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Advisory Review of ESIA for Inkisi Water Supply and Sanitation Project



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Advice by the Secretariat of the NCEA

Title	Advisory Review of ESIA for Inkisi Water Supply and Sanitation Project – Democratic Republic of Congo – ORIO12CG05
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List of abbreviations

ACE	Agence Congolais pour l'Environnement, local ESIA Agency
CDF	Congolese Franc
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
IFC PS	International Finance Corporation Performance Standards
NCEA	Netherlands Commission for Environmental Assessment
NTS	Non-Technical Summary
PAP	Project Affected Person
RAP	Resettlement Action Plan
REGIDESO	National Water Authority
RVO	Netherlands Enterprise Agency, financier of project
SNV	International NGO, initiator of the project
ToR	Terms of Reference
VIP latrines	Ventilated Improved Pit latrines
WASH	Water, Sanitation and Hygiene
WB EHS	World Bank Environmental, Health and Safety Guidelines
WTP	Willingness to Pay

1. Introduction

1.1 Project description

The 'Water Supply and Sanitation project' in Inkisi, Democratic Republic of the Congo, contains two main components: provision of potable water and improvement of sanitation facilities. The aim of the project is to improve the existing water supply to the growing population of Inkisi, and to improve and expand the existing sanitation facilities, both public and private. The project is located in the urban agglomeration of Inkisi which includes the Inkisi River and a botanical garden (where part of the project will be located). According to the latest census (2015), Inkisi had a population of 127.000 people; this number is expected to rise to more than 220.000 by 2030.

The potable water component aims to supply water to Inkisi. This will be done by constructing and rehabilitating several boreholes in a water field next to the river. The water will be extracted from an aquifer, which draws water from the river as well as from natural precipitation. A water treatment plant will be constructed close to the water field, as well as three water towers on elevated areas in the city. From there, a pipeline network will be constructed which will lead to 135 standpipes and 1020 household connections. The location of the standpipes and household connections is not specified in the ESIA report.

The sanitation component includes the construction or rehabilitation of 212 public and 225 household latrines. The exact location of the household latrines is not given. The sanitation component also includes the construction of a sludge treatment plant and mentions transport of excreta from the latrines to the sludge treatment plant by vacuum trucks or manually operated pumps. Lastly, the sanitation component includes one part-time job for the cleaning of sanitation blocks at schools; it is not clear if this job will need to take care of all 22 public latrine locations.

SNV, an international NGO, is the initiator of the project, in cooperation with the local water authority, REGIDESO. This authority is also responsible for most of the management of the project (such as the collection of sludge and the collection of water fees) during the implementation phase.

The Netherlands Enterprise Agency (RVO) has been requested to subsidise 80% of the costs (total costs are estimated to be 25 million euros). RVO has requested the Netherlands Commission for Environmental Assessment (NCEA) to conduct an independent review of the ESIA that has been prepared for the project. The local environmental agency, ACE, has granted a *certificat de conformité environnementale* for the project based on the ESIA that was delivered in 2016.

1.2 Approach by the NCEA

The NCEA was asked by RVO to review the ESIA report, whose final version was received by the NCEA on 15 February 2019. The main purpose of this review was to assess the quality of the ESIA report and process and its appropriateness to support decision making on the project. In this report, the NCEA presents her observations and recommendations for improvement.

To conduct this review, the NCEA has assembled a working group consisting of a chair, a technical secretary, and three experts on the following topics: social impacts, hydrology and water, sanitation and hygiene (WASH). The ESIA has been reviewed at a distance, meaning that no field visit was conducted. This limits the degree and the depth of the NCEA's findings. These limitations have been indicated in the text when applicable.

The document reviewed by the NCEA is the definitive version of the ESIA, 2019. The NCEA has also taken note of the following supplementary documents on their relevance regarding (mitigating) potential negative impacts:

- Annex 1: ToR, validated;
- Annex 2: Hydrological study;
- Annex 3: List of consulted persons;
- Framework for Relocation/Resettlement and Compensation, 2016;
- Study on affordability and willingness to pay;
- Study on groundwater effects;
- Project Plan, updated version 2017.

For the review of the ESIA report the NCEA used the following reference framework:

- Congolese legislation on ESIA;
- IFC Performance Standards (IFC PS);
- WB Environmental, Health and Safety (EHS) Guidelines.

Note that the NCEA does not express an opinion on the feasibility or acceptability of the project itself, but comments on the quality and completeness of the ESIA report, in line with Congolese and international guidelines.

Chapter 2 presents a summary of the essential shortcomings and other observations. An essential shortcoming means that a proper decision on the project cannot be taken as long as the issue has not been remedied. The recommendations listed as other observations can be remedied after project approval. Chapter 3 explains the essential shortcomings of the ESIA in further detail and presents recommendations by the NCEA. Chapter 4 includes other observations and recommendations. Annex 1 gives a brief overview of the relevant documents that have been drafted. Annex 2 includes further detailed observations on the Affordability and Willingness to Pay (WTP) study. Note that the NCEA has taken note this study and has made some observations, but it has not conducted a full review of the Affordability and WTP study.

2. Summary

The NCEA has nine main observations on the ESIA under review; five observations on essential shortcomings and four other observations.

Essential shortcomings

1. The sanitation component, and any potential associated impacts, are not sufficiently described in the ESIA. Consequently, the NCEA cannot determine to what degree these potential impacts could be addressed within the project design and the Environmental and Social Management Plan (ESMP). These components should be better described before project approval can be granted. The NCEA has identified three main areas of concern:
 - The risk of **liquid waste / excreta** entering the environment cannot be fully understood. The household latrine-type proposed by the project (VIP latrines) is easily affected by flooding. In addition, the locations of household latrines are not specified, except that they will be located in low land, flood-prone areas along water sources (such as the river) and public areas. The potential negative impacts of flooding on health are not described in the ESIA, nor are mitigation measures included.
 - Impacts related to the **collection and transport of sludge**: the ESIA does not adequately address potential risks such as non-existing or non-functional pit emptying services, the health risks to manual pit emptiers or health risks caused by overflowing pits in potentially sensitive locations (flood-prone and public areas). The ESIA also does not discuss financial and institutional management of these parts of the sanitation component.
 - The ESIA does not address the capacity to establish, design, manage and finance the **sludge treatment plant**. If disposal and treatment of sludge are not satisfactorily managed, the collected sludge could be inadequately treated and could spill into the environment. The ESIA is currently lacking criteria for the location choice for the treatment facility and, more importantly, measures to ensure adequate treatment and prevent spillage and other negative impacts on public health.
2. The method of **water treatment** is not discussed in enough detail in the ESIA. The water in the boreholes will go through a natural filtration process through sand. However, the specifics on filtration are not discussed. The ESIA also does not provide enough detail on how the pumped water is tested and subsequently treated before it is distributed, nor if there is capacity to do so. Without field visit, the NCEA cannot be certain that this is adequately considered.
3. The **resettlement action plan (RAP)** is lacking in information on several relevant aspects (such as a proper grievance mechanism), and there is no evidence of a consultation of Project Affected Peoples (PAPs) related to the RAP. The way the ESIA & RAP are currently formulated, there is a risk that the impacted people will not be sufficiently compensated or that the resettlement does not encompass all who are eligible. The NCEA advises that the RAP is redone according to the requirements of IFC PS5.
4. The **consultation with local stakeholders** needs to be improved. It is poorly documented and might be out of step with the current project design and ESIA, as no new consultations seem to have been held since 2016. Without a field visit, the NCEA cannot be certain relevant stakeholder concerns have been taken into consideration in the ESIA. The updated ESIA does not refer to the *enquête publique*, which is required by Congolese law and should have been conducted after the earlier version of the ESIA was approved by local environmental authorities.

5. The current document is currently does not present a credible approach **to environmental and social management of the impacts** identified and creates the risk that some responsibilities are not taken up. The ESMP is not actionable enough and does not provide operational details about impacts management, and rather defers this until after project approval to the contractor. The ESMP does not include enough details on how it will be monitored, as is required by IFC PS 1 (guidance note §80), nor does it include a description of REGIDESO's and ACE's capacity to monitor and follow-up the ESMP. Last, especially for the sanitation component the impacts are not adequately discussed. Before the project is approved there must be guarantees that all responsibilities for monitoring, maintenance, and capacity building are taken care of.

Other observations

6. The **(geo) hydrological** study (and its representation in the ESIA) presents the information adequately and presents enough details about the water supply and geological circumstances related to water quantity. Based on the hydrological study submitted by the proponent the risk of negative impacts on the water supply caused by increased water-extracting industrial activities (as is foreseen by the ESIA) seems to be limited.
7. During the **drafting process** the ESIA report and its supporting documents became increasingly fragmented, leading to a loss of consistency and unclarity on how up-to-date the information is. This also means that the ESIA information is difficult to access and to use for (local) decision makers and other stakeholders. The ESIA should be completely rewritten and be made available in French to ensure consistency, completeness and accessibility to local stakeholders.
8. NCEA's concerns about the **financial sustainability and equity** of the project, although discussed in the Affordability and Willingness to Pay (WTP) and §5.5 of the ESIA, are not alleviated. The project would benefit from a more extensive analysis of the (financial) conditions required to ensure that the sanitation components are sustainable. If long-term sustainability of this component is not ascertained, badly maintained latrines could lead to serious health risks. For the water component, although the study uses relevant and recent secondary sources, various non-financial elements such as quality and quantity are missing. Special attention should be given to monitoring the access of the poor to water and sanitation; this should be included in the ESMP.
9. The effects of the **increased volumes of wastewater** (grey water) caused by the project are not adequately discussed in the ESIA. Without a field visit the NCEA cannot ascertain the quality of the sewage system of Inkisi and its capacity to handle the increased volume of grey water. There are health risks associated with increased amounts of grey water (see EHS Guidelines) or stagnant water which could lead to negative health impacts caused by mosquitoes.

3. Essential shortcomings of the ESIA

3.1 Sanitation

The sanitation component is not sufficiently described in the ESIA. This can lead to negative impacts in case of an inadequate design or management of the sanitation process. This also means that certain impacts cannot be foreseen and thus mitigated. In the description of the impacts on health during the exploitation phase (§5.3.2.2, table 5.7) no mention is made of the health risks of non-existent, inadequate design and access / use of sanitation infrastructures and services. Specifically, the NCEA has identified three main areas of concern:

1. Liquid waste / excreta from latrines

The risk of untreated liquid waste / excreta from latrines entering the environment and causing negative impacts on health is not sufficiently discussed in the ESIA. The locations of *public* latrines are specified but not shown on a map, which makes it difficult to evaluate the risks of untreated liquid waste / excreta. Public latrines include an outlet, which directs the effluent to an infiltration field. An infiltration field next to or in a public place (like a market, school or health clinic) poses health risks. Because the location choices are not made clear (on a map), the NCEA cannot judge whether these health risks have been adequately discussed in the ESIA.

For *households*, the ESIA states that latrines will be located in low land, flood-prone areas along Inkisi river banks and along other river tributaries crossing Inkisi (p 29). Here, the project proposes the construction of VIP-latrines, which are especially vulnerable for overflowing during flooding. The reasoning behind the type of latrine, including the risks that result from these choices, is not explained in the ESIA, nor are mitigation measures discussed in the ESMP. The ESIA should discuss other alternatives for latrine type, such as a raised (above flooding level) urine-diverting toilet on top of a dehydration vault. Another option would be a well-constructed septic tank connected by extended pipes to an infiltration field far away from the flood prone area.

The NCEA recommends to further specify the location of the latrines, making use of a map (showing the Inkisi river and tributaries and their flow direction, as well as the locations of the boreholes for water supply). When the facilities are located in risky areas (such as public places, flood-prone areas or close to the boreholes), measures to prevent liquid waste spillage should be included in the ESMP. The NCEA recommends explaining the choice for the VIP-latrines and septic tanks in the chapter on the project alternatives, and to discuss the risks of overflowing in the ESMP.

2. Impacts related to the collection and transport of sludge.

The ESIA does not adequately address all risks such as non-existing or non-functional pit emptying services or the health risks to manual pit emptiers. If thorough management and emptying of public toilets is lacking, there is an increased risk of negative impacts on health due to overflowing septic tanks.

The WB EHS Water and Sanitation Guidelines recommend “to consider provision of systematic, regular collection of fecal sludge and septic waste. (...) Provision of collection services, or

ensuring that collection services are available, is of primary concern. Effective design and operation of a sewerage system... can minimize the potential for community exposure and health impacts from raw wastewater and sludge collection.” The WB EHS Guidelines include measures that need to be taken to minimize the risk of negative impacts on the health of staff working in sludge collection and treatment. Although the ESIA states that the EHS guidelines will be applied, this is not subsequently detailed (especially in the ESMP).

The NCEA recommends describing in further detail how the transport of sludge from the latrines to the treatment plant will be managed. Potential negative impacts and mitigation measures that should be discussed in the ESIA and ESMP include:

- Health risks for manual pit emptiers (including reference to the EHS Guidelines),
- Health risks caused by VIP latrine pits and septic tanks not emptied on time.

3. Management of sludge treatment plant

WB EHS 3 states that “recommended strategies for the management of solid wastes include: Select appropriate sludge treatment technologies... [ensure] available resources for capital expenditures, training, operations and maintenance; availability of skilled operators, maintenance personnel, etc.” However, the ESIA doesn’t mention anything about the operation of the sludge treatment plant. The NCEA is concerned about the capacity of REGIDESO to establish, design, manage and finance the facility. Sludge from the latrines needs to be treated well so that it can be reused or safely disposed. If the sludge from the latrines is not satisfactorily managed (or not managed at all), the liquid sludge could spill into the environment, leading to negative impacts on health.

IFC PS3 states that “Where waste generation cannot be avoided, the client will reduce the generation of waste and recover and reuse waste in a manner that is safe for human health and the environment.” However, recovery and reuse are not referred to in the ESIA. This is a missed opportunity, as this could be included in the description of the sludge treatment facility. REGIDESO needs to have the capacity to manage also this aspect of the sanitation component. Development of REGIDESO’s capacity to conduct hygiene awareness raising for latrine users is also not included in the ESMP.

Last, the choice for the sludge treatment plant’s location is not explained in the ESIA, even though if it is located in populated areas and it is not properly managed, it could lead to negative impacts on health.

The ESIA (and ESMP) should include a description of the capacities of REGIDESO to manage the whole sanitation cycle. This includes the technical aspects of raising hygiene awareness, building toilets, pit emptying, transport, disposal and treatment of excreta, as well as knowledge of and experience with financial, institutional, environmental and social aspects of all elements of sanitation. It is also recommended to describe existing services and how they will be able to deal with the changes in the sanitation system. Capacity development and continuous back-up support of REGIDESO should be included in the ESMP, including a budget (see also the NCEA’s comments in 3.5 (ESMP)). Finally, the location of the sludge treatment plant should be better described in the ESIA.

3.2 Water treatment

The method of **water treatment** is not discussed in enough detail in the ESIA. The ESIA mentions that water in the boreholes will go through a natural filtration process through sand. However, the ESIA does not describe the sediment levels in the Inkisi river, nor is the sand layer which is supposed to filter the water addressed clearly in the document. It is therefore difficult to draw conclusions about the quality of water that is extracted from the aquifer.

If the natural filtration of the water in the boreholes is limited, a more rigorous (and expensive) treatment in the water treatment plant would be necessary. The same might be necessary if there are cumulative impacts on water quality, caused by new activities upstream (such as new industries upstream) which may pollute the river. On this point the ESIA also does not provide enough detail on how the pumped water is tested (daily or weekly) and subsequently treated before it is distributed, nor does the ESMP describe the capacity of REGIDESO to treat the increased water volumes. The ESIA also does not describe whether there will be external water quality control. Without field visit, the NCEA cannot be certain that water treatment is adequately considered.

The NCEA recommends including more details on the water treatment in the ESIA (including external water quality control) and taking into consideration in the ESMP the potential extra costs that might be necessary to make the water clean enough to meet the Congolese/WHO standards (as described in the ESIA). The ESMP should also include, if necessary, budget to develop the capacity of REGIDESO to test and treat the increased water volume.

3.3 Resettlement Action Plan

Experience tends to show that properly managing the RAP is a sine qua non to avoid risks for the project while protecting PAP interests. The Resettlement Action Plan (RAP) is not sufficiently described, neither in the separate report, nor in the ESIA itself. The NCEA has identified three main areas of concern:

1. Consultations for the RAP

The ESIA states that consultations have been done, but these are not described well enough. There is no list of people who have been consulted specifically for the RAP, and although the RAP refers to minutes, they are not attached. There is no information provided about the socio-economic background of these PAPs nor their level of vulnerability. Relevant project information related to resettlement is not presented adequately; for example, there is a discrepancy between page 16 of Annexe 6, where 7 plots are indicated in Kintanu to set up the new water tank, while only 2 plots are mentioned page 37. This causes uncertainties about whether the number of PAPs indicated is correct.

The NCEA is not confident that the number of PAPs in the RAP adequately represents the situation on the ground. Without a field visit, the NCEA cannot ascertain whether the number represented in the RAP is accurate. The NCEA recommends conducting an update for the RAP with proper census and cut-off date, as required by IFC PS 5.

The following information is required at minimum in the RAP: a description of all relevant elements of the project (water treatment plant, transmission network, latrine locations, etc.), the nature of the potential impact on land or structure, more precise localization (using GPS coordinates maps and photos), name and contact details of the PAPs/organisations affected in the case of public infrastructures, evaluation of the impact, and a discussion on the compensation calculations and levels.

2. Grievance Mechanism

In general, the grievance mechanism should not only cover the resettlement aspects but also any other issues linked to the project impacts during the project life cycle (as required by the IFC PS1). However, this ESIA lacks detail about the operational aspects of the Grievance Mechanism. On page 50 of the RAP a grievance mechanism with reference to an Implementation Steering Committee by REGIDESO is mentioned, while in ESIA page 70 states that the grievance mechanism will be set up later by the contractor. There is also no mention of a proper supervision/monitoring by the proponent to ensure that the mechanism is compliant with the IFC performance standards and whether it is effective.

The ESIA suggests a informal grievance mechanism involving a third party (NGO/CSO) with a more formal recourse process. This is acceptable since, as required by the IFC PS 5, the grievance mechanism should be scaled to the risks and adverse impacts' importance.

The NCEA recommends including in the ESIA how the grievance mechanism will be set up, implemented and monitored. The grievance mechanism should fulfil the requirements of IFC PS 5, meaning it should be transparent and cost-free for users, be well-documented and publicize the complaints process, accessible and safe, culturally appropriate, predictable (including a timeline), consistent, include a recourse option and have clearly defined responsibilities of all parties (proponent, contractor, and others). The mechanism should cover all the issues (identified or unforeseen yet) related to the project during its life cycle.¹

3. Compensation

The work done so far can be considered exploratory and the shortcomings in the information displayed (quality, quantity, presentation) do not provide enough confidence in the process and reliability of the information generated. The explanation for the level of compensation is often lacking (the RAP refers to minutes which are not included). It is not possible to infer from the compensation amounts given if these represent compensation at replacement cost, as required by the IFC PS5. Moreover, in the report, there is no indication of owners' approval of the compensation levels. The official *procès verbal*, provided in the RAP, covers only agriculture activities. Other impacted activities like stalls in the market are not included. They are only indicated in table 5.8 of the ESIA, but in this table there is no reference to compensation.

¹ See also IFC PS1 and IFC's Good practice note: addressing grievances from project-affected communities, 2009.

Since the 2016 RAP, the data has been updated and the total cost of resettlement has almost doubled from 23 million CDF to 44 million CDF. It is, however, not clear why this change has been made and no rationale is generally given for any compensation calculation. It is uncertain whether this amount is sufficient to compensate PAP losses due to the project. The ESMP mentions that provisions must be made to restore livelihoods (as is required by IFC PS5), but no financial provisions for this are included. Resettlement costs are not included in the ESMP.

The NCEA recommends that a proper process of land acquisition and compensation for any loss should be undertaken according to Congolese legal requirements and IFC PS 1 and 5. It should be documented accurately using clear maps and photos. The rationale behind any evaluation of compensation costs should be made explicit for the PAPs and clearly explained and documented in the report. The compensation and livelihood restoration costs should be included in the ESMP budget.

3.4 Consultation with local stakeholders (separate from RAP process)

The stakeholder engagement that has taken place within the ESIA is too limited. The NCEA cannot be certain that the process was conducted according to the relevant standards as this has been poorly documented. No information is provided on the overall process, on the stakeholder choice, their socioeconomic characteristics, consultation tools used, and no minutes are provided. The output of the consultation is very limited and not very informative. In the list of stakeholders, no associations of water users are included² nor the NGOs who are engaged with the institutional setting of water management (mentioned on p90 of the ESIA). Furthermore, the consultation is outdated (no new consultations have been held since 2016), so the situation might have changed in the meantime. The lack of consultations is a concern, as consultations can help better assess the situation, understand the local actors' dynamics and can inform current decisions on, for example, the locations of the new latrines.

According to the ESIA, various aspects of the project will be determined at a later stage. This includes the location of the latrines that will be constructed and some of the water points. The project could profit from the inputs of the stakeholders in the choice for these locations. Involving NGO's, water users and other stakeholders in further discussion can help in the institutional settings around stand pipes management.

Congolese legislation³ requires that a new consultation based on the ESIA and ESMP results should be undertaken with a clear documentation of the process. This procedure is known as *enquête publique* where the results of ESIA and ESMP are to be presented and discussed with the stakeholders. The ESIA indicates (p 22) that a consultation regarding the ESIA results is going to be held and "To do this, public consultation workshops and restitution sessions will be organised in the concerned agglomerations." Even though the ESIA has been approved by local authorities in 2017, there is no evidence of any consultation held since then.

² Organisations of water users do exist in the capital Kinshasa, but without field visit the NCEA cannot determine whether these exist in Inkisi, nor if members have been consulted in a different capacity.

³ Titre 5 of Décret n° 14/019 du 02 août 2014 fixant les règles de fonctionnement des mécanismes procéduraux de la protection de l'environnement.

The NCEA currently does not have enough information to be confident that the concerns of the local population have been adequately addressed. According to IFC PS 1 stakeholder engagement should be done for any project. The extent and degree of engagement required by the consultation process should be commensurate with the project's risks and adverse impacts and with the concerns raised by affected communities. The NCEA recommends that before the project is implemented, the consultation is updated according to IFC PS 1.

3.5 Environmental and Social Management Plan (ESMP)

The ESMP should define its objectives and describe the detailed actions needed to achieve these objectives and timeframes, including how they will be achieved, by whom, when, with what resources, with what monitoring/verification, and to what target or performance level. It should as well describe capacities of the managing entity and define measures for capacity development, if necessary.

The current ESMP does not provide operational details about impact management. It gives only a list of mitigation measures but does not explain how this will be implemented and monitored. It is therefore not possible to judge whether these measures have the potential to be effective, appropriate and sufficient. Three main shortcomings are noted:

First, the capacity to monitor the implementation of the ESMP is not adequately described. According to the ESIA, a proper ESMP is supposed to be set up later by the contractor. As specified by IFC PS 1, when the implementation of the management plans is outsourced to contractors, the project's proponent "should also ensure that these contractors have the requisite knowledge, skills, and training to perform the work... in accordance with the management system and programmes and the requirements of the Performance Standards." (see IFC PS1 guidance note §80). When a third party has responsibility for managing specific risks and impacts and associated mitigation measures, it is important that the project's proponent is able to collaborate in setting up and monitoring such mitigation measures. The extent of monitoring should be commensurate with the project's environmental and social risks and impacts and with compliance requirements.

Second, for some impacts (mainly linked to IFC PS 2 (labour conditions) and PS 4 (community health, safety and security)) the mitigation measures are not included in the ESMP. The most important ones are: construction management (safety of neighbourhood, diffusion of information about construction planning, and avoidance of traffic disruption), WASH measures in the worksite to avoid water contamination, and the impacts on the river water quality (the numbers of samples to take should be included). More mitigation measures concerning activities taking place in the botanical garden must be included in the ESMP as well.

Third, mistakes are made in the budget for the ESMP. Money for compensation is not included in the table in chapter 6 (as mentioned in 3.3 (RAP)). Also, it is not clear if REGIDESO has enough financial capacity to conduct the monitoring of the ESMP.

Without guarantees that monitoring and management aspects are included in the ESMP, there is a risk that negative impacts are not mitigated. The NCEA recommends that RVO pays special attention to the (contractual) delegation of these responsibilities. Because of the delegation of these responsibilities, capacity development of REGIDESO to monitor the contractor's compliance is recommended. Also, clear agreement must be ensured on the budget available for the mitigation measures. See 3.1 (sanitation) for the various management issues of the sanitation component that should be included in the ESMP.

4. Other observations

4.1 Hydrological Study

The (geo-) hydrological study presents the information adequately and presents enough details about the water supply and geohydrological circumstances related to water quantity.

The project will draw its water from boreholes next to the river, after a natural filtration process through sand. Compared to the water supplied by the river and precipitation infiltration, the increased extraction of water foreseen by the project is minimal. Even if a large increase in water extraction takes place (such as an increase in water-consuming industries, as mentioned by the ESIA), there seems to be no risk that too much water will be extracted.

However, some elements are still incomplete or unclear, such as the geographical data provided in the ESIA. The map on page 17 of the ESIA shows the location of the water treatment plant next to boreholes. However, no hydrogeological justification for the location of the boreholes is given. Also, the study uses terms which are not very clear, such as 'river resistance'. In addition, the data is presented in a confused manner, with internal inconsistencies. For example, on page 2 the study first mentions a so-called realistic resistance of 300 days, but later on the same page and on page 3 a realistic resistance of 600 days is stated.

The NCEA recommends improving the hydrological study by a) explaining what is meant by river resistance and clarifying any uncertainties, b) improving consistency in the data, and c) improving the consistency between ESIA and hydrological study.

4.2 Drafting process and completeness of information

Final version of the ESIA

The ESIA has been updated several times over the last four years. In 2015 the Terms of Reference were approved by local authorities, and one year later the first version of ESIA was completed. The local authorities granted the *certificat de conformité environnementale* in 2016, but the RVO required more information on hydrology and affordability to pay. In 2017 a new version was written, which was subsequently translated into Dutch. The next update (2019) was done by adding English texts to the Dutch ESIA. This is the version that was sent to the NCEA and which is under consideration in this review.

Partially due to the iterative creation of the document, the information presented in the 2019 version of the ESIA is not always complete, nor is it presented in a clear manner. The ESIA is

written in Dutch and English, with references to French documents. The ESIA is lacking several elements, including the final chapters (consulted persons and conclusion). Thus, this document does not fulfill the requirements of the ToR, nor would the NCEA consider this good practice.

The NCEA recommends that the final ESIA integrates all necessary elements and is redacted in the same language. If this language is not French, a French translation must be available for local authorities.

Non-technical summary (NTS)

One of the goals of the NTS is to allow decision-makers to gain an overview of the project and be able to determine what the main issues are. Although the current NTS does list the activities and applicable environmental standards, it remains quite generic. It does not always specify relevant information such as how many household latrines will be constructed or how many people will have to be compensated. The NTS also includes information that is less relevant in an NTS, such as the methodology.

The NCEA recommends rewriting the NTS by removing elements that are too generic and including the issues relevant to decision-makers. It is especially important that the NTS includes conclusions on the most important impacts and how these will be mitigated. Other useful information includes a map of the project, specific data on displaced people and water volumes, alternatives considered, and, when relevant, a summary of the additional studies.

Project Description

In general, the project description is fragmented and unclear. The project will include the construction of latrines, water taps, pipelines, water treatment, sludge treatment, but in the ESIA it does not always become clear where exactly these structures will be located, and what their effects might be on the natural and social environment. Although a map is included on page 37, it does not give a clear overview of the area the project will be located, nor does it specify the proximity of the water and sanitation facilities between themselves.

Chapter 2 mentions sanitation and hygiene campaigns and trainings that will be conducted parallel and/or conjointly with the construction works. This is not reflected in the planning of the project, nor is stated who will be responsible for this campaign. In addition, the costs for this campaign seem to be lacking from the ESMP.

In addition, some of the data is confusing or lacking. Chapter 2 states that latrines will be rehabilitated in several locations but fails to mention how many latrines will be *rehabilitated*. Also, the number of toilets to be *constructed* mentioned in Table 2.1 does not seem to match the data mentioned in Table 2.2. Another example: it is not clear how large the pipeline network will be: 90km or $113+11=124$ km (both are indicated on page 14).

Last, the description of the social environment also contains various insufficiencies. The chapter on gender (3.4.12) does not provide much information, nor are the sources clearly stated. The chapter on economic activities is quite generic.

The NCEA recommends improving the information on the project interventions, including better data and a clearer map of the project area which including all individual constructions, and a better description of the project's social and ecological environment.

4.3 Sustainability and Equity

If long-term sustainability of the water and sanitation components are not ascertained, badly monitored water quality and badly maintained latrines could lead to serious health risks. Affordability and willingness to pay all or part of the costs of services, like water and sanitation, is a relevant factor for the sustainability of services. For example, if there is no willingness to pay for latrine usage, there is a risk that REGIDESO will lack the long-term financial capacity to maintain the infrastructure and thus prevent negative impacts on health. If this is not researched well and users are not willing/able to afford the water and sanitation component, the project might have an overall negative impact: the structures cannot be maintained and might end up not being used, even though they entailed negative impacts during construction.

The Affordability and Willingness to Pay (WTP) study, whose results are represented in the ESIA (§5.5), does not alleviate concerns about the project's overall sustainability. The study has not included all relevant factors such as the perceived quality of the water, its quantity and reliability of the service, travel distance to the water source and accessibility, the waiting time, or the availability or not of alternatives (rainwater, boreholes, springs, etc.). Given the many uncertainties in the assumptions made in the WTP study, it is uncertain whether an affordable price can be guaranteed and especially what the implications will be for the poor and their access to clean water.

The Affordability and WTP study does not discuss the sanitation aspect of the project, while this could have serious implications related to negative impacts on health. If poor households do not have the money to pay a pit emptier and/or they do not give this expenditure priority, unemptied latrine pits can cause serious health risks.

The NCEA recommends that the Affordability and WTP study include an analysis of the sanitation component of the study. Considering that the project focusses on both water and sanitation, it would be useful to conduct separate Affordability and WTP studies for the two project components.

The NCEA recommends including measures in the ESMP to ensure that poor stakeholders will be able to make use of the facilities (for example by maintaining lower tariffs for poorer households).

4.4 Wastewater

The effects of the increased volumes of wastewater (grey water) caused by the project is not discussed in the ESIA. Without a field visit the NCEA cannot ascertain the quality of the sewerage system of Inkisi, and how well it will be able to handle the increased volume of water circulating in the city. This is a concern, because as the WB EHS Guidelines point out, grey water may “still contain high levels of... substances such as oil, fat, soaps, detergents, and other chemicals and can have negative impacts on human health as well as groundwater quality.”

There is a risk of increased amounts of stagnant water which could lead to an increase in mosquito populations. This could subsequently lead to health risks. Again, without a field visit the NCEA cannot ascertain the likelihood of negative impacts.

The NCEA recommends including a discussion of the negative impacts related to increased grey water volumes in the ESIA, and including mitigation measures, if necessary, in the ESMP.

Annex 1: Process and documents consulted

Date	Action/document	Consulted?
2013	Screening by NCEA	
2015	ToR approved by local authorities	YES
2016	First version ESIA, RAP,	YES
	Local authorities (ACE) approve ESIA, RVO requires update	
2017	Quick Scan by NCEA of 2016 ESIA	
	Second version ESIA, in French. Translated to Dutch	YES
	Updated Project Plan	YES
	RVO requests new update	
2019	Definitive version of ESIA	YES
	Hydrological study	YES
	Affordability and Willingness to Pay study	YES

The NCEA has reviewed the 2019 updated version of the ESIA. It has taken notice of the other documents listed, but not conducted an extensive review of those documents.

Annex 2: Affordability and Willingness to pay (WTP)

Note that the NCEA has not conducted a full review of the Affordability and WTP study, but rather taken it into consideration when reviewing the ESIA. This annex includes some of the NCEA's general observations on the study.

Willingness to pay all or part of the costs of services, like water and sanitation, is a critical factor for the sustainability of services. Thus, it is important to examine the determinants of the WTP of water consumers.

This Affordability and WTP analysis for the Inkisi project only focuses on water services (sanitation is not covered). It is based on secondary data: a recent tariffs study covering 13 cities in DRC as part of PROSECAU (Programme Sectoriel Eau et Assainissement). The project also uses limited primary data from REGIDESO users of the 3 stand pipes. In general, the NCEA finds that the argumentation on water services is correctly constructed and given the lack of first-hand data on Inkisi, this an acceptable proxy. However, it remains difficult to assess if the assumptions made are accurate.

The finding that households dependent on piped water delivered through public standpipes and informal market face water prices significantly higher than the households with private connections is consistent with the situation in many African countries as shown in the study of the World bank. ("Africa's water and sanitation infrastructure: access, affordability and alternatives", Banerjee and al, 2011)

Below an effort is made to summarize the financial data of the WTP study in a table:

	Real costs	Official tariff	Real tariff	Liter pp pd
Stand pipes	400 CF / m3	500 CF / m3	4000 CF / m3	11 - 12 or 14 - 21 ?
House connections		\$150=242302 CF once + \$1=1615 CF/month (for water meter)	1000 CF / m3 (average)	
Resell to neighbours			More than (?) 1000 CF / m3	

The text includes many estimations and guesses, as concrete figures were not available. This leads to some assumptions which are hard to check, such as:

- Sales price: lower than CF 4000;
- Market competition, which could take the form of tariff agreements between operators as well;
- Expected preference for house connections;
- Whether profit margin is included in the practice of household connections reselling water to their neighbours.

The general population is presented in the report as middle-income households, without any supporting evidence. According to a World Bank study⁴, Congo Central (where the project is located) is indeed among the provinces where the level of poverty is the lowest in RDC. However, there are certainly poor and more vulnerable groups for whom the issue of affordability requires further consideration.

The study does not make certain that an affordable price can be guaranteed, especially for the poorest group. The conclusion that the expected effect of open market and the realistic opportunity to switch to house connections will result in an affordable water price for all income deciles in Inkisi, does not hold for the lowest decile.

WTP is not necessarily only linked to income and affordability but also to other parameters which have not been used here. Take the 'K3 factors' (quantity, quality, and continuity), which are not considered. In some countries (e.g. Indonesia), people prefer not to be connected because the services are of poor quality. The study has not included all relevant factors such as the perceived quality of the water, its quantity and reliability of the service, travel distance to the water source and accessibility, the waiting time, the availability or not of alternatives supply sources (rainwater, boreholes, springs, etc). Given the many uncertainties in the assumptions made in the WTP study, it is uncertain whether an affordable price can be guaranteed and especially what the implications will be for the poor and their access to clean water.

Considering that the project focusses on both water and sanitation, it would be useful to split the willingness to pay between water and sanitation. In that case, most probably, sanitation would have much lower priority for the local population than water. However, investments in the construction of private latrines can be expensive and important to avoid health risks.

WTP for sanitation is not treated in this document, while payment is expected for:

- Public latrines: if people are not going to pay an entrance fee for public latrines, no income will be generated for operation and maintenance (including pit emptying fees, which are quite high for septic tanks). This will lead to dirty and broken latrines, which in turn will lead to a risk for public health.
- Household latrines: investment costs may be borne by the project, but maintenance costs (including pit emptying fees) are not expected to be affordable to the poorest households.

The study does not explain whether REGIDESO will have the (financial) capacity to ensure that the sanitation facilities will be safely maintained.

On page 29 of the ESIA, proven willingness to maintain the infrastructure is mentioned as a criterion to receive a latrine. However, it is not clear how this willingness to pay for maintenance of sanitation facilities is measured (or if people are aware of these costs), taking into account the specified poverty of the beneficiary households.

⁴ Source: Poor WASH in a water-rich country: a diagnostic of Water, Sanitation, Hygiene and Poverty in Democratic Republic of Congo, World Bank 2017. 'Bas-Congo' is used in some of the documents, is the old name of this province.