Etude d'impact environnemental et social des travaux d'infrastructures hydrauliques dans la ville province de Kinshasa

(Résumé non technique en version Anglaise)

DRINKING WATER SUPPLY PROJECT IN URBAN ENVIRONMENT (PEMU-FA)

Environmental and Social Impact Assessment (EIES) of hydraulic infrastructure works in the city of Kinshasa

NON TECHNICAL SUMMARY

A. BRIEF DESCRIPTION OF THE PROJECT

A.1. Overall objective

The Urban Drinking Water Supply Project (PEMU) was set up by the Democratic Republic of Congo as part of its post-conflict reconstruction. It aims to substantially increase the production and supply of drinking water that are well below potential demand and to reduce losses due to the dilapidated distribution network and connections.

The initial project has gone from 2009 to 2012 and covered the cities of Kinshasa, Matadi and Lubumbashi.

In order to consolidate the gains made in the three cities mentioned above and also cover the city of Kindu, the DRC had requested and obtained from the World Bank Additional Financing for 166 million dollars.

This Additional Financing includes, among other activities, the continuation of the reform of REGIDESO SA, the rehabilitation of old pipes and pumping stations, the construction of new drinking water treatment units and the extension of primary networks secondary and tertiary as well as the laying of special connections, water meters and the construction of standpipes.

A.2. Specific objectives

In accordance with the World Bank Operational Policy 4.01, the Kinshasa City drinking water project is subject to an environmental assessment which helps to ensure that the project is environmentally sound and sustainable.

For this purpose, the specific objective of this study is consist of:

- Evaluate the environmental and social impacts that will be generated by the realization of the works related to the aforementioned activities;
- Develop measures to mitigate negative impacts and measures to improve positive impacts.

From a methodological point this study comprises the following 3 phases:

- A preparatory and documentary phase based on a meeting with the project managers and the collection of existing documentation relating to environmental legislation and any other document related to the implementation of the hydraulic power project in the city of Kinshasa.
- Basic data collection and public consultation targeted by the project;
- An analysis of the data collected and the drafting of the report of the Environmental and Social Impact Assessment (ESIA).

B. BRIEF DESCRIPTION OF THE SITE AND THE MAJOR / CRITICAL ENVIRONMENTAL AND SOCIAL ISSUES IN THE SITE AND PROJECT INFLUENCE AREA

Biophysical and socio-economic benefits of the study area

ASPECTS	DESCRIPTION
Physical characteristic of the project area	
Geographic location	The areas concerned are: - The areas of Kasa-vubu, Elengesa, Kikwit and Makala located in the district of Funa; - The University / Salongo zones located in the district of Mont-Amba; - Ndjoko zone located in Tshangu district; - The Kinshasa-West zone located in the Lukunga district.
Biological characteristics of the project area	
Flora, vegetation and timber exploitation	Urban vegetation is almost non-existent except for some herbs and vegetable crops on the saio axis.
Wildlife	Only a few rodents, birds and a sporadic bird fauna remain.
Socio-economic profile of the project area	
Populations	The population of Kinshasa is estimated at about 8.000.000 inhabitants according to the document PRSP KINSHASA 2.
Structure	The City of Kinshasa is inhabited by people from all the Provinces of the DRC and various countries of the world. All the original languages and dialects of these inhabitants are spoken in this City. However, five languages are official, namely French, Kikongo, Swahili, Tshiluba and Lingala. Total per capita expenditure per year is estimated at $ 315 in Kinshasa. The structure of household expenditure reveals a predominance of food expenditure that reaches 48.8% This share of Kinshasa's diet is much lower than that of the DRC as a whole, which is 62.9%.
Transport infrastructure and communication	The field of road infrastructures is relatively developed; the Boulevard du 30 juin, the Avenu Triomphale, Boulevard Lumumba, Boulevard du Colonel Mondjiba, Avenue du Tourisme, etc. Kinshasa is full of various hotels, shopping centers like the City of the River, Congo Trade Center, the Chinese promotion of future downtown SCTZ, ... The transport and communication sector is operated by a multitude of public and private carriers operating in the formal and informal sectors. At present, public transit is almost entirely in the hands of individuals who carry 95.8% of passengers per day compared to 4.2% transported by public companies.
Land tenure	Law No. 73021 of July 20, 1973 amended and supplemented by Law No. 08008 of July 18, 1980, makes the Congolese State the sole owner of the soil and subsoil and regulates land tenure in the DRC.
Education	Kinshasa has the highest enrollment rate and literacy rate in the DRC: - Net primary school enrollment rate of 74.8 percent in Kinshasa compared to 55.0 percent for the DRC; - Literacy rate of 67.6% against 43.2% in the DRC. Despite this performance, education faces difficulties in Kinshasa. Moreover, despite the proximity of primary schools, two-thirds of them are private schools and therefore relatively more expensive (UNDP, 2009).
Health	Health services are not enough in Kinshasa. Indeed, we count: - 94 hospitals for the whole province; - 10.4 beds per 100,000 inhabitants; - 1 doctor for 4865 inhabitants. (UNDP, 2009).

HIV / AIDS and malaria	According to UNAIDS figures, the prevalence rate of AIDS is estimated at 3.2% in Kinshasa. In the DRC, malaria remains the major endemic and the leading cause of morbidity. It is also among the top three killers of pregnant women and children under five. Only 42.2% of households in Kinshasa own mosquito nets.
Habitat, drinking water, energy and sanitation.	Most households live in cement block houses (83.1%) with plank or cement floors (79.5%). Kinshasa suffers from significant delays in the energy, water and sanitation sector. This situation is due to insufficient infrastructure following limited investments in this sector. - Only 59.5% of households have access to electricity and 52.8% of households have a water tap in their plot. - Sanitation remains an important problem: ❖ Landfill (23.5%) is the main mode of garbage disposal; ❖ 22.3% of households opt for the wild dump; ❖ 8.2% of households in this province throw garbage on public roads and pollute the environment; ❖ 1.1% of households do not have toilets; ❖ Most existing toilets are holes in the plot.
Agriculture	Urban agricultural production mainly includes vegetable and food crops (vegetables, cassava, beans, bananas, groundnuts).
Type of waste produced and their disposal	The majority of waste is solid and liquid waste from households and markets. Their evacuation is done: - In road services (14.9%); - In public roads (8.2%); - At incineration sites (13%); - Composting sites (9.7%); - In landfills (23.5%); - In wild dumps (22.3%) (UNDP, 2009).
Breeding	The breeding of pigs and poultry is traditional. The animals are left stray and often are the source of the conflicts between the inhabitants.
Fishing and fish farming	Fishing is mainly practiced by people living along the Congo River; it is of the traditional type. The fish farming is much more practiced by the private ones in the peripheral zones of Kinshasa.
Main areas of employment.	In Kinshasa, poverty is important (41.6% in 2005); The population is young, with half to less than 20 years old and high unemployment (15.0% in 2005); The informal non-agricultural sector is highly developed (almost 1 million jobs); There are nearly 875,500 informal production units (UNDP, 2009).

In addition to the major issues mentioned above, there are two other issues:

- Road safety and the fight against waterborne diseases, ARIs and STIs / HIV-AIDS;
- Preservation of the living environment and the circulation of goods and people.

C. INSTITUTIONAL AND LEGAL FRAMEWORK FOR THE IMPLEMENTATION OF THE PROJECT

Documents that define relevant policies for environmental management in the DRC include:

- The National Environmental Action Plan (NEAP) developed in 1997;
- The National Strategy and Plan of Action for Biological Diversity developed in 1999 and updated in October 2001;

- The National Action Plan for Adaptation to Climate Change (NAPA) developed in 2007;
- The Growth and Poverty Reduction Strategy Paper (GPRSP: 2011-2015);
- The National Health Development Plan (PNDS: 2011-2015);
- The Framework Strategy for Implementation of Decentralization (CSMOD, July 2009).

Legislative and regulatory aspects include:

- Law n ° 11/009 of 09 July 2011 laying down fundamental principles relating to the protection of the environment;
- Decree No. 14/019 of 02 August 2014 laying down the operating rules of the procedural mechanisms for the protection of the environment;
- The regulatory and legislative texts which are the Labor Code, the Forest Code, the Mining Code and the mining regulations, the ordinance-law n ° 71-016 of March 15, 1971 relative to the protection of the cultural goods and the law 73 -021 of July 20, 1973 laying down general system of property, land and real estate system.
- The implementation of the project will comply with the requirements and provisions of these texts. In addition, this study was conducted taking into account the World Bank's environmental and social safeguard policies. It is more specifically OP 4.01 "Environmental Assessment"; OP 4.12 "Involuntary Resettlement" and OP 17.50 "Dissemination and Information"; and then environmental and social conventions ratified by the DRC.

At the institutional level, the implementation of the project is led by:

- The Ministry of Energy and Hydraulic Resources, which manages them;
- The Water Projects Implementation Unit (CEP-O / REGIDESO), which is responsible for the implementation of the project and has an Environment & Social Sub-Cell (SCES) within it;
- The Congolese Environment Agency (ACE), which is the structure of the Ministry of Environment and Sustainable Development (MEDD), coordinating the environmental and social assessment process under Decree No. 14 / 030 of November 18, 2014;
- The other actors, in particular: the Provincial Coordination of the Environment (CPE), the Urban Environment Bureau (BUE), the Health Centers and the Control Missions (contractual supervision of works).

D. CONSULTATIONS CARRIED OUT

The targets of this consultation for awareness and information on the project were:

- The population directly concerned by project.
  There are 641 REGIDESO / Kinshasa Subscribers.
  This consultation made it possible to inform them about the project, to gather their opinion and to ask for their implication during the works.
- The population indirectly concerned by the works.
  These are sellers, locals and tenants.

Since this work will be carried out along the avenues, the vendors occupying the sidewalks, the displays and the makeshift markets have been sensitized and even warned of the possibility of relocating their business during the works.

E. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

E.1. Measures to improve positive impacts resulting from the implementation of project activities

Project phase	Risk-source activities	Assigned component (Receiver)	Potential positive impacts	Bonus measures
Preparatory phase	Local recruitment of workers.	Socioeconomic, Human.	Job creation	• For the recruitment of all-works, give preference to residents.
	Land preparation and clearing.	Socioeconomic, Human, Health and security	Improvement of sanitary conditions and hygiene.	• Evacuate garbage cans located in the work areas.
Work execution phase	Transport of materials for execution of works;	Socioeconomic, Human, Health and security	Creation of jobs (Ir BTP, Polytechnicians, Drivers, Mechanics, and all works) and indirect renewal of private property damaged by the works.	• For the recruitment of labor, favor the local workforce and the female workforce. In particular, for all-works, give preference to nationals of the local community.
	Handling and storage of materials;			
	Validation of the lines of the pipes;			
	Opening of pipe laying trenches;			
	Laying and joining trench lines in which pipes are laid.			
Operation phase	Commissioning of project facilities Circulation of maintenance vehicles and monitoring.	Socioeconomic, Human, Health and security	- Improved access to drinking water; - Improvement of sanitary and hygienic conditions; - Reduction of waterborne diseases; - Increase of turnover of REGIDESO; - Reduction of water chores; - Preservation of biodiversity.	• Sensitize the population to the proper use of the hydraulic infrastructures; • Empower local associations and ONG to manage community standpipes.

E.2. Measures to mitigate negative environmental impacts resulting from the implementation of project activities

Project phase	Risk-source activities	Assigned component (Receiver)	Potential positive impacts	Reduction measures
Preparatory phase	Land preparation and clearing; Construction of material storage depot.	Flora and landscape	Slaughter of several fruit and ornamental trees.	• Replant fallen trees once work is complete; • Minimize site disturbance during construction by promoting non-mechanized work.
Work execution phase	Transport of materials in the project site;	Air and landscape	Atmospheric pollution	• Reduce dust emission by: - Use of wetting materials; - Use of water jets; - Slowing down of work. Use mascaraed for protection against slack, fragment ect. - Respect the technical specifications of vehicle and machine manufacturers to minimize air pollution.
	Validation des tracés des conduites ; Ouverture des trachées de pose des conduites	Ground, human	Contamination of soil and water following the disposal of solid and liquid waste by vehicles and construction equipment.	• Choose the sites of the bases-lives in a concerted manner with the national and local environmental authorities; • Inform stakeholders of all constraints necessary for the collection, storage and disposal of waste; • Have warehouses near the site to store the cuttings to avoid polluting sewers, streams, streets and adjacent properties; • In case of accidental dispersion of waste, be able to inform the services concerned and apply appropriate restoration measures; • Implement a good technique for the collection and disposal of solid and liquid wastes, including oils and lubricants.

	Backfilling and compaction of pipe laying trenches.	Ground, Human	Contamination and erosion of the soil.	• At the end of the works, restore the sites disturbed by the works. • Perform anti-erosion work to protect the facilities of the AEP system.
	Commissioning of the project facilities. Circulation of maintenance vehicles and monitoring.	Air	Atmospheric pollution	• Comply with the technical specifications of the manufacturers of maintenance and monitoring vehicles to minimize air pollution.

E.3. Measures to mitigate negative social impacts resulting from the implementation of project activities

Project phase	Risk-source activities	Assigned component (Receiver)	Potential positive impacts	Reduction measures
Preparatory phase	Land preparation and clearing; Construction of material storage depot.	Socioeconomic, human.	Stopping certain economic activities on certain areas of the project right-of-way.	• Compensate people whose activities will be paralyzed; • Choose wisely project sites in order to avoid temporary or permanent relocations of populations.
Work execution phase	Transport of materials in the project site; Handling and storage of materials.	Socioeconomic, human.	Temporary closures of roads; Difficult access due to traffic jams.	• Inform the public in advance about temporary road closures; • Post signs or notices to signal work in progress; • Establish traffic control around project areas to avoid road jams and accidents; • Specify traffic routes and signal secondary roads in case of road closures; • Limit work spaces to minimize closure of sections of main avenues; • Outside working hours, keep all gates and signs in place at work sites, with lights or signs on at night, to prevent vehicular and pedestrian traffic; • If possible, install the walkway separately from the vehicle traffic lane; • Define speed limits;

				• Put in place, as far as possible, the one-way traffic system; • Use qualified controllers for traffic control and management; • Define loading / unloading areas for vehicles and the storage location of materials; • Park project vehicles only in designated parking areas or areas.
	Validation of pipe layouts Opening of the tracheas laying pipes.	Socioeconomic, Human, Health and Safety.	Difficulties of access; Insecurity of pedestrians and workers; Sound pollution (noise).	• Implement : - Temporary fences around work areas; - Bridges on trenches, ramps and temporary access roads; - the control panels. • Select machinery and other equipment with crude reduction system; • Regularly maintain these machines according to the technical specifications of the manufacturer of the control.
	Laying and joining trench pipes. Backfilling and compaction of pipe laying tracheas.	Socioeconomic, Human, Health and Safety.	Health and safety risk.	• Only use machines and equipment in good working order with regard to the manufacturer's specifications; • Organize training sessions and guidance on the health and safety of workers before and during the course of activities; • Establish a health and safety plan for workers; • Provide workers with personal protective equipment; • Provide workers with drinking water; • Reduce dust emission by: - Use of wetting materials; - Use of water jets; - Slowing down of work. • Minimize or completely eliminate mosquito breeding sites; • Provide human waste disposal facilities;

				• Prohibit unauthorized access to key project sites during rest periods.
			Accidents and damage	• Train workers on the operation of machinery and equipment available; • Place warning messages and directional signs in the various construction sites; • Ensure that the driving code is followed; • Develop an action plan on site security; • Provide a first aid kit and drinking water on all sites; • Establish the incident log of all accidents that occur on the project site, and implement measures to prevent and correct them; • Comply with the Workers' Compensation Act and union agreements; • Repair any damage to the private property of the surrounding population.
Operation phase	Commissioning of project facilities Circulation of maintenance vehicles and monitoring.	Socioeconomic, Human, Health and Safety.	Risk of spread of HIV / AIDS.	• Raise awareness among workers and surrounding communities about the prevention and management of HIV / AIDS; • Use surrounding clinics to provide workers, surrounding communities and vulnerable people: - Advice and voluntary tests; - antiretrovirals.

E.4. Implementation schedule mitigation measures for negative impacts and accompanying measures

Project phase	Potential negative impacts	Reduction measures	Tracking indicators	Responsibility for execution	Achievement calendar	Responsibility for follow-up	Unit	Amount	Unit cost	Total cost	Project Share (CEP-O)	Part PGES Building
Preparatory phase	Felling of trees	Reforest	Rate of growing plant cover	Contractor	During the realization of the works	MEDD/ACE/SE [1]	Ha	12	1 200	14 400	0	14 400
Work execution phase	Pollution by solid and liquid waste	Set up waste collection bins		Contractor	Before start-up	MEDD/ACE/SE	ferry	40	20	800	0	800
		Popularization and subsidy of VIP toilets	Number of rehabilitated toilets	Project	During the realization of the works	MEDD/ACE/SE	Toilet	40	200	8 000	8 000	0
	crimes	Notify the competent authority (police, prosecutor's office, etc.)	Number of reported crimes and complaints	Projet	Monthly	MEDD/ACE/SE	Month	12	100	1 200	1 200	0
	Use of children for work	Verification of identity documents at recruitment	Employee data recorded	Projet	Quarterly	MEDD/ACE/SE	Month	3	100	300	300	0
	Noise	Use low noise gear	Number of complaints	Contractor	Monthly	MEDD/ACE/SE	Month	12	10	120	0	120
	Air pollution by dust and smoke	Practice the technical revision of the machinery	Certification technical revision, air quality.	Contractor	Number of reviews	MEDD/ACE/SE	Revision	4	500	2 000	0	2 000

[1] SE: Environmental Supervisor

Project phase	Potential negative impacts	Reduction measures	Tracking indicators	Responsibility for execution	Achievement calendar	Responsibility for follow-up	Unit	Amount	Unit cost	Total cost	Project Share (CEP-O)	Part PGES Building
	Disturbance of sites by works	Rehabilitation o sites (development and implementation of RAP, establishment o 50 temporary access ramps)	Comparison of site photos before and after works	Contractor + Project	Before, during and after the execution of works	MEDD/ACE/SE	Flat rate	1	359 000[2]	359 000	355 000	4 000
	Discrimination	Distribute employment opportunities equally between men and women	Number of employees by their gender	Contractor	Quarterly	MEDD/ACE/SE	Month	3	20	60	60	0
	Sexual harassment and SGBV	Notify the competent authority (police, public prosecutor's office, etc.)	Number of complaints	Contractor		MEDD/ACE/SE	Month	3	20	60	60	0
	Threat to health and safety	Raise awareness among employees and the local population on the prevention and fight against potential diseases.	Number of awareness sessions	Contractor		MEDD/ACE/SE	Month	12	100	1 200	0	1 200

[2]This amount of $ 359,000 includes:

- The development of the PAR: $ 220,000

- RAP implementation: $ 135,000

- Construction of temporary access rappels during construction: $ 4,000

Project phase	Potential negative impacts	Reduction measures	Tracking indicators	Responsibility for execution	Achievement calendar	Responsibility for follow-up	Unit	Amount	Unit cost	Total cost	Project Share (CEP-O)	Part PGES Building
	Accidents and loss of life	Distribute and require workers to use personal protective equipment.	Number of Kits distributed	Contractor	During execution of works (and during operation for certain equipment	MEDD/ACE/SE	Kit	200	300	60 000	0	60 000
		Raise awareness among employees and the public	Number of accidents and damage observed	Contractor	Monthly	MEDD/ACE/SE	Month	12	200	2 400	2 400	0
		Laying signs or temporary notices to indicate work in progress	Number of posted signs	Contractor	During execution of works (and during operation for certain equipment	MEDD/ACE/SE	Panels	250	50	12 500	0	12 500
	Damages to private property	Repair the damage caused	Number of complaints registered	Contractor	Monthly	MEDD/ACE/SE	Month	12	500	6 000	6 000	0
Operation phase	HIV / AIDS	Distribute condoms and educate workers and the public	Number of companions on the transmission of STDs	Contractor	Before putting	MEDD/ACE/SE	Month	8	300	2 400	0	2 400

			in general and HIV / AIDS in particular;									
Subtotal:										470 440	373 020	97 420

E.5.1. Environmental monitoring program

Tracking element	Technical indicator	Nature of follow-up activities	Periodicity	Responsibility for follow-up	Tracking indicator	Unit	Amount	Unit cost	Total cost	Project Share (CEP-O)	Part PGES Building
Quality of water resources	Physical quality and	Monitoring physico-chemical and bacteriological analyzes	Quarterly	MEDD/ACE/ analysis laboratory	DCO et DBO[3]	Month	3	600	1 800	1 800	0
Population health	microbiological	Monitoring awareness	Before and after the work	Sanitary district	Number of	Frequency of follow-up	2	250	500	500	0
Fauna and flora	Rate of increase of cases of waterborne diseases, STDs and others	Monitoring reforestation and reintroduction of extinct animal species	Quarterly for the duration of the project of one year	MEDD/ACE	MST case	Month	3	800	2 400	2 400	0
soils	Disappearance of fauna and flora	Monitoring of findings and physico-chemical analyzes	Quarterly	MEDD/ACE/ analysis laboratory	Rate	Month	3	500	1 500	1 500	0
Subtotal:									**6 200**	**6 200**	**0**

[3]DCO: Chemical oxygen demand
BOD: Biological oxygen demand

E.5.2. other activities

Measures	Total cost	Project Share (CEP-O)	Part PGES Building
Training	12 000	9 000	3 000
Sensitization	6 000	4 000	2 000
Environmental and social audit	47 560	47 560	0
Subtotal	**65 560**	**60 560**	**5 000**

E.6. Risk Management Plan

Risk-source activities	Associated risk	Urgent measures	Responsibility surveillance	Followed
Land preparation and clearing	Accidents, injuries and / or loss of life	▪ Raise awareness among workers	BdC	MEDD/ACE
Construction of a material storage depot	Accidents, injuries and / or loss of life, noises	▪ Raise awareness among workers ▪ Provide workers with personal protective equipment (PPE)	BdC	MEDD/ACE
Recruitment of workers	Violence by job seekers not recruited	▪ Give priority to the local workforce	BdC	MEDD/ACE
Transport, handling and storage of the materials needed to carry out the work	Accidents, injuries and / or loss of life, disturbance of residents, disruption of road services	▪ Raise awareness among workers ▪ Provide workers with personal protective equipment (PPE) ▪ Use less noisy machines.	BdC	MEDD/ACE
Validation of pipeline layouts	Quietness of local residents, disruption of road services	▪ Sensitize the local population	BdC	MEDD/ACE
Opening of pipe laying trenches	Accidents, injuries and / or loss of life, disturbance of residents, disruption of road services	▪ Raise awareness among workers ▪ Provide workers with personal protective equipment (PPE) ▪ Use less noisy machines.	BdC	MEDD/ACE
Laying and joining of trench pipes	Accidents, injuries and / or loss of life	▪ Raise awareness among workers ▪ Provide workers with personal protective equipment (PPE) ▪ Use less noisy machines.	BdC	MEDD/ACE

Backfilling and compaction of tracheae laying pipes	Accidents, injuries and / or loss of life, disturbance of the residents	▪ Raise awareness among workers ▪ Provide workers with personal protective equipment (PPE)	BdC	MEDD/ACE
Maintenance and follow-up vehicle traffic	Quietness of residents	▪ Perform periodic technical overhaul of maintenance and follow-up vehicles	BdC	MEDD/ACE

F. COST OF PGES

Implementation of PGES is reputable by $ 542.200 total cost whose $ 439.780 are project lord (CEP-O) and $ 102.420 at loading of part PES-Building site this total cost is following like this:

N°	Measures or activities	Load project (CEP-O)	Cost ($US) load project (PGES- Building site)	Total
1	Negative impacts of reductions and accompanying measures	373 020	97 420	470 440
2	Environmental monitoring program	6 200	0	6 200
3	Other activities			
3.1	Training	9 000	3 000	12 000
3.2	Sensitization	4 000	2 000	6 000
3.3	Environmental and social audit	47 560	0	47 560
Total		**439 780**	**102 420**	**542 200**