

**AFRICAN DEVELOPMENT FUND**



**TRANSPORT AND ICT DEPARTMENT  
TRANSPORT DIVISION 1 (OITC.1)**

**REPUBLIC OF BENIN**

**REHABILITATION OF ABIDJAN-LAGOS CORRIDOR:  
PAHOU-OUIDAH-TOGO BORDER SECTION IN BENIN  
NUMBER: P-BJ-DB0-014**

**SUMMARY ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

## **1. THE PROJECT AND ITS ENVIRONMENTAL AND SOCIAL COMPONENTS**

1.1 The project has four components: road works, related upgrades, studies and road studies, and project management.

### **○ Road Works**

The road works include: (i) construction of a 2x2 lane carriageway and sidewalks between Pahou and Ouidah (18.75 km), including reservations for laying optical fibre cables; (ii) rehabilitation works and upgrading of the road between Ouidah and Hillacondji (57.75 km) to ECOWAS standards, including reservations for laying optical fibre cables; (iv) mitigation of environmental impacts; and (v) monitoring/supervision and sensitization of project area population, transport operators and users on road safety, environmental protection and road transport and transit facilitation regulations.

### **○ Related Works**

Related works include: (I) construction of 101.7 km of access rural roads; (ii) extension of the two Grand Popo and Ahozon toll stations; (iii) rehabilitation of social, educational and health infrastructure along the road; (iv) construction of a bridge to the right of the Ouidah market; (v) provision of intermediate means of transport for women's groups; and (vi) control and monitoring of related work.

### **○ Road Studies**

These studies include: (i) Comé-Lokossa-Dogbo Road Study (64 km), and (ii) Porto Novo-Pobé-Ober Road Study, including the Zian-Igolo-Nigeria border (91 km) motorway.

### **○ Project Management**

This component covers the following activities: (i) monitoring and evaluation of project impacts; (ii) project financial and accounting audit; and (iii) operation of the project monitoring team.

1.2 The project area is located to the South-West of Benin, between Cotonou to the East, the Atlantic Ocean to the South and the Togo border to the West. It has a four-season sub-equatorial climate with an annual rainfall ranging from 900 to 1400 mm, depending on the year. The project area is characterized by farms relatively limited by insufficient arable lands and inadequate technologies used. Fishing and aquaculture are practised in lakes and rivers, and cattle rearing in humid areas. Owing to the influence of urban centres, the main ones being Cotonou and Ouidah, there are fifteen markets in urban neighbourhoods and villages of varying sizes between Pahou and Hillacondji.

1.3 The project area has considerable tourism potential. A tourism development project for the *Route des pêches* (coastal road parallel to the project between Ouidah and Pahou) has been designed and will be implemented in the years ahead. Budgeted at CFAF 130 billion and for which studies are far advanced, the project includes the construction of 21 three-star and two-star hotels, 430 high-class villas and 360 standard villas, a golf course, 2 water parks, 130 shops, 17 restaurants and 12 hectares of landscaped green spaces.

1.4 Ecologically, the highway crosses the Pahou forest reserve and the project area consists of two wetlands classified as Ramsar Sites in 2001. However, the works right-of-way remains within the existing platform. The project will be executed in an area already degraded for years by previous works and the presence of human settlements along the road. As such, the project will not encroach on new natural spaces.

1.5 The project's direct impact area (Ouidah, Como and Grand-Popo townships) currently has a population of over 333 000, of which more than 75% urban. The most represented cultural groups are the Fon and Adja. The largest population concentrations are found in the dense urban neighbourhoods of Ouidah, Como and Grand-Popo.

1.6 The project is being executed in a context marked by the building of the Godomey (Cotonou West exit) - Pahou Road Section with support from the World Bank as from the first quarter of 2011. In Togo, the country's section of the road is currently being upgraded as part of the Abidjan-Lagos Corridor Transport and Trade Facilitation Programme. An environmental compliance certificate was issued for the Godomey-Hillacondji stretch by the Environment and Forest Resources Minister under reference number CEC 0030/MEPN/DC/SGM/DG-ABE/DEIE/SA of 12 November 2009, following the Environmental and Social Impact Assessment conducted with World Bank financing within the context of the Abidjan-Lagos Corridor Transport and Trade Facilitation Programme. This environmental compliance certificate (hereto attached as Annex 1 of the ESMP) is valid for the Pahou-Ouidah-Hillacondji section of the road that is included in the Godomey-Hillacondji stretch.

## **2. MAJOR ENVIRONMENTAL AND SOCIAL IMPACTS**

### **2.1. The positive impacts of the project are:**

- Job creation and financial income for 300 local workers during the two years of the construction period;
- Improvement of the standard of living for men, women and girls. Women's groups along the asphalted road and related earth roads will receive carts to transport farm products to local markets;
- Women involved in petty trade along the road, will earn a minimum of CFAF 20 million in income from the sale of meals and drinks to construction workers;
- During the operational phase, the project will also help to improve the living standards of the underprivileged, including: (i) the creation of permanent jobs (transport operators, other activities generated by the construction of the road and access roads); (ii) easier access to markets for the sale of produce at lucrative prices and supplies for the area; (iii) provision of access to health services and education through improvement of facilities and learning conditions for young children; (iv) reduction of the time required to evacuate the sick to health centres, and redeployment of staff to basic social services in the project areas; (v) improvement of conditions for learning, particularly for children and teachers, as a result of easy movement; and (vi) development of tourism and handicraft in the areas crossed by the road and resulting activities

in terms of accommodation and catering. This project will contribute to strengthening sub-regional economic integration among countries of the sub-region, improving the effectiveness of the transport logistics chain along the Togo-Benin-Nigeria Highway. .

## 2.2. The negative impacts of the project include:

- Potential health issues relating to the possible spread of HIV/AIDS in settlements crossed by the project;
- Safety issues (accidents related to the management of project sites, movement of vehicles and road users, manipulation of explosives at the quarry sites, etc.);
- Displacement of informal trade facilities and destruction of terraces and other private property along the Pahou-Ouidah Road. Commercial facilities and other properties (152) are concerned. Owners (125) have been identified. **A Resettlement Blueprint has been designed to specifically address this impact;**
- Nuisance associated with waste generated by site facilities (household refuse), maintenance of site equipment, works-related noise and vibration;
- Higher strain on the natural resources of the area due to the exploitation of firewood, especially when the road will be opened to traffic;
- Contribution, to climate change, albeit limited, given that increased traffic will lead to greater emission of greenhouse gases, especially carbon dioxide (CO<sub>2</sub>).

## 2.3. Climate Risks

Although climate risks in Benin's Centre and North mostly concern flooding, changes in rainfall, winds etc., the coast constitutes a geo-system born of recent tidal oscillations. The morphodynamic stability of the coastal geo-system has been disrupted in recent years both by natural causes and a series of developments upland. Following the commissioning of Nangbéto Dam, 100,000 m<sup>3</sup> of silt has been held back upstream and prevented from reaching the coast. In addition, strong currents caused by waters discharged from the dam during floods explain the current extent of erosion at the mouth of the Mono River and its surrounding areas since 1990.

Grand-Popo town was almost completely destroyed by erosion first observed at the turn of the last century (1908) by Henri Hubert, who noted a 20-metre sea retreat between 1892 and 1900 and a 7-metre sea encroachment between 1900 and 1905.

During the joint assessment of vulnerability to climate change with the population, it was noted that the major problem facing Grand-Popo dwellers is coastal erosion. The priority action for them is the control of sea encroachment.

Moreover, mangrove occupies the central and western coast of Benin, and touches the coastline, Ahémé and Nokoué Lakes and the lower valleys of Mono River. It plays the role of shelter and spawning grounds for fish and bird species. Several studies on the mangrove

showed continued deterioration of this ecosystem and the need to seek appropriate solutions for its restoration and protection. The ecological and socio-economic impacts on the coastal environment are such that restoration is a national concern. To mitigate the vulnerability of the population of the affected areas in the participatory management of aquatic ecosystems, it is urgent to restore the ecosystem in the water bodies of the South.

### **3. IMPROVEMENT AND MITIGATION PROGRAMME**

#### **3.1. The main positive impact enhancement measures include:**

- Sensitization of construction workers on the need to support rural savings through micro credit institutions;
- Implementation as much as possible of a labour-intensive approach; and
- Sensitization of the population on the need to diversify sources of income.

#### **3.2. The main negative impacts mitigation measures include:**

- IEC activities to combat the spread of STIs and HIV/AIDS. These actions will be carried out under the "HIV Control" component of the Corridor Programme being implemented along the entire Abidjan-Lagos Corridor and funded by ECOWAS. Therefore, these activities are not budgeted in this ESMP;
- Road safety measures through IEC activities and use of signage along the road. Replacement and ribbon plantations at the entrances and exits of the main towns: Pahou, Ouidah, Grand-Popo and Comé and are also recommended;
- Integration of safety mechanisms in the road's technical design is recommended;
- Restoration of loose rock borrow pits and quarry sites, watering of roads in the dry season, equipment for managing various nuisances by the contractor;
- Further measures which will at the outset reflect consideration of the project-related environmental and social concerns include the effective inclusion of environmental clauses in the bidding documents, implementation status reports and guarantee documents;
- Measures to help limit climate change include: (i) control of axle load at ports and at the Hillacondji JCP; (ii) track enlargement and road surface improvement; (iii) improvement of traffic flow in the project area; (iv) reduction of travel time; (v) reduction of vehicle fuel consumption; (vi) increased use of collective means of transport (transit, minibus, etc.); and (vii) planting and maintenance of tree species with high chlorophyll function along the road and in the project impact area.

### 3.2.1. Climate Risk Management

Under the National Action Programme for Adaptation to Climate Change, five projects were selected by the Government of Benin, including "The Project to Protect the Coastal Zone from Rising Sea Levels". The project's overall objective is to "correct the sedimentary imbalance, beach retreat and decline, restore mangroves, and promote improved salt extraction technology using combined solar and wind energy." This project is being negotiated with Benin's bilateral and multilateral partners. Its cost is estimated at USD 1,296,000. Its implementation period is 5 years, at least for the first phase. Its execution, which covers the period of the project under consideration (2012-2015), will contribute to protecting the upgraded road, even if it is considered relatively free of the risk of coastal retreat. In effect, the distance of the corridor from the coastline varies between 1 km to 12 km and its elevation above sea level is between 30 and 50 m.

In addition, the project's flood resistance level used to scale the dimension of existing hydraulic works and structures, namely once every half-century (hydraulic works) and once every century flooding (structures) with a return period of at least 2 to 4 times the life of the project (20 years), reduces the risk of flooding of the project road. The structures of this road withstood extreme flooding in the region in 2008. Lastly, it is expected that the flooding zones observed around the Ahozon Bridge should be raised within the framework of this project. These costs are included in the road works.

## 4. ENVIRONMENTAL MONITORING PROGRAMME AND SUPPLEMENTARY INITIATIVES

These include environmental monitoring and follow-up.

### 4.1 Environmental Monitoring

#### 4.1.1 Issues to Consider at Various Stages of the Project

Environmental monitoring aims to ensure that environmental and social impact mitigation and improvement measures are actually implemented. Monitoring will entail a number of issues at different stages of the project.

**“Site Installation” stage:** (i) approval of the installation plan (dump vat, landfill, storage areas, etc.); and (ii) inspection of site facilities (latrines, sick bay, waste disposal, etc.).

**“Works Execution” stage:** (i) checking the management plan and technical specifications in compliance with the project process (site log, etc.); (ii) verification of materials, affected areas, quantities used; (iii) checking the most important points identified in the ESMP (environmental and social measures, indicators); (iv) inclusion of the item "environmental measures" during site meetings with contractors; (v) drawing up either an environmental report or an environmental record; and (vi) considering environmental measures when taking delivery of the works.

**“Works Completion” Stage:** (i) verifying the rehabilitation of borrow pits and quarry areas, filling of pits, removal of products of excavated soils and fillings, removal of scrap and other debris, and general site cleaning; (ii) preparing a site clearance report; (iii) conducting an end-of-mission review, assessing the actions taken and the effectiveness of measures and methods used on-site; and (iv) preventing the temporary impacts of the work-site and proposing a methodological framework for similar projects (feedback).

#### 4.1.2 Environmental Monitoring Procedures and Arrangements

These procedures and arrangements will involve assessing the degree of implementation of recommended measures and ascertaining compliance of these measures with the contract provisions.

#### **Assessing the Status of Implementation of the Measures**

This part of monitoring could be carried out using the table below:

Table 1 : Model Environmental Monitoring Dashboard

Environment	Key Actions	Projections	Achievements	Deviation	Remarks
Human environment	= IEC actions on HIV/AIDS + road safety + environment in urban areas = Safety equipment for construction workers = Safety equipment at work sites = Information signposts = Facilities for women = Etc.	x	x	x	x
Air	= Watering of sites during construction = Wearing of dust masks	x	x	x	x
Soil	= Rehabilitation of borrow areas = Solid, liquid waste management	x	x	x	x
Groundwater and surface water	= Construction of vegetated earth bunds to protect water bodies for livestock watering = Waste collection on work sites	x	x	x	x
Vegetation and ecosystem	= Replacement reforestation = Involvement of the population in replacement tree planting = Planting of shade trees	x	x	x	x
Capacity-building	= Various training programmes = Regulatory measures Etc.	x	x	x	x

#### **Ascertaining Compliance of Measures Implemented**

Non-compliant works are characterized by a mismatch between the works executed and the contractual obligations of environmental safeguards and protection. These include: (i) minor non-compliant works whose consequences are repairable (key point); and (ii) major non-compliant works whose consequences are difficult to repair (breakpoint). There are three types of actions proposed: (i) remedial actions designed to repair environmental damage and prevent the repetition of dysfunctions observed; (ii) preventive measures resulting from assessment of new risks and aiming to avoid their occurrence; and (iii) supplementary actions in case of areas unattended. After each field trip complete with a site meeting, the team leader in charge of environmental monitoring will, as the case may be, address a compliance request to the contractor.

## 4.2 Environmental Follow-up

### Follow-up of Mitigative and Improvement Measures

The structure in charge of monitoring the ESMP will organize visits with the contractor during the guarantee period to ascertain the effectiveness of measures, including whether each of them: (i) does not in any way change the impact on the affected part of the receiving environment; (ii) significantly reduces or improves the impact on the affected part of the receiving environment; (iii) considerably reduces or improves the impact on the affected part of the receiving environment; (iv) worsens or does not clearly improve the impact on the affected part of the receiving environment; and (v) worsens or does not clearly improve the impact on the affected part of the receiving environment.

The following table assesses the effectiveness of each measure:

**Table 2  
Grid to Evaluate the Effectiveness of Measures Recommended**

Environment	Key Actions	Effectiveness		
		Good	Average	Average
Human environment	= IEC actions on HIV/AIDS + road safety + environment in urban areas = Safety equipment for construction workers = Safety equipment at work sites = Information signposts = Facilities for women			
Air	= Watering of sites during construction = Wearing of dust masks	x	x	x
Soil	= Rehabilitation of borrow areas = Solid, liquid waste management	x	x	x
Groundwater and surface water	= Construction of vegetated earth bunds to protect water bodies for livestock watering = Waste collection on work sites			
Vegetation and ecosystem	= Replacement reforestation = Involvement of the population in replacement tree planting = Planting of shade trees			
Capacity building	= Various training programmes = Regulatory measures Etc.			

## 5. INSTITUTIONAL AND CAPACITY BUILDING REQUIREMENTS

5.1. The ADB and the Republic of Benin through the Ministry Delegate in charge of Road Infrastructure have the joint responsibility to ensure that environmental and social measures are included in bidding documents, contractors' selection criteria, periodic project implementation status reports and guarantee documents.

5.2. The contractor will be responsible for overall compliance with its commitments to the borrower with respect to the quality of field work, compliance with deadlines, production of documentation, implementation of environmental and social measures, etc.

5.3. The Government of Benin must ensure that persons affected by the relocation of commercial facilities and other property along the Pahou-Ouidah Highway are duly compensated and effectively relocated before commencement of works.

## **6. PUBLIC CONSULTATION AND INFORMATION DISSEMINATION REQUIREMENTS**

Public consultations are planned within the framework of ESMP implementation.

6.1. A workshop to inform, sensitize and prepare stakeholders on project implementation and its ESMP will be held. A one-day workshop bringing together 40 participants from Ouidah, Cotonou, Pahou, Ouidah, Como and Grand-Popo has been planned.

6.2. After consultations with persons to be compensated following the displacement of their commercial facilities or destruction of their property along the highway, the schedule and budget will be finalized. The consultations will take place within the framework of activities of the Local Compensation Committee to be established by the Government of Benin.

6.3. A special consultation is recommended with Ahozon village animist priest, to avoid any inconvenience that may result from disturbing the tranquillity of the area. Dialogue sessions are also planned with village communities concerned with IEC activities on road safety and environmental protection, including the levelling of borrow sites and restoration reforestation.

## **7. COST ESTIMATES**

7.1. The overall cost of the ESMP measures and support for women's organizations in the project area in terms of intermediate means of transport amounts to CFAF 305 510 400, including CFAF 32 640 000 to support women's organizations. Cost details are given in the table below:

<b>Activities</b>	<b>Cost in CFAF</b>
IEC activities: Road safety awareness	6 000 000
IEC activities: Environmental protection awareness	6 750 000
Support for women's organizations in the project area	32 640 000
ESMP monitoring activities	16 770 400
Capacity building of ESMP stakeholders	8 000 000
Alignment tree planting at the entrances and exits of townships	33 040 000
Restoration of massive rock borrow areas and quarries	10 000 000
Rehabilitation of social facilities (schools and health centres)	156 100 000
Compensation costs for minor facilities to be displaced	36 210 000
<b>Total ESMP measures and support/rehabilitation actions</b>	<b>305 510 400</b>

## **8. IMPLEMENTATION AND REPORTING SCHEDULE**

8.1 The implementation of mitigative/improvement measures will begin at project take-off with capacity building actions (project start-up workshop).

8.2 Environmental safety and sanitation measures will be conducted daily. Site restoration (borrow and quarries) will take place at project completion.

8.3 Quarterly ESMP implementation reports will be prepared at the same time as technical implementation reports.

It follows from the study that the project will have positive socio-economic impacts for the local population, the entire region, Benin and the sub-region. It also has negative impacts that can be addressed by appropriate measures. Under these conditions, it can be classified as a Category II project.

## Environmental Compliance Certificate

**MEPN**

**CERTIFICAT DE CONFORMITE ENVIRONNEMENTALE**

**MEPN**



\* \* \* \* \*

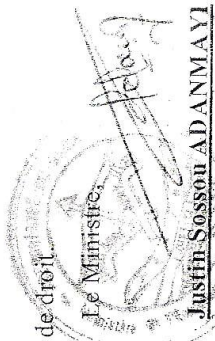
### Le **Ministre de l'Environnement et de la Protection de la Nature** (MEPN)

- Vu le rapport d'Etude d'Impact Environnemental du Projet Régional de Facilitation des Transports et du Transit le Long du Corridor Abidjan-Lagos : axe Godomey- Hilacondji - Frontière Togo;
- Vu les résultats de l'atelier d'analyse du rapport d'Etude d'Impact Environnemental du Projet Régional de Facilitation des Transports et du Transit le Long du Corridor Abidjan-Lagos : axe Godomey- Hilacondji - Frontière - Togo
- Vu l'avis technique de l'Agence Béninoise pour l'Environnement (ABE).

### **CERTIFIE**

Que le Projet Régional de Facilitation des Transports et du Transit le Long du Corridor Abidjan-Lagos : axe Godomey- Hilacondji - Frontière Togo est conforme aux exigences environnementales.  
Le promoteur dudit projet, la **Direction Générale des Travaux Publics (DGTTP) du Ministère Délégué auprès du Président de la République Chargé des Transports Terrestres, des Transports Aériens et des Travaux Publics** devra prendre les dispositions nécessaires pour mettre en œuvre, sous peine de retrait du présent Certificat, les activités identifiées dans le plan de gestion environnementale et destinées à corriger les impacts négatifs du projet.

Le présent Certificat, établi en un seul original, est délivré pour servir et valoir ce que de droit.



**Justin Sossou ADANMAYI**

Enregistré au Ministère de l'Environnement et de la Protection de la Nature, Cotonou, le **12 NOV 2009** sous le N° CCE-0030/MEPN/DC/SGM/DG-ABE/DE/ES-4

**MEPN**

**ENVIRONMENTAL COMPLIANCE CERTIFICATE**

**MEPN**

\*\*\*\*\*  
-----

**The Minister for Environment and Nature Protection  
(MEPN)**

- Having regard to the Environmental Impact Assessment Report of the Abidjan-Lagos Corridor Transport and Trade Facilitation Programme: Godomey-Hilacondji-Togo Border Road
- Having regard to the results of the workshop to analyse the Environmental Impact Assessment Report of the Abidjan-Lagos Corridor Transport and Trade Facilitation Programme: Godomey-Hilacondji-Togo Border Road
- Having regard to the technical opinion of the Benin Environment Agency

***HEREBY CERTIFIES AS FOLLOWS:***

That the Regional Project relating to the Abidjan-Lagos Corridor Transport and Trade Facilitation: Godomey-Hilacondji-Togo Border Road complies with environment safeguard requirements.

The Proponent of the said project, the **Directorate General for Public Works (DGTP) of the Ministry Delegate at the Presidency of the Republic in Charge of Land Transport, Air Transport and Public Works** shall take the necessary measures to implement, under pain of withdrawal of this Certificate, the activities identified in the Environmental Management Plan and intended to mitigate the negative impacts of the project.

This Certificate has been issued, in one original, to serve and avail when and where required.

The Minister  
Justin Sossou ADANMAYI

*Registered at the Ministry of Environment and Nature Protection, Cotonou on 12 November 2009 under No. 0030/MEPN/DC/SGM/DG-ABE/DEIE/S4*