aquatic wildlife are limited to less 150 m on both sides of the bridge, and will not fundamentally disrupt the ecology of the river's fish species. There will also be slow sedimentation of the riverbed downstream from the bridge, due to the obstruction and turbidity caused by the pile groups in the path of sediments carried by the current (at a maximum speed of 2m/s) immediately after the scour holes, downstream of the pilings;

ii) The restoration of the mangrove around the bridge, as well as the planting of ornamental and shade plants on the premises of the border posts are recommended. They will have a positive impact on the plant resources. Such planting should be done preferably with local species. The other benefits are: (i) thermal softening; (ii) screen against dust; (iii) boundary effect; (iv) mitigation of air pollution through CO<sub>2</sub> absorption, as well as controlling desertification and soil salinity near the river banks.

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- iii) **Wildlife:** The increased population and traffic may lead to new pressure on wildlife resources. There will be greater need for bush meat, not only from the resident population but also from people travelling along the bridge access roads, as well as those heading in the direction of the project area who will seek to buy game for consumption back in town. This negative impact will occur in the medium term with the increasing population and traffic.
- b) **Human environment:** The negative impact of the project during the operational stage remains insignificant. However, it will include nuisance for local residents, mainly from the pollution generated by the gradually increasing traffic and accident hazards for pedestrians from the higher speeds on the rehabilitated and tarred road.
- (i) **Loss of business activities:** for farmers; vendors on both side of the River and some of the GPA staff operating on the ferries.
- (ii) **Noise:** At the operational stage, the reference speed limit on the RN4 will be **80 km/h**. Traffic on it will increase steadily. The noise nuisance will be aggravated by the larger number of vehicles using this road.
- (iii) **Population and social life:** The period of adaptation to the operation of the new road will affect certain pedestrian traffic. Local residents will be exposed to heightened accident risks related to the traffic flow, increased traffic and speed; hence the need for an awareness campaign.
- (iv) **Socio-economic activities and built-up areas:** During the operational phase of the infrastructure, access to certain businesses will be limited, especially those that formerly used the project easement as parking area for their customers or suppliers. A special action plan will be implemented to support ferry staff that lose their jobs. The plan envisages the redeployment of some of the staff to other facilities. The planned construction of the two markets on either side of the river bank will also help to accommodate 115 people among the established traders affected by the project, with priority to women. These arrangements are intended to mitigate this constraint.
- (v) **Health:** The impacts will stem from the intermingling of the population and movement of infected persons, etc. The impact on STI/AIDS is classified as a direct major impact because it has long-term effects in terms of space and human health, hence the need for an awareness campaign.

### 6.2 Mitigation and Enhancement Measures

#### 6.2.1 *Compensation for vacating the right-of-way and for loss of income opportunities*

A total amount of GMD 100,000 has been set aside as compensation for expropriation and loss of income from the rice paddies. It is the first stage of the planned special action plan for income restoration (SAP/RSIR). The other project affected persons (vendors and some GPA staff) will be compensated and assisted during the course of the project. More details are provided in the ARAP which is an annex to the ESIA summary.

#### 6.2.2 *Mitigation Measures during the Construction Phase*

The main mitigation measures that are primarily geared toward the organization of the works, construction equipment and site camp equipment, recommended in contractors' specifications in both Gambia and Senegal, to mitigate the overall nuisance generated from the works, are as follows:

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- (i) Site Installation: The worksite areas will be set up in open pockets of easily accessible non-farm land. Works contractors will ensure that site camps are set up well away from wells and water bodies so as to avoid any risk of water pollution. No equipment depot that can release pollutants will be authorized within the protected perimeter. Access will be controlled to limit interaction between the worksite and the outside environment. The working hours will be regulated to limit disturbance of local residents.
- (ii) Traffic and diversion plan: A heavy equipment traffic plan will be drawn up to facilitate vehicle movement and access for local residents and ferry users. It will be open-ended to tie in with subsequent phasing of works. The plan will be reinforced with the installation of road signs and dissemination of information. The works site area will be clearly marked.
- (iii) Installation of lubricant and fuel depots: Petrochemical products will be stored either in reservoirs or drums placed in appropriate containment areas, so as to avoid spilling or leakage and minimize fire hazards. The project provides for entrapment containment equipment as well as cleaning materials in case of spilling. Such equipment and materials will be kept in good condition.
- (iv) Containment of flammable and hazardous substances: Storage areas for flammable products (bitumen, lubricants and other petrochemical by-products) should have appropriate emergency equipment that is maintained in good working order. The oxygen, propane and acetylene for cutting and welding will be stored in a special area and enclosed so as to avoid possible accidents involving vehicles. Used oils will be collected into drums for recycling and conveyed from the site in accordance with NEA requirements, in liaison with MDC.
- (v) Soils contaminated by fuels and lubricants: A special area will be reserved for treating soil contaminated by petroleum products. The soil will be excavated and placed in tightly sealed containment bins and decontaminated with solvents. The treated soil will then be evacuated into authorized dumps.
- (vi) Tree felling and hedge cutting: Compensatory planting, seeding and restoration of the mangrove will be carried out within the project easement (upon completion). An integrated participatory community-based programme for restoration of the mangrove ecosystem (IPCPR/M) is envisaged. This action will help to prevent erosion on temporarily cleared areas.
- (vii) Earth movement: Extraction sites (quarries) or areas intended for surplus material will be selected in such manner as to avoid any alteration of the landscape or pose a hazard. Such sites will be restored upon completion of works.
- (viii) Dust emission: To reduce dust emission from heavy equipment traffic and transportation of materials, site supervisors will dampen tracks adjacent to inhabited areas. It might also be necessary to dampen temporary fill and debris areas.
- (ix) Liquid discharges, water pollution risks and solid waste: Depending on the size of sub-sites, effluents from the facilities will be collected and evacuated according to their composition into water-tight septic tanks or mobile collection systems. Water from washing and maintenance of equipment should be treated for oil separation; the water will be evacuated to the septic tanks, and bitumen and oil residue will be collected, recycled or destroyed. Oily and petroleum products (for heavy equipment) will be carefully drained to prevent spilling on the ground and into the river. Solid waste from the construction sites will be conveyed to authorized dumps for sorting and recycling, mainly for wood, metals and organic matter (to be turned into compost).
- (x) Construction of River Gambia Bridge Crossing: Civil works at the site will be done while preserving navigability of the river at all times.
  - a) A *strict ban* will be imposed on the storage or spreading of toxic products within a radius of 500 m of the river banks.
  - b) A *dolphin* will be installed to signal the navigable passage and allow berthing of boats and barges.

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- c) *Foundation*: When the pilings are being discharged, nearly 6,000 m<sup>3</sup> of the silt and sediments to be dredged will be trans-boarded by barge for disposal in indicated landfill sites for five years. This waste may be recovered for use in nearby farming areas. Following concrete fixation of the piling, the pile cut-offs will be put in controlled landfills.
- d) *Concreting of spread footing, piers, abutment and deck*: Set up a control system against pollution in the concrete production unit, and install at each site or heavy equipment parking lot a concrete mixer and sedimentation basin downstream that will be emptied and cleaned periodically;
- e) *Protection of vulnerable areas from erosion* through biological methods (planting vegetation after adjusting the topsoil) or by mechanical methods (concrete riprap or rocks).
- f) The water drained from the concrete production area will therefore be collected in sedimentation basins with no outlet, and the suspended solids accumulated in these basins will be recovered and the dry residue placed in a controlled or authorized landfill.
- g) Erosion hazards and assessment of soil stability: The contractors will monitor changes in soil stability, mainly for the construction of the access ramps to the bridge on the River Gambia. This will consist in identifying areas at the worksites that are prone to erosion during and after the construction. Drainage systems will be provided and physical slope stabilization techniques adopted (jetties, gabions, retaining walls, re-vegetation etc.).

### 6.3) Positive Impacts

The positive impact of the road on the biological environment will be the accessibility it will provide to the area, and this will allow administrative services, associations and NGOs to expand their activities throughout the project area. The construction of the bridge will allow structured free flowing traffic, less costly travel and improved road safety. The expected benefits are as follows:

- i) Reduced travel time: The link-up by the bridge will allow average travel speeds of about 80km/h for light vehicles and 50km/h for heavy vehicles. Thus, the considerable waiting times, coupled with the ferry operating times, will be virtually eliminated.
- ii) Easier access to health facilities, education and administrative offices: Access to administrative, economic, educational and health centres in major towns along the project corridor will be facilitated and improved in terms of travel time, safety and comfort. Intra- and inter-regional trade, particularly between Farafenni and Soma, will also be boosted.
- iii) Job creation in the construction, operational and subsequent phases. The number of jobs and qualifications will be determined by the contractors and their sub-contractors, as appropriate. Considering that the construction of this type of bridge requires about 400 to 700 jobs for the 40 months' duration of the construction, the surrounding population could potentially be used as labour, particularly as security guards, traffic controllers, and for manual earthmoving and weeding. There will be recruitment of several middle-level and high-level officers, including project leaders (engineers), team leaders (senior technicians) and topographers (senior technicians).
- iv) Facilitation of access and travel: The project will benefit the local residents and those of the regions along the river banks, as well as Senegalese nationals and transport sector operators. The international scope of the bridge construction and road rehabilitation is likely to promote improved movement of goods and persons throughout the sub-region.
- v) Development of socio-economic activities: With project workers moving into Farafenni and Soma, as well as the towns and villages, there will be greater demand for low-cost, middle-

## SUMMARY ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

income and luxury housing, leading to increased rental income. Demand for equipment could encourage house owners to improve the state of their property, which will have a positive impact on the environment. During construction, the population in the project area will increase because of the presence of the contractors' staff, as well as those coming there to trade. The authority of traditional leaders and that of elected officers will be enhanced during the construction phase through their involvement in the commitments made by various stakeholders (promoters, contractors and the population), and will foster social cohesion. Furthermore, the temporary influx of workers to the project site will increase the consumption of several basic commodities such as fuel and foodstuffs, thereby increasing the incomes of traders and business persons. More specifically, at the bridge, the revenue of the Gambian Ports Authority (GPA) will increase with the use of the jetty by the construction firm.

- vi) Improved environmental integration: The construction of storm water drainage gutters will help curb soil erosion and protect water resources and dwellings along the road from flood water. The erosion control measures (planting over slopes, stabilizing erosion areas, building booms and dwarf walls, carrying out re-vegetation, mangrove restoration, etc.) will help curb soil loss and contribute to the sustainability of the road. Planting on the shoulders of the road will add aesthetic value and curb noise and light nuisance. Permanent maintenance by the NRA will help to significantly reduce the risk of degradation.

### **7. Climate Change and Environmental Risk Management**

#### **7.1 Temporary Risks for Local Residents**

The project implementation will generate temporary nuisance for local residents (discomfort, noise, vibration, air pollution) due to the movement of heavy equipment and handling and transportation of materials. The deterioration of air quality should have no public health impact. The works will temporarily cause slow traffic, disruptions, stops and deviations, and will carry more risks of accidents.

#### **7.2 Project-Related Risks**

There will be a risk of flow of polluted substances into the ditches (or river) and/or ground water following accidental spill of waste oils and fuels or seepage into stored materials. In some sectors, there may be additional pressure on water reserves intended for the needs of the population and farmers due to water extraction. In areas with steep slopes, it is necessary to prevent erosion hazards through right-of-way corrections (rockfalls, landslides and sloping platform). In sections bordering areas with forest cover, it would be necessary to forestall fire hazards and plan how to deal with them. The fuel depots could also cause pollution to soil and water following accidental spill of oils, fuels or lubricants, as well as fire hazards.

#### **7.3 Climate Change**

Data going back to 1940 show an increase of 0.4° C per decade in the average monthly temperatures and changes in rainfall patterns. According to the National Adaptation Programme of Action (NAPA) the major climate risks are: (i) increases in temperature and rainfall which could lead to floods on over 10% of the mangrove area along the River Gambia; and (ii) combination of sea level rise and increase rainfall patterns could lead to increased saline intrusion into the River Gambia and coastal aquifers. Rehabilitation of the early warning systems on climate-related natural hazards nation-wide is the first priority of the Gambia NAPA. The implementation of this system could contribute to mitigate the impacts of floods along the River.

The proposed bridge design incorporates various considerations aimed at adapting to climate change especially to extreme events such as floods, increased salinity and temperature in the

## SUMMARY ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

project area as follows: (i) design of foundation, piles and deck taking into account large horizontal forces (such as wind and extreme water speed) and extreme temperatures. The design of the bridge has also taken into account the highest water level and design discharge with a 100 year recurrence. In addition the access road pavement layers will be made of waterproofing layer with side pumping. Finally collection and evacuation of sediments from the river's bottom (generated by the excavation works) will contribute to reduce the risk of floods; and (ii) protection of piles against corrosion to mitigate the risk related to saline intrusion into the River and coastal aquifers.

Although there is no baseline data on Carbon dioxide (CO<sub>2</sub>) emission in the project area, it is expected that in the long run, CO<sub>2</sub> net emission into the atmosphere will decrease. The bridge will allow for better traffic flow at a nominal speed of at least 40km/h. The stabilized speed limit of 40km/h will allow for operation of vehicles at optimum consumption levels for best energy efficiency, resulting in minimum emissions compared to the "without project" situation (ferry) where CO<sub>2</sub> emissions were concentrated at congestion points and are exacerbated by frequent stop-and-start during waiting times (weighing and at the pier). Furthermore, the bridge will significantly shorten travel distance of Senegalese road users travelling between the northern and southern regions. Travel distance from Dakar to Casamance via the future bridge will reduce the route via Tambacounda by 378 km.

Additional measures adopted under the project, which could positively contribute to mitigating climate change through carbon sequestration and reduction of greenhouse gas emissions into the atmosphere, include: (i) reducing the straight section at the bridge right bank so as to reduce clearance of the mangrove; (ii) restoring the mangrove to help to absorb CO<sub>2</sub> emissions; (iii) planting of trees made of various indigenous species; (iii) proper reinstatement of borrow pits..

### **8. Environmental and Social Monitoring Programme**

According to Gambian institutional arrangements, responsibility for monitoring project implementation will be organized and chaired by NRA, the Delegated Project Manager of the Ministry of Works (MOW), which will pool the observations made by the other Ministries and project stakeholders (NEA), Departments of Mines and Classified Institutions, National AIDS Secretariat, etc.). The MOW, through the NRA Environmental Unit and assisted by the Control Mission (MDC), will regularly monitor project implementation until acceptance of the works.

The Project Manager and Delegated Project Manager (MDC) will be responsible for overseeing the environmental and social component of the project. At their initiative, the works execution contracts will contain the description of penalties to be applied to contractors who fail to comply with specific environmental and social technical requirements. Environmental monitoring is intended to regularly assess the degree of implementation of the mitigation measures recommended by the ESIA to enable the promoter to clarify, adjust, adapt or possibly redirect some measures relating to the characteristics of the environmental components. To that end, the Environmental and Social Management Plan plans the proposed protection measures and identifies the various partners and their responsibilities for implementation of the measures. These activities are carried out during the project preparation and implementation phases, and cover environmental surveillance and monitoring. The works environmental surveillance and monitoring programme falls under the mandate of the Control Mission. The Bank's supervision missions will assess the quality of the project's environmental and social monitoring. The surveillance and monitoring costs are included in the budget of the Control Mission.

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Actions Considered	Cost in EUR
Implementation and management of IPCPR/M coordination*	523,179
IPCPR/M sensitization campaign	5,195
Operating costs of Management Committee	5,195
Preparation of nurseries	207,792
Mapping	51,948
Mangrove clearing works	10,390
Restoration of dwellings	5,195
Planting of degraded areas	207,792
Training in participatory management	5,195
<i>Total Sub-Component 1</i>	<i>1,021,881</i>
Health of workers and population	31,169
AIDS/STI campaign	31,169
<i>Total Sub-Component 2</i>	<i>62,338</i>
Road safety campaign	31,169
Communication programme	242,618
SAP/RSIR ** implementation	150,000
Environmental monitoring programme	313,766
Environmental capacity building	31,169
<i>Total Sub-Component 3</i>	<i>893,398</i>
<b>Total</b>	<b>1,915,279</b>

The general site measures are contained in the contractor's terms of reference. Soil and water conservation and preservation measures, and those relating to human perceptions (diversions, noise reduction, working hours, water use, etc.) are incorporated in the project cost. Sensitization measures for the population on: (i) rules for keeping people away from the area of operation of machinery and equipment on the site during mechanized works, (ii) road safety and compliance with the traffic code, (iii) HIV/AIDS issues, (iv) the community mangrove restoration plan, (v) the ferry workers redeployment programme, (vi) the communication programme (information to the public), etc. For the three sub-components of actions taken, the environmental measures will require a budget estimated at **EUR 1,915,279**.

### **9. Public Consultations and Dissemination of Information**

#### **9.1 Consultations with all the stakeholders**

The project formulation process involved consultations with various stakeholders during the initial Environmental and Social Impact Assessment done in 2007 and its update. Additional public consultations were held during the project preparation and appraisal missions. At the country level, consultations involved relevant government agencies and DPs. At local level, area councils were consulted by the project team. All the consultations with stakeholder including the populations in the project area were meant to: (i) present the bridge project to the stakeholders; (ii) seek their views and concerns with regards to the project's impacts and; (iii) identify key activities that could contribute to complement the design of the project.

#### **9.2 Project Affected Persons (PAPs)**

During the baseline socio-economic data collection from PAPs in the project area in 2007 and in 2011, consultations were held with individual PAP. In addition to these individual consultations and discussions held with PAPs, a plenary meeting (Public Hearing) was held on October 8, 2011 with PAPs at Bambatenda (more information in the summary of the ARAP).

### **9.3 Future Consultations**

The consultation process will continue throughout the project cycle. They will be held at various levels and with all the groups of PAPs. For all the PAPs (farmers, established traders and GPA staff), consultation will continue after the payments and various compensation and/or assistance through the monitoring and evaluation mechanism of the project. This is to ensure that livelihoods of all the PAPs have been improved or have been restored at least to the same level that they were before the project.

### **10. Additional Initiatives**

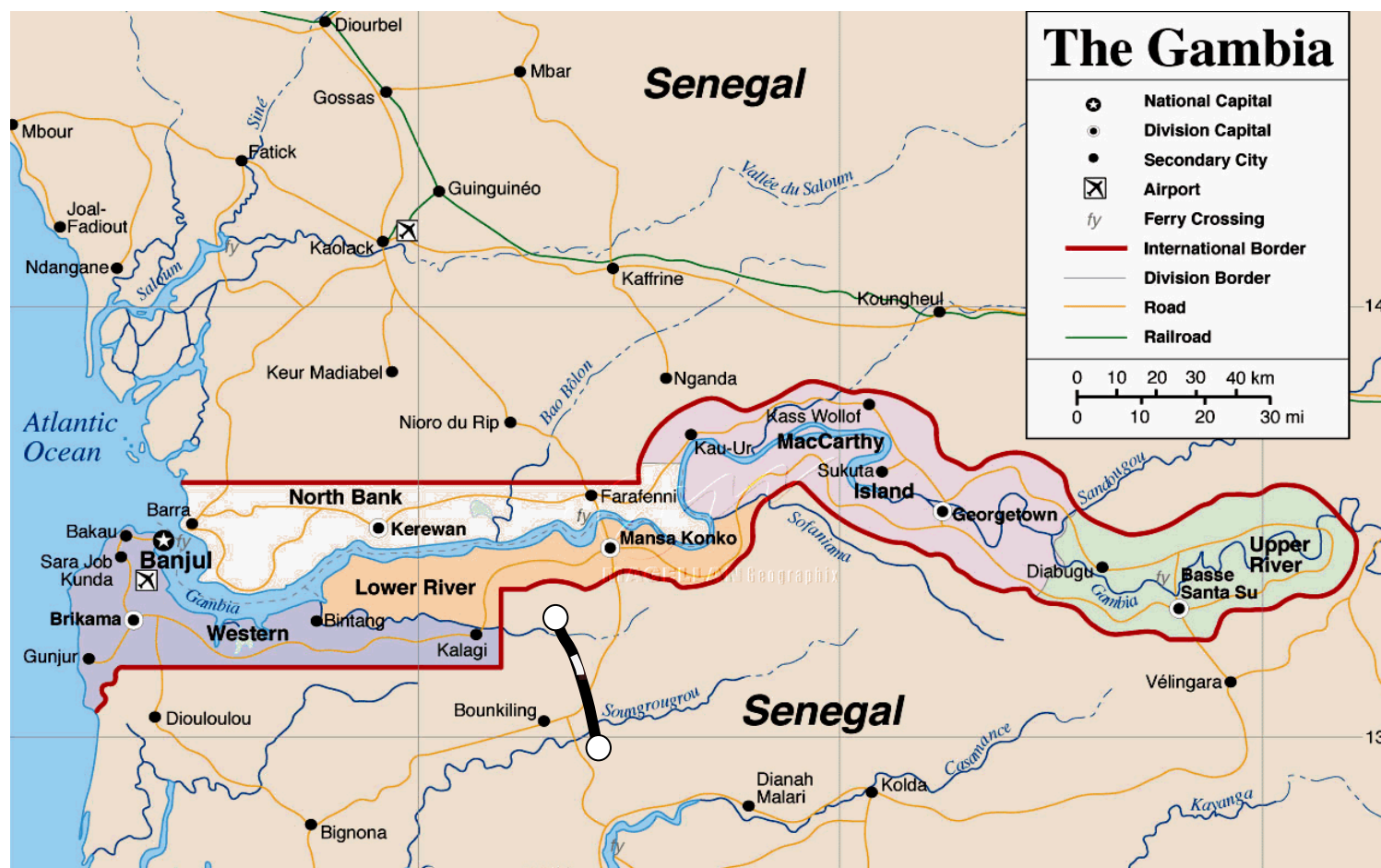
The project has included several complementary initiatives that will benefit the road users and the communities living in the project zone of influence. These include:

- Safety enhancement: While the bridge will improve the safety issue from ferries use to a reliable bridge, the project will also conduct road safety campaigns and education for all road users;
- The project will promote trading activities through the construction of two regional markets (one on each bank of The Gambia River) and rehabilitation of 15 km of feeder roads. The two new regional markets will accommodate close to 200 new stalls for which the 115 affected vendors will be give priority.

### **11) Conclusion**

Taking into account the impacts and measures identified, this project is deemed environmentally and socially acceptable. The key issues arising from the analysis and the environmental assessment have been addressed, and appropriate measures likely to offset or mitigate the identified impacts are provided.

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**ANNEX OF ESIA SUMMARY  
ABBREVIATED RESETTLEMENT ACTION PLAN**

**1. INTRODUCTION**

**1.1 Justification and description of the project**

The Transportation Corridor Trans-Gambia is a strategic and economic linking northern parts of Senegal as well as the Gambia, and by extension the ECOWAS countries through the corridor between Dakar and Lagos. The bridge will promote the free movement between the north and south of the Gambia and Senegal. The construction of bridge will promote the free movement between the north and south of the Gambia and Senegal. Thus, the project will reduce travel time, increase trade and strengthen the cohesion between communities that were once isolated from each other. The project will facilitate the delivery of agricultural products to market, thereby reducing agricultural losses after harvest and promote socio-economic activities.

The implementation of the project will be done in two phases. Phase I, purpose of this project involves the construction of the Trans-Gambia Bridge and two (2) one-stop border posts (OSBPs), while Phase II focuses on the rehabilitation of 137 km road between Ziguinchor and Senoba in Senegal reinforcement of 24 km road between Farafenni and Senoba in Gambia. The abstract resettlement action plan (ARAP) is related to activities of Phase I of this project. This ARAP has been prepared to ensure that adequate measures are taken to compensate/restore the revenues of people affected by Phase I of the project (PAP) in accordance with the involuntary displacement policy (IDP) of African Development Bank.

**1.2 Justification of an abstract resettlement action plan**

The IDP of the Bank is required whenever a project involves the acquisition of properties or changing in their use, and this acquisition or change causes a permanent or temporary loss of income, housing or access to resources, whether legal or illegal occupation. Compensation and restoration of revenues in this project will therefore be implemented in accordance with Gambian regulations and Bank IDP. The Bank IDP requires, "for projects requiring the resettlement of a small number of people (less than 200 people to be relocated), and resulting in loss of assets or a restriction of access to assets of minor importance, that an ARAP to be elaborated and agreed with the borrower.

**1.3 Policy, legal and administrative scope**

The policy, legal and administrative environment in which this ARAP was elaborated is summarized below: (i) for the Gambia, "the law on land tenure in 1990 and 1999 on land expropriation and compensation", covering aspects related to land tenure and property rights. This collection of laws concerns the regulation of key aspects of land tenure and use in the Gambia. It also covers the regulation and the various aspects of land expropriation, (ii) for the Bank, the IDP defines the conditions under which the Bank will finance a project that involves resettlement of people and/or affects their social and economic well-being. It also defines the framework for compensation and restoration of income for all PAP to be conducted.

The main institutions in charge of the preparation and implementation of the ARAP are: (i) the Ministry of Works, Construction and Infrastructure through the National Roads Authority (NRA), the Ministry of Local corporates and community development through its departments in charge of land issues and local boards of Mansakonko and Farafenni, the Ministry of Finance, the

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Gambia ports authority (GPA), the National Environment Agency (NEA), the Association of Non-Governmental Organizations.

## 2. SOCIO ECONOMIC SURVEY OF PERSONS AFFECTED BY THE PROJECT

### 2.1 Definition and identification of PAPs

Persons affected by the project (PAPs) are defined as those who might lose, directly as a result of the project, property, or access to their property or opportunities which can generate incomes. In this project, the PAP include: (i) three farmers owners of rice fields in zone of influence of the bridge, (ii) 115 sellers located on both sides of the crossing of the ferry (64 located to Yelintenda and 51 to Bambatenda), (iii) approximately 60 employees of GPA working at the crossing of the ferry. The 115 sellers were interviewed individually using a questionnaire. Two of the three farmers were also interviewed. Finally 30 of the GPA employees were also interviewed. A database was elaborated. It includes the socioeconomic characteristics of PAP (name, age, education, household size, income, etc.), the GPS coordinates locating their shops and fields, as well as photos of the owners.

### 2.2 Main socio-economic characteristics of PAPs

#### 2.2.1 Farmers

The main socio-economic characteristics can be summarized as follows:

- **Age and gender** : two farmers interviewed are men aged between 75 and 80 years ;
- **Education** : none of them received any formal education ;
- **Marital status** : they are all married, each one with four women ;
- **Household size** : they are all responsible of household with between 34 and 45 people;
- **Land ownership** : the fields are owned by families headed by the two farmers interviewed. These fields were originally mangroves converted to farmland since 1952. Since then these two families use them for rice farming.

#### 2.2.2 Sellers

The main socio-economic characteristics can be summarized as follows:

- **Age and gender**: the majority PAPs identified are male (79%) while the remaining 21% are female. The age distribution shows that 35% have an age between 18 and 35 while 34% are between 36 and 50 ;
- **Education** : their educational level is not high. About 30% have studied up to lower secondary. In this group, educated women represent about 15% (4 of 34). The remaining (70%) didn't receive any formal education ;
- **Marital status** : the majority are married (90%);
- **Household size** : they are all responsible of household with between 34 and 45 people;
- **Land ownership** : the average household size is 13 people. This is slightly higher than the national average of 9 people. Of these 13 people, 5 are under 15 years, on average, and one over 65 years;
- **Average income** : the average monthly income generated from these key activities varies between 2,000 and 10,000 dalasi.

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### 2.2.3 *Employees of GPA*

About 60 employees of GPA working on two ferries crossing point Yelitenda/Bambatenda could be affected by the proposed bridge. In November 2011, the following main positions were likely to be affected: terminal manager, engineers, electricians, bank supervisor, shift supervisor, collector, vendor, security guard, a cleaning agent. About 95 percent of these positions are held by men while only 5 percent are held by women. The distribution of annual income of employees of the GPA is between 22 000 and 110 000 Dalasi. The average salary is 40 000 Dalasi.

### 3. ELIGIBILITY AND RIGHT

People affected by the project (PAPs) are defined as those who might lose, directly as a result of the project, property, or access to their properties or opportunities which can generate incomes. PAPs eligible for compensation or additional assistance are those concerned by this definition and have been registered during identification process conducted from November 17 to 18, 2011. Payments and other assistance should be strictly based on the identification of November 2011. Anyone who encroaches on the project area after the deadline will not be eligible for compensation or relocation assistance, or any other assistance. The deadline for compensation and assistance as part of this ARAP is November 18, 2011. The procedure for determining eligibility for compensation, assistance for the relocation and rights considers the following factors (Table 1):

**Table 1: Matrix of Rights**

Type of PAP	Type of loss	Right
Farmers with traditional or formal rights recognized in relation to land	Loss of agricultural land and crop	Compensation for loss of land and crop losses and assistance from the village chief to find another parcel for agriculture
Farmers with no formal or traditional rights recognized in relation to land	Crop loss	Compensation for crop loss and assistance from the village chief to find another parcel for agriculture
Seller	Temporary loss of business opportunities or income	Lump sum for interruption of income and assistance for relocation to new markets
Employees of GPA	<ul style="list-style-type: none"> <li>• Loss of income (applicable only to employees who choose voluntary separation and early retirement) ;</li> <li>• Temporary interruption of income and inconvenience for the redeployment or reassignment.</li> </ul>	<ul style="list-style-type: none"> <li>• Allowance for separation / early retirement ;</li> <li>• Lump sum for reassignment and redeployment and training as appropriate.</li> </ul>

### 4. PUBLIC CONSULTATION

In the process of formulating the project, consultations were held with various stakeholders during the environmental and social impact assessment carried out in 2007 and updated in 2011.

#### 4.1 Consultation with PAPs

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Consultations were held individually with each PAP during the baseline socio-economic studies in the project area in 2007 and 2011. During these consultations, project impacts and proposed mitigation measures were discussed individually with the PAP. In addition to individual consultations and discussions with the PAP, the plenary sessions (public hearing) were held October 8, 2011 with the PAPs. Among the participants there was the Chief of Jarra West (President), Head of Illiassa, the Permanent Secretary of Ministry of Works, the Deputy Permanent Secretary of Ministry of Local corporates, the Director General of the National Authority for Roads, representatives of the Ministry of Finance, the Office of the President, the Department of Community Development, the police Commissioner of Kerewan and Gambia Ports Authority. Also 83 PAP representing farmers, vendors and staff of the CPA working on the ferry participated. The main objectives of this public hearing were: (i) inform everyone that the Government of Gambia has decided to build a bridge at crossing point between Bambatenda and Yelitenda, (ii) present the objectives of the project, its components and activities, and potential impacts as positive and negative, (iii) provide a framework for all PAPs can voice their concerns on the bridge project, (iv) allow officials to clarify all issues relating to the proposed bridge.

The following concerns were raised during the public hearing: (i) clarifications were requested on the type of market that will be built and whether the sellers currently installed at the ferry terminal will be prioritized in the allocation of warehouse, (ii) a staff representative of the GPA called for the renovation of the building of Bareto so it can serve as meeting room for staff working on the ferry, (iii) the operations manager of the ferry has expressed concerns regarding the fate of current staff to the ferry when it will cease its operations due to bridge construction.

### **4.2 Future consultations**

The consultation process will continue throughout the project cycle. They will be held at various levels and with all groups of PAPs. For all PAPs (farmers, sellers and staff of the GPA), consultation will continue after the payment of compensation and/or assistance through the monitoring and evaluation. This will ensure that the livelihoods of all PAPs have been improved or have been restored to at least the same level they were before the project.

## **5. PROCEDURES FOR EVALUATION AND COMPENSATION**

### **5.1 Method of evaluation**

In assessing the affected land, the current value of cultivated land was considered without taking into account depreciation or loss of soil fertility. In addition, this evaluation considered the value of the crops on the land with the best market prices. Finally the assessment took into account the disruption, discomfort and other contingencies that may arise during the relocation on new land. For sellers the evaluation of the cost of restoring revenue has taken into account: (i) the disruption of income during the relocation to new markets, (ii) the inconvenience and other contingencies for the relocation based on the level of disturbance, which are quantified and expressed as a percentage of total interruption of income. The summation of the values estimated above provides the proper amount of compensation to be paid to the PAP.

For staff of the ferry, who: (i) will be redeployed on other sites will receive a lump sum to facilitate the relocation. This amount will be determined on the basis of the socioeconomic conditions of the PAP in particular family size and location of the new position, (ii) will be reassigned with pay for the relocation and training. This compensation will be equivalent to one month's salary to be paid during the training period for the upgrade before assuming duty in their new positions, (iii) will choose early retirement or voluntary separation will receive compensation in accordance with applicable procedures and laws in effect.

## 5.2 Compensation and other assistance

**For farmers:** in addition to compensation for land and crops, arrangements with the chief of village will enable them to obtain agricultural land if they so request, provided that they are not used for other purpose other than for agriculture. Compensation for farmers will be made before the start of civil works. Although the work is taking place in the dry season, farmers will be notified well in advance.

**For sellers:** in addition to the compensation/assistance for relocation, the Government of Gambia is committed to give priority to 115 registered sellers and especially women during the allocation of warehouses in the new regional markets. Compensation and assistance for sellers will be completed at least one year before the completion of the work for such contracts. This will allow them to have enough time to resettle in new markets.

**Staff of the ferry:** the compensation and assistance for staff of the ferry should start at least two years before the completion of the bridge. This will allow them to complete the appropriate training for those who will be reassigned to new positions and, before assuming duty. This will also give enough time for staffs with children in schools make arrangements before being posted on other sites. In addition to compensation and assistance, the Government of Gambia is committed to ensuring that no member of the GPA staff working on the ferry losing his job or source of income due to the project.

To implement the above three solutions in the ARAP, arrangements have been taken to carry out the following key activities: (i) sensitization and explanation of all options for compensation to all the PAPs, including GPA staff, (ii) establishment of a focal point for workers on the ferry, (iii) aptitude test for the staff concerned, in accordance with their new positions (3,802 euro included in the budget of ARAP), (iv) choice of resettlement and arbitration with the assistance of a law firm, (v) updating of skills in money transactions, accounting, management and training in citizenship and customer relationships, and (vi) budget for the payment of compensation for early retirement / voluntary separation.

## 5.3 Complaint procedure

In order to minimize as much as possible potential conflicts related to land expropriation for farmers or interruption of income generating activities for sellers and staff of the ferry, consultations were carried out during the project design. However a complaints committee has been established for the amicable resolution of the issues of compensation and restore of income related to the project. This committee includes representatives from the NRA, the Ministry of local corporates, the NEA, regional councils and representatives of PAPs (Table 2).

Any PAP not satisfied with the amount of compensation or assistance received may seek redress through the complaints committee. If the PAP is still not satisfied, he can seek redress through the judicial process and eventually to the Supreme Court.

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**Table 2: List of members of complaints committee**

<b>Name</b>	<b>Description/function</b>	<b>Institution (if applicable)</b>	<b>Telephone</b>
Lamine FOFANA	Regional engineer	National Roads Authority	7770097
Ansumana Sambou	Director of planning and development	Local councils Mansakonko/Farafenni	9937325
Borry Manga Demba	NEA/ local representative	National Agency for the Environment	90677179
Sunkary BADJIE	Responsible for planning	Department of Community Development	9712511
Jerry Jammeh	Ferries manager Yelintenda/Bambatenda	Gambia Ports Authority	9963505
ALHAJI ALI JOBE	Sellers representative	Yelintenda/Bambatenda	9865533
BALLO S. FOFANA	Farmers representative	Farmer fromà Sankwia	6608884

## 6. INSTITUTIONAL RESPONSIBILITIES, MONITORING AND EVALUATION

### 6.1 Institutional responsibilities

NRA is ultimately responsible for the implementation of all project components. NRA is directly responsible for the implementation of ARAP. Even if NRA will play a leading role, it will work with other institutions like the Ministry of Local Corporates through the Department of Community Development (DCD), NEA and the regional councils if necessary a consultant to successful implementation of the ARAP. NRA will play a role in social surveys and assessments thereon and ensure the participation of stakeholders such as PAPs and NGOs. NRA is responsible for monitoring the implementation process by ensuring that compensation and restoration mechanisms are carried out properly.

### 6.2 Monitoring and evaluation

Internal monitoring will aim to establish if the implementation of ARAP is in accordance with approved plans.

Its implementation will involve: (i) process of implementation review, in light of the schedule and on budget approved, (ii) evaluate the performance of disbursements for compensation of PAPs. The implementation of ARAP will be evaluated regularly by the NRA (Table 3) to ensure that the actions for compensation and assistance were conducted in accordance with the ARAP. This will be conducted in collaboration with the Ministry of local corporates (regional councils and the Department of Community Development) and the NEA to ensure that NRA is on schedule and the principles of this ARAP.

Monitoring and external evaluation will mainly to determine whether the overall objectives of ARAP were achieved. As a result, they will focus on the period after the relocation. This activity will therefore focus on establish whether, after the execution of the relocation, the living standards of people affected will be improved if their livelihoods have been restored and maintained in a sustainable manner. It was then that will be measured efficiency, effectiveness, impact and sustainability of all ARAP. The project sponsor, in collaboration with funding agencies and traditional leaders, will monitor externally. This monitoring should be carried out annually for at least two years. It will be used a number of indicators to measure performance, impacts and outcomes of activities for compensation and resettlement. These indicators will aim to measure the

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physical and socio-economic status of people affected by the project to understand and guide their social well-being.

**Table 3: Roles in monitoring**

<b>Stakeholders</b>	<b>Role</b>
NRA	Lead agency and coordinating institution for the evaluation of both internal and external monitoring of the implementation of the ARAP
DCD	sensitization for adequate involvement of PAPs Periodic monitoring of the impacts of the ARAP and development resulting from the project
Department of Land	Regular monitoring to ensure that the approved amount of compensation is paid
NEA	Regular monitoring of the implementation of the ARAP and its environmental impacts if any
Regional Councils	Periodic monitoring of the impacts of the ARAP and development resulting from the project
External consultant and ADB	External monitoring, evaluation and audit of the implementation of the ARAP.

### 7. ESTIMATED COST

By taking into account the relevant indicators such as loss of livelihood, the extent and effects of impact, economic and institutional factors, among others, cost, excluding contingencies and fluctuations, compensation and restoration of incomes of PAPs has been estimated at 5.9 million GMD. This is equivalent to about 149 556 Euro and will be paid by the Government of the Gambia.

### 8. SCHEDULE OF IMPLEMENTATION

The schedule for implementation of key activities is described in Table 4 below.

### 9. PUBLICATION OF INFORMATION

This ARAP will be published in Gambia by NRA which will have copies available to the public at its headquarter and distribute copies to PAPs and regional councils covering these areas. ADB will publish this ARAP on its website.

### 10. CONCLUSION

The project will facilitate the flow of agricultural products to market, thereby reducing agricultural losses after harvest and promote socio-economic activities. However, the bridge will affect 178 people including three farmers, 115 sellers established on both banks of the Gambia River and about 60 employees of the GPA working on the ferry crossing point to Yelitenda/Bambatenda. With the implementation of mitigation measures, negative social impact will be minimized. The project will provide significant socio-economic opportunities for communities and people of the area and many other benefits at local, regional and national levels.

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Table 4: Schedule for Implementation of the Major Activities																				
Major Activities	Year 1				Year 2				Year 3				Year 4				Year 5			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Education and awareness creation for farmers, vendors and affected GPA staff																				
Budgeting/effectiveness of Credit																				
Payment for compensation for farmers before the civil works																				
M&E of payment to PAPs including grievance redress measures/reports																				
Sensitization and explanation of solutions proposed to ferry staff																				
Aptitude test, relocation choice and arbitration																				
Skills upgrade and various trainings																				
Implementation of various solutions for GPA affected staff																				
M&E of the implementation of the solutions for Affected GPA staff including grievance redress measures/reports																				