CLEAN DEVELOPMENT MECHANISM
SIMPLIFIED PROJECT DESIGN DOCUMENT
FOR SMALL-SCALE PROJECT ACTIVITIES (SSC-CDM-PDD)
Version 02

CONTENTS

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.

SECTION A. General description of the small-scale project activity

A.1. Title of the small-scale project activity:

West Nile Electrification Project (WNEP).

A.2. Description of the small-scale project activity:

The overall objectives of the West Nile Electrification Project (WNEP) are to promote socio-economic development in rural Uganda and to reduce energy-related CO_2 emissions causing global climate change. The two main project components of the WNEP are:

- Project Component #1: Installation and operation of a 3.5 MW (2 units of 1.75 MW) hydroelectric power plant; and
- Project Component #2: Installation and operation of a HFO-fired 1.5 MW generator. The generator will serve as a base-load plant during the construction phase of the hydroplant and as a peaking plant once the hydroplant becomes operational in 2007.

The project also upgrades and extends the existing distribution networks in Paidha, Nebbi, and Arua municipalities, as well as connects existing and new customers, who would otherwise operate small, privately-owned generation facilities.

In 2001, the WNEP was identified as a potential CDM project and the original financial plan for the project includes carbon finance revenue from sales of CO_2 emission reductions. The starting date of the project is April 1, 2003. The WNEP is part of a ten-year World Bank lending program entitled Energy for Rural Transformation (ERT) that is being undertaken in the context of the on-going power sector reform in Uganda. The objectives of the ERT are to assist Uganda's rural energy sector in contributing to rural transformation and poverty alleviation and, at the same time, to protect the global environment through implementation of CO_2-neutral hydropower displacing diesel and petrol based electricity generation. As a complement to this project an 80 km sub-transmission line connecting Nebbi and Arua has been built with financial support from Norway. This line is transferred to the WNEP operator. The government of Uganda has developed the WNEP with assistance from the ERT program.

Significant barriers and extended delays have resulted in a long gestation time for the WNEP. The original intention in 2001 was to install two new, efficient diesel generators (1.5 MW and 1.0 MW), and to construct one 5.1 MW hydropower plant at the Nyagak site in the Nebbi District in Phase I of the ERT, plus an optional 1.5 MW hydropower plant in Olewa in the Arua District two years later. However, given an unanticipated low level of power demand in the project area, the project sponsor has subsequently redesigned the original project design in line with a more realistically expectable load in the West Nile region. The redesigned project is a 1.5 MW HFO-fired generator located in Arua, which has been in operation since May 2005, and a 3.5 MW hydroplant at Nyagak, which will begin generating power in 2007.

Taken together, Arua, Nebbi, and Paidha constitute the largest load centre in the West Nile region. The WNEP helps developing the hydropower potential of the West Nile region by installing one run-of-river hydro plant and by operating the power distribution system with a focus on these three regional urban centres.

The proposed project will reduce the demand for diesel fuel and abate GHG emissions (i.e., CO_2, N_2O and CH_4) from fuel trucks that would otherwise bring diesel fuel from supply centers to consumers residing in the project area. Given that the fuel supply centers are located in Mombassa, Kenya, approximately 3,000 km over land from the West Nile Region, the project activity will bring about a non-trivial reduction in transport-related GHG emissions.

Because an approved methodology for small-scale CDM project activities reducing GHG emissions from fuel transport currently does not exist, the World Bank Carbon Finance Business has submitted a proposal for such a methodology to the small-scale working group on April 24, 2005. The submitted methodology is based on an approved large-scale methodology[1] as well as an approved consolidated methodology.[2] If the CDM Executive Board approves this or an applicable methodology, the project participants intend to claim the emission reductions from this anthropogenic source. This will possibly require a modification of the Project Design Document; and the necessary monitoring information and data must be collected by the project operator and must be verified by a DOE.

A.3. Project participants:

Name of Party Involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Uganda (host)	Ministry of Water, Lands and Environment	No
	West Nile Rural Electrification Company Limited (WENRECo)	
To be determined prior to the Registration with the CDM executive board	The International Bank for Reconstruction and Development (IBRD) acting as Trustee for the Prototype Carbon Fund ("PCF")	To be determined prior to the Registration with the CDM executive board

(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.

A.4. Technical description of the small-scale project activity:

[1] AM0004. Version 02, 7 April 2004: "Grid-connected biomass power generation that avoids uncontrolled burning of biomass". http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_383333082
[2] ACM0003.Version 01, 13 May 2005: "Emissions reduction through partial substitution of fossil fuels with alternative fuels in cement manufacture." http://cdm.unfccc.int/EB/Meetings/019/eb19repan07.pdf

A.4.1. Location of the small-scale project activity:

West Nile region, Uganda.

A.4.1.1. Host Party(ies):

Uganda.

A.4.1.2. Region/State/Province etc.:

West Nile Region.

A.4.1.3. City/Town/Community etc:

Arua, Nebbi and Paidha.

A.4.1.4. Detail of physical location, including information allowing the unique identification of this small-scale project activity(ies):

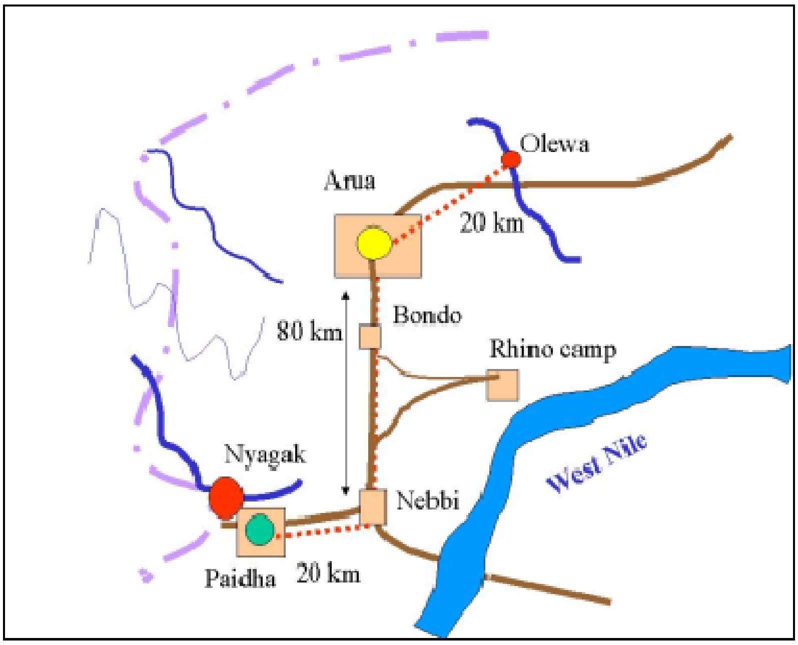
The hydroelectric plant will have an installed capacity of 2 x 1.75 MW (for a total rated discharge of 5 m^3/s and a gross head of 87 m) for a period of at least 25 years using the waters of the Nyagak River. The plant will be located close to the Paidha village.

The 1.5 MW HFO-fired generator will be located in the city of Arua.

The West Nile Region borders to the west on the Democratic Republic of Congo and to the north on Sudan. It comprises the districts of Nebbi, Arua, Moyo and Adjumani. Arua has a population of 850,000, Nebbi 450,000, and Moyo and Adjumani 110,000. The proposed project activity covers both urban and peri-urban areas. The West Nile Region has the potential to become one of Uganda's more productive agricultural areas, but insufficient and unreliable electricity supply has seriously constrained regional development, particularly in the agro-processing areas (e.g. coffee processing, cotton ginning, tea processing, edible oil extraction and grain milling).

Figure 1 gives a schematic depiction of the West Nile region. It shows the three population centres Arua, Nebbi, and Paidha, the hydropower stations at Nyagak and Olewa, and the sub-transmission lines (dotted lines).

Figure 1: Schematic Representation of Proposed West Nile Electric System as Originally Designed.



A.4.2. <u>Type and category(ies)</u> and technology of the <u>small-scale project activity</u>:

The proposed project activity consists of two project components that are eligible under the simplified modalities and procedures for small-scale CDM projects:

<u>Project Type I - Renewable Energy Projects. Category I. D: Renewable electricity generation for a grid</u>
The proposed Project Component # 1 falls into project category I.D given that it will build and operate one 3.5 MW hydroelectric plant that will export its generation output to a mini-grid, thus displacing generation from fossil fuel-fired generators and engines. Two 1.75 MW Francis turbines manufactured by Mavel and supplied by Skoda have been selected through a competitive bidding process. It will include a diversion weir leading to a penstock and a powerhouse with transformers and switchgear. The power output will be fed to the existing grid though a 33kW over-head line. The hydroelectric station is expected to start generating power in spring 2007.

<u>Project Type II - Energy Efficiency Improvement Projects. Category II. B: Supply side energy efficiency improvements – generation</u>

The proposed Project Component # 2 installs one 1.5 MW HFO-fired generator that generates at a higher efficiency rate than the diesel engines and small-size diesel/petrol generators currently supplying power to consumers in the project area. The annual energy savings from this component amount to TJ 52.95 at most.[3] The savings are thus below the 15 GWhe (TJ 54) threshold for Project Type II energy efficiency improvement projects, and the project is eligible to use the project category II.B methodology concerned with supply-side energy efficiency improvements.

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[3] See spreadsheet 'energy savings'.

A.4.3. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed small-scale project activity, including why the emission reductions would not occur in the absence of the proposed small-scale project activity, taking into account national and/or sectoral policies and circumstances:

The proposed project activity will mainly reduce GHG emissions from three anthropogenic sources:

- By installing and operating one hydroelectric plant that will deliver renewable energy to consumers who would otherwise be supplied by diesel-based electricity;
- By installing and operating one high-efficiency HFO generator that will displace low-efficiency diesel generators at isolated diesel stations in Arua and Nebbi and generation from small privately owned diesel gen-sets; and
- By reducing the demand for imported diesel fuels into the West Nile region.

Over a 21-year period, the anticipated total amount of emission reductions from the proposed project activity is 760,437 tonnes of CO_2e. The total amount of CO_2 emitted in the baseline scenario over the 21-year project lifetime is estimated on basis of the amount of electricity that otherwise would be generated by private diesel and petrol generator-sets and diesel engines supplied by Uganda Electricity Board (UEB) times an emission rate for these generators and engines.[4]

A.4.3.1 Estimated amount of emission reductions over the chosen crediting period:

Table 1 gives estimates of the ERs generated by the project over the chosen crediting period.

[4] The Uganda Electricity Board, a quasi independent vertically integrated monopoly to generate, transmit, distribute and supply electricity within Uganda and other countries in the region, was disbundled by the government in March 2001 into a Distribution Company (UEDCL), a Transmission Company (UETCL) and a Generation Company (UEGCL).

Table 1: WNEP ERs.

Years	Estimation of annual emission reductions in tonnes of CO_2e
2005	3,788
2006	3,788
2007	39,624
2008	39,624
2009	39,624
2010	39,624
2011	39,624
2012	39,624
2013	39,624
2014	39,624
2015	39,624
2016	39,624
2017	39,624
2018	39,624
2019	39,624
2020	39,624
2021	39,624
2022	39,624
2023	39,624
2024	39,624
2025	39,624
Total estimated reductions (tonnes of CO_2e)	760,437
Total number of crediting years	**21**
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	**36,211**

A.4.4. Public funding of the small-scale project activity:

The Government of Uganda, through the Rural Electrification Fund (REF), supports the WNEP with underlying project financing. The REF is a Ugandan government fund established under the Uganda Electricity Act of 1999 which supports rural electrification in Uganda. Uganda, the World Bank (through IDA), and bilateral donors (Norway) contribute resources to the fund, and a number of eligible activities, including the WNEP, are supported through the REF. The WNEP receives a subsidy from the REF to help cover the capital cost of the 33/11 kW substation, the internal combustion unit, and the hydroplant at Nyagak, as well as a subsidy per new connection.[5] But the project activity will be driven by the private sector, and an Independent Power Producer (IPP) will build, operate and own the project.

The public-funding resources available for the underlying project financing will not purchase any GHG emission reductions (ERs) generated by the proposed project. Instead, the Prototype Carbon Fund — the

[5] Information on subsidy available for validation.

World Bank is acting as trustee for the multilateral fund PCF — will purchase the ERs generated from the project activity. The financial resources of the PCF are exclusively private sector and non-ODA government resources.

The use of public funds for the underlying project financing will not result in a diversion of ODA resources.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a larger project activity:

The proposed project activity is not a de-bundled component of a large-size hydroelectric project and/or a large-size energy savings project activity undertaken in the West Nile region because all the debundling rules in Annex C are met. It is eligible as a small-scale project activity for the following reasons:

- Project Component #1: the WNEP will build the first hydroelectric power plant on the Nyagak River with a total nominal capacity of 3.5 MW, which is below the 15 MW threshold value; and
- Project Component #2: There is currently no other, similar small-scale energy saving CDM project under implementation in the West Nile or in the process of applying for CDM registration.

SECTION B. Application of a baseline methodology:

B.1. Title and reference of the approved baseline methodology applied to the small-scale project activity:

The proposed project activity is eligible to apply the approved small-scale baseline methodologies for the following project categories:

I. D: Renewable electricity generation for a grid

II. B: Supply side energy efficiency improvements – generation.

B.2 Project category applicable to the small-scale project activity:

Efficiency factor and CO_2 emissions from generators and engines in the baseline scenario

A large number of interviews, extensive field visits, and solicited experts served as inputs when a comprehensive survey of the installed engines and diesel gen-sets in the West Nile region were prepared in 2001 in the context of the ERT lending program.[6] According to this survey, 182 generator sets were being operated in the urban and peri-urban areas of Arua, Nebbi, and Paidha. Moreover, many gen-sets were not connected to the UEB-grid for lack of UEB capacity. Additional 42 diesel engines were used for milling purposes – 36 engines were installed in businesses with the remainder installed in institutions or private houses.

This survey concluded that the average efficiency across the whole range of plants operating in the West Nile region, including the UEB gen-sets, is 1.5 kWh/litre of fuel, or 0.66 litres of diesel/kWh. This implies that the average efficiency factor for the diesel/petrol gen-sets and diesel engines in the West Nile region is approximately 15 percent. This efficiency factor corresponds well to the CO_2 emission coefficients for 0-15kW and 15-35 kW diesel gen-sets operating at a 25% or 50% load factor standardized in the Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories (Table 2 below). In fact, a 15 percent efficiency factor is rather conservative vis-à-vis the factors standardized in Table 2.[7] The baseline emission rate in this PDD will utilize this emission coefficient (calculated in Section B.5) for the engines and diesel/petrol gen-sets that would operate in the West Nile region in the absence of the proposed project activity, because it is more conservative than the pre-defined emission factor in Appendix B and because it is supported by the survey.

The two simplified methodologies summarized below are utilized in determining the ER amounts generated by the two project components:

<u>Project Component # I and Project Category I. D: Renewable electricity generation for a grid.</u>
Given that the hydroplant will deliver electricity to a grid, Project Component #1 falls into project category I.D. Diesel/petrol generation sets and diesel engines are the only sources of electricity generation in Arua, Nebbi, and Paidha prior to the implementation of this project component. This simplified methodology defines the energy baseline as 'the annual kWh generated by the renewable unit times an emission coefficient for a modern diesel generating unit of the relevant capacity operating at optimal load'.[8] Table 2 gives the approved standardized emission coefficients for various load factors and sizes of gen-sets.[9] However, as explained, the CO_2 emission per kWh coefficient for the diesel/petrol generators operated in the baseline scenario is based on the above comprehensive World Bank survey.

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[6] Survey available for validation.

[7] The standardized emission factor of 2.4 kg CO_2/kWh in Table 2 corresponds to an efficiency factor around 13.3%, the 1.4 kg CO_2/kWh emission factor corresponds to around 22.9%, and the 1.9 kg CO_2/kWh emission factor corresponds to around 16.8%.

[8] I.D. Renewable electricity generation for a grid. "Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM Project Activities: Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activities". Paragraph 6. http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf

[9] *Ibid*, paragraph 6.

Table 2: Emission factors for diesel generator systems (CO_2e/kWh) for three different levels of load factors.

Cases	Mini-grid with 24 hours service	i) Mini-grid with temporary service (4-6 hr/d) ii) Productive applications iii) water pumps	Mini-grid with storage
Load factors (%)	25	50	100
<15 kW	2.4	1.4	1.2
>=15<35kW	1.9	1.3	1.1
>=35<135kW	1.3	1.0	1.0
>=135<200kW	0.9	0.8	0.8
>200kW	0.8	0.8	0.8

Source: Table I.D.1 in the Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories.

<u>Project component # II and Project category II. B: Supply side energy efficiency improvements – generation.</u>

The proposed project also installs one new 1.5 MW HFO-fired generator. The generator provides electric power in the intermediate period until the hydroelectric power plant is constructed and is fully operational, and it will provide back-up capacity when the hydropower plant has become operational.

According to the approved methodology, in this situation the energy baseline should be calculated 'using a standard for the equipment that would otherwise have been installed.'[10] Given the extremely low rate of technology change observed in the West Nile Region, it seems both reasonable and conservative to assume that diesel/petrol gen-sets and diesel engines similar to those currently operating in the West Nile Region would be installed in the absence of the HFO-generator installed and operated by the CDM project. Again, the CO_2 emissions per kWh coefficient for the generators and engines operated in the baseline scenario is based on the above-mentioned comprehensive World Bank survey.

B.3. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

While off-grid electricity in rural Uganda is supplied mainly by diesel and gasoline (petrol) gen-sets, there has been considerable interest among donors in harnessing the local hydropower resources as part of an electrification scheme for the West Nile at least since the 1990s.[11] But political, financial, social, and institutional barriers have so far precluded small hydropower development in this region. In particular, the lack of a capital market accessible to IPPs, the utility company's inability to provide the required

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[10] *Ibid*, Project Type II. Energy Efficiency Improvement Projects/II. B: Supply side energy efficiency improvements – generation. Paragraph 3.

[11] A few off-grid renewable energy resources (less than 1 MW nationally) supported by major international (donor) subsidies have been developed (e.g., church missions). No private hydro investments have been made in Uganda; hydropower in Uganda to date has been funded either by governments or by international NGOs. Private hydropower investments have been considered in Uganda only in the past several years, but none have been financed thus far.

financing, the consumers' low ability-to-pay, and the high up-front investment would preclude the WNEP from coming to fruition. Moreover, energy sector and infrastructure investments in Uganda are considered highly risky. The economic, political, inflation and currency risks for the most part cannot be mitigated and they therefore raise the required discount rate significantly and reduce the business prospects for power development investments in the West Nile region. These barriers fall under eligible barrier Class A ("Investment barrier"), Class C ("Barrier due to prevailing practice") and Class D ("Other barriers") identified for small-scale CDM projects.

The proposed project activity has been tendered internationally on a "build, own and operate" basis, with two 20-year licences (generation and distribution) granted to the winning bidder by the Electricity Regulatory Authority (ERA). WNEP has received financial assistance because of high project costs and risks – and in order to make the project sufficiently attractive to an IPP. The Rural Electrification Fund in Uganda, which has been established with ERT support, will provide a "smart subsidy". The smart subsidy is a capital investment subsidy for investment in generation, sub-transmission lines, distribution lines, and customer connections. Additionally, the GOU completed an 80 km sub-transmission line connecting Nebbi and Arua, which has been transferred to the WNEP operator (WENRECo).

The number of privately-owned diesel and petrol generation sets in the West Nile region has grown consistently since the late 1990s.[12] This trend will most likely prevail until substantial investments are made in an alternative regional electricity supply system. However, it is unlikely that the UEB would increase its generation capacity in the region any time soon. Thus, the business-as-usual scenario, i.e. increased private sector generator and mill engine ownership, is the most plausible option for future electrification of the West Nile in the absence of the proposed project activity.

The key national and regional level barriers to the WNEP are described below. Additionally, the implications of these barriers for the WNEP are examined. Over 30 businesses operating in Uganda, including the largest commercial banks, the largest multinational corporations and Ugandan businesses, were interviewed in order to understand the barriers to the proposed project activity. As well, interviews were conducted with regional and international development banks, investment and export credit insurance and guarantee agencies.[13]

Overview of Barriers in Uganda

Although Uganda has experienced dramatic economic growth over the past fifteen years, dependency on neighbouring countries (Congo, Sudan and Rwanda) and regional instability has resulted in economic

[12] Indeed, between the August-September 2000 West Nile surveys and interviews with municipal authorities during the ERT April-May 2001 appraisal mission, at least another 30 gen-sets, with a total installed capacity of 1 MW, have been installed within the system boundary. In contrast, effectively no new consumers have been added to the local grid for over 20 years. West Nile had over 2,000 customers in 1979 compared to fewer than 1,000 in 2001.

[13] Institutions consulted included the East Africa Association (in Uganda and the UK), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), the Oversees Private Investment Corporation (US), the Commonwealth Development Corporation (UK), the Export Credit Guarantee Department (UK), the Kreditanstalt für Wiederaufbau (Germany), the International Bank for Reconstruction and Development (World Bank) including the World Bank's Uganda Resident Representative Office and Country Team, the European Investment Bank (EIB), commercial banks, the Uganda Investment Authority, the Uganda Manufacturers Association, Uganda's Private Sector Foundation, among others. Some information was provided on a confidential basis and cannot be attributed to specific sources in many cases. Yet, detailed information can be provided for validation purposes.

insecurity.[14] Security is the primary barrier in Uganda today, particularly in the western and northern regions where small rebel groups continue to operate in opposition to the current government. Relations with Sudan and Congo have been poor for a number of years. This has frequently fed internal instability (fuelled and supported by antagonistic neighbours) and has led to insecurity in border areas.

Dependence and energy security in Uganda are important issues, particularly with regard to fuel supplies. Uganda is land-locked and depends upon its petroleum supplies transiting through Kenya from the Indian Ocean port of Mombassa. Political tensions between Kenya and Uganda have periodically led to border closures and disruption of petroleum and other supplies to Uganda. Uganda is hoping to open up a second overland route through Tanzania. However, for the foreseeable future it will continue to import fuels such as diesel through Kenya.

Uganda follows a positive policy and attitude towards foreign direct investment. However, because of historical precedence, such as post-independence expropriation of private sector assets,[15] and the perceived high risks of power generation, transmission and distribution systems, Uganda is currently not attractive to potential private sector investors. Leading credit ratings agencies (Moody’s, Fitch, and S&P) do not rate Uganda — a strong indicator, in itself, of the high country risk.

Economic Barriers

The West Nile is one of the most rapidly expanding economies in Uganda but it lacks banking and other financial and economic infrastructure and intermediation.[16] The lack of adequate and reliable electricity supply has seriously constrained West Nile’s development, particularly in the agro-processing sector. Most of the businesses are in the informal sector, hence almost no ties with formal credit or finance exist.

Larger businesses that rely upon their own diesel or gasoline generated electricity face stiff competition from businesses connected to the main grid in other parts of Uganda (even if electricity supplies on the main grid are often unreliable and insufficient to meet business requirements). West Nile businesses in areas as diverse as welding and printing periodically shut down due to high energy costs.[17] For example, the costs of transporting welded products and printed materials from Kampala can be less than that of using own-generators to provide electricity. Increase in fuel costs caused by supply disruptions, inflation, and depreciation pose major economic risks to West Nile businesses.

Political Barriers

Civil war in Uganda in the 1970s and the early 1980s deteriorated the electricity infrastructure and supplies as well and undermined investor confidence. While the West Nile has enjoyed political stability

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[14] This section is based on discussions held with, or reviews of materials from, Economist Intelligence Unit, World Bank Uganda Country Team, IFC Uganda Resident Missions, British Foreign and Commonwealth Office (FCO), British Export Credit Guarantee Department, Commonwealth Development Corporation, European Investment Bank, US Export Import Bank and Overseas Private Investment Corporation, East African Association, Uganda Investment Authority, and the banking sector in Uganda.

[15] It should be noted, though, that under Museveni (since 1986) the GOU has not expropriated any private property and property expropriated under previous governments was restituted.

[16] There are no effective credit markets operating in the region (only two commercial banks have small branches in these two districts with three quarters of a million people); there is no financial intermediation for infrastructure investments, particularly in rural areas; and there are no insurance schemes for hydroelectric investments.

[17] Based on interviews with a number of businessmen during the course of this work and the design of the ERT.

under the current Ugandan government for fifteen years, it remains vulnerable to the insurgency in the north of Uganda in so far as traffic and transport in and out of the West Nile is affected. The Lord's Resistance Army's brutal campaign against rural communities and government supporters between Central Uganda and West Nile is expected to continue for some time. Though the West Nile region is not directly affected, the major trade routes to Kampala can become insecure, making air traffic the only safe means of transport into and from the region. This, however, increases the cost of conducting business in the region, slowing down the economic activity. Civil unrest in neighbouring Congo and Sudan add further political risk.

Interference by local politicians in the operations of the WNEP could pose another political barrier. For instance, granting and maintaining rights of way to the hydropower sites, control over water resources, and tariff setting are potential political issues that any investor must take into consideration.

Corruption is unfortunately substantial and is officially cited by President Museveni as one of the major impediments to Uganda's continued growth and development. President Museveni has pledged that Government of Uganda institutions will root out corruption and some progress has been made. Nonetheless, foreign investors in Uganda perceive corruption as a growing concern.[18]

<u>Summary of Barriers</u>

In order to determine the baseline scenario, three plausible scenarios for increasing and improving the future power supply in the West Nile region should be considered. These three scenarios can be summarized as follows:

- The *Business-as-Usual* option is a continuation of the current trend, i.e., a demand increase would be met by an increase in privately-owned and operated petrol and diesel generators and auto-generation by business, institutions and households; in addition, the UEB (or its successor) would continue to supply the existing consumers with 4 hours of unreliable power (often load-shedded for days at a time) daily;
- *Extension of the National Grid* implies construction of a transmission line to the main grid at the closest point at Gulu, nearly 200 km east of the West Nile region; and
- *Hydropower Mini-Grid* – i.e., the proposed WNEP – is the development of a stand-alone hydropower system and efficient diesel mini-grid.

Table 3 shows that major fixed-asset investments in rural Uganda face high barriers. Foreign investors investing in rural power supply in Uganda will typically require a return on equity (RoE) around 30-35 %.[19] The BAU option, in contrast, does not face these country barriers.

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[18] More information on this and other aspects of this risk assessment can be provided.

[19] As cited by the Utility Reform Unit, Ministry of Finance through discussions with potential investors for concessions on the main UEB grid, and reinforced through discussions with AES Nile Power (Bujagali), and members of the UK Power Sector Working Group (PSWG).

Table 3: Summary of Country Barriers to Foreign Direct Investment in Uganda.

Scenario Barrier type	Private Gen-sets	Extension of Main Grid to West Nile / WNEP
Investment barriers	Not applicable	**High**: Low investor confidence due to civil war and expropriations under previous governments (till 1986); Supply risk: Land-locked Uganda depends on imports via road through Kenya; Corruption is a growing concern.
Economic barriers	Not applicable	**High**: Lack of banking, financial and economic infrastructure; High costs in West Nile region due to poor transport links; Dependency of economy on volatile cash crops revenues.
Political barriers	Not applicable	**High**: Problematic external security situation: conflicts in south Sudan and Congo could spill over into Uganda; Internal security situation not fully under control: rebel activities in northern Uganda; and Possible political interference with business decisions: new regulatory system is untested.
Inflation and foreign exchange barriers	Not applicable	**High**: Vulnerability of Ugandan currency to external factors (ODA, world market coffee price etc.); and Significant inflationary pressure.

Table 4 shows that a very high barrier for the grid extension option exists at present and most likely in the foreseeable future. This option should be regarded as infeasible. The WNEP option, however, is feasible with public support. The investment barrier is high, but due to the envisaged smart subsidy and the earnings from carbon revenue, it will be possible to lower the barriers sufficiently to make the project attractive to the private sector. Finally, the BAU option is presenting the lowest barriers. In the prevalent multi-barrier environment, it represents the most likely option in the absence of outside intervention.

Table 4: Summary of Project Specific Barriers.

Scenario Type of barrier	Private Gen-sets	Grid Extension	WNEP
Technological barriers	**None**	**High**: Power shortages in the main grid; Rebel activities in northern Uganda; Transport problems.	**Low**: Studies have confirmed feasibility. Engineering problems cannot be excluded.
Investment barriers	**None**	**High**: Opportunity costs of grid extension are large.	**Medium**: Week economic growth (export prices, poor roads). Demand for power too low for viable operation.
Barriers due to prevailing practice	**None**	**Medium:** Outcome of UEB privatisation and decentralization uncertain Political interference in business decisions possible	**High**: No experience with new Electricity Act and regulatory system. Political interference in tariff setting cannot be excluded. Problems with construction and operation licenses.

Scenario / Type of barrier	Private Gen-sets	Grid Extension	WNEP
Inflation and foreign exchange barriers	**Low**: impact on prices of fuel and machinery	**Medium:** Probably substantial foreign investment needed	**Medium**: Cost of diesel in Uganda. Substantial foreign direct investment needed. Repatriation of profits could be uncertain.
Additional investment barriers	**Low**: price increases for fuel and machinery	**High**: Opportunity costs of grid extension are high	**High**: Investment in non-removable asset. Cost overruns (construction and operation). Construction delays. Customers default. Fees and licenses higher than expected.
Aggregate barriers	**Low**	**High**	**Medium**

In summary, due to preventive barriers, the WNEP would not be implemented without government support. The fact that the Government of Uganda, the World Bank and other donors are willing to provide financial assistance to the project shows that it is a widely shared view that the WNEP would not happen as a purely commercial investment. Therefore, given that the government has discarded the grid extension option as it considers that this option does not meet the requirements for secure and safe power supply, the only alternative that does not face barriers is the business-as-usual scenario and the project activity must be viewed as additional.

B.4. Description of how the definition of the project boundary related to the baseline methodology selected is applied to the small-scale project activity:

In accordance with methodology 1.D, regarding Project Component #1, "the project boundary encompasses the physical, geographical site of the renewable generation source," in this case the hydro plant to be developed and operated by the proposed project. Regarding Project Component #2, "the project boundary is the physical, geographical site of the fossil fuel fired power station unit affected by the efficiency measures."[20]

It is expected that the proposed project will supply power to a number of current and future consumers who would otherwise be operating their own private diesel gen-sets and engines. By increasing the installed grid-connected capacity and by interconnecting Nebbi and Paidha in the south to Arua in the north through a sub-transmission line, the project connects and serves consumers currently generating power on-site to an isolated electric grid. The project therefore signifies a change from a system of many, widely dispersed, small stand-alone power generators to an isolated grid system.

B.5. Details of the baseline and its development:

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[20] Paragraph 2. "Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM Project Activities: Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activities". http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf.

The baselines for Project Components I and II are calculated separately. Yet, both use a calculated average emission coefficient of 1.843 kg CO_2/kWh for the diesel/petrol gen-sets and engines that would be operating in the project area in the absence of the proposed project.

Using the IPCC values for net calorific value and carbon emission factor for fuels, the baseline emission rate, ER_{BL}, for the West Nile is calculated as follows:

$$ER_{BL} = 43.33 \text{ MJ/kg} * 20.2 \text{ gC/MJ} * 44/12 * 0.87\text{kg/l}^{21} * 0.66 \text{ l diesel/kWh} \quad (1)$$
$$= 1.843 \text{ kg } CO_2\text{/kWh}$$

At the point of crediting period renewal, a designated operational entity shall establish that the baseline scenario and the baseline emission rate is still valid or has been updated taking account of new data.

Project Component #1

According to the approved methodology, the baseline is the net annual electricity output from the hydropower stations times an emission coefficient for a modern diesel unit. But as explained in section B.2, the PDD utilizes 1.843 kg CO_2/kWh as the baseline emission rate – a conservative rate based on a comprehensive user survey conducted in the West Nile project area and on expert opinion.

For the purpose of the PDD it is assumed that the hydro station can deliver 19,500 MWh per year over the lifetime of the project. This figure is the technology provider's estimate of the guaranteed electrical output and energy production, based on site-specific assumptions concerning head, river flow, biological flow, etc. Nevertheless, the project operator will continuously meter and record the net annual electricity output from the hydroplant over the life of the project.

Project Component #2

The baseline for the HFO generator will be calculated as the metered output (in kWh) from the HFO generator times the baseline emission rate 1.843 kg CO_2/kWh determined *ex-ante*. The baseline emission rate is calculated using the approach and inputs figures defined above.

It is assumed here that the HFO generator will deliver 4,049 MWh annually during Project Phase #1 (2005-2007), and that it will generate at full capacity (1.5 MW) for 30% of the time when the Nyagak hydroplant is operational.[22]

Date of completing the final draft of the baseline section: 10/09/2005.

Name of person/entity determining the baseline:
Dr. Lasse Ringius
Senior Environmental Specialist
Carbon Finance Business
The World Bank
818 H Street, NW

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[21] Density figure is taken from Munday and Farrar, *An Engineering Data Book* (Macmillan Press, 1979).

[22] The annual output in Project Phase #1 is based on the performance and generation data from June 2005, while the scenario for Project Phase # 2 reflects the project owner's expectations as to the future expectable load in the West Nile region.

Washington, D.C. 20433
USA

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SECTION C. Duration of the project activity / Crediting period:

C.1. Duration of the small-scale project activity:

C.1.1. Starting date of the small-scale project activity:

01/04/2003.

C.1.2. Expected operational lifetime of the small-scale project activity:

25y-0m.

C.2. Choice of crediting period and related information:

The project activity will use a renewable crediting period. Therefore, only C.2.1 will be completed.

C.2.1. Renewable crediting period:

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C.2.1.1. Starting date of the first crediting period:

01/01/2005.

C.2.1.2. Length of the first crediting period:

7 yrs

C.2.2. Fixed crediting period:

N/A

C.2.2.1. Starting date:

N/A

C.2.2.2. Length:

N/A

SECTION D. Application of a monitoring methodology and plan:

D.1. Name and reference of approved monitoring methodology applied to the small-scale project activity:

The two approved methodologies applied to the project activity are:

Project Type I - Renewable Energy Projects. Category I. D: Renewable electricity generation for a grid

Project Type II - Energy Efficiency Improvement Projects. Category II. B: Supply side energy efficiency improvements – generation.

D.2. Justification of the choice of the methodology and why it is applicable to the small-scale project activity:

The proposed project activity consists of two project components that are eligible under the simplified modalities and procedures for small-scale CDM projects:

Project Type I - Renewable Energy Projects. Category I. D: Renewable electricity generation for a grid

The monitoring methodology conforms entirely to the approved monitoring methodology for this project type stating as follows: "Monitoring shall consist of metering the electricity generated by the renewable technology."[23]

Project Type II - Energy Efficiency Improvement Projects. Category II. B: Supply side energy efficiency improvements – generation

The monitoring methodology conforms entirely to the approved monitoring methodology for this project type stating as follows: "Energy savings shall be measured after implementation of the efficiency measures, by calculating the energy content of the fuel used by the generating unit and the energy content of the electricity or steam produced by the unit. Thus both fuel use and output need to be metered." Also: "A standard emission coefficient for the fuel used by the generating unit is also needed. IPCC default values for emission coefficients may be used."[24]

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[23] http://cdm.unfccc.int/UserManagement/FileStorage/ssc_i_d.pdf

[24] http://cdm.unfccc.int/UserManagement/FileStorage/ssc_ii_b.pdf

D.3 Data to be monitored:

Table 5: Summary of Project Specific Barriers.

ID number	Data type	Data variable	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic / paper)	For how long is archived data to be kept?	Comment
1.a	Amount of fuel combusted by generator	FC_j	Liters	(m)	Daily, monthly	100%	Paper, electronic	Until 2 yrs after end of crediting period	
1.b	Generation output	GEN_{TH}	MWh	(m)	Daily	100%	Paper, electronic	Until 2 yrs after end of crediting period	
1.c	Density	$DEN_{prjct,fuel\ j}$	MJ/t	(m)	Monthly	100%	Paper, electronic	Until 2 yrs after end of crediting period	Verified data
1.d	Calorific value	NCV	MJ/kg	(m)	Monthly	100%	Paper, electronic	Until 2 yrs after end of crediting period	Verified data
1.e	Heat rate	$HR_{prjct,fuel\ j}$	MJ/kWh	(e)	Monthly	100%	Paper, electronic	Until 2 yrs after end of crediting period	Project operator will calculate heat rate monthly, using verified data on calorific value of fuel(s).
2.a	Generation output, hydro plant	GEN_{Nyagak}	MWh	(m)	Daily	100%	Paper, electronic	Until 2 yrs after end of crediting period	

D.4. Qualitative explanation of how quality control (QC) and quality assurance (QA) procedures are undertaken:

Information on fossil fuel consumption, generation output, and various other performance variables are currently being collected under the oversight of the manager of the HFO generator in Arua in the West Nile region. The staff responsible for the operation of the power plant is collecting information daily and the ultimate responsibility for QC/QA is assigned to the manager. The manager checks the quality, consistency and comprehensiveness of the collected information on a daily basis and compares with kept data records. The information is recorded in both paper and electronic form before it is electronically stored. The manager finally quality checks the information and data before it is reported to the WENRECo management team.

The QC/QA procedures that will be followed by WENRECo will be fully consistent with the QC/QA procedures generally put into practice at hydroelectric stations around the world and in CDM projects in which the World Bank is a project participant. Professional support and experience will be sought when the operational and management approach is identified and put in place at the Nyagak hydrostation.

D.5. Please describe briefly the operational and management structure that the project participant(s) will implement in order to monitor emission reductions and any leakage effects generated by the project activity:

The operator of the West Nile Hydro Power project will have certain operational and data collection obligations to fulfil, in order to minimise greenhouse gas emissions and to ensure that sufficient information is available to calculate ERs in a transparent manner and to allow for a successful verification of these ERs.

A separate, detailed monitoring plan (MP) and work sheets will be developed specifically for this project activity. The operator shall comply with the data collection, testing and analysis, and data management obligations contained in this MP. Key parameters define the performance of the project and the operator shall integrate the data collection requirements into the company's database and information collection policies. Table 6 summarizes the management structure and the division of responsibility among the project participants.

Table 6: Management and Operation System: Roles of Project Partners

	WENRECO	The World Bank
Monitoring System	- Review MP and suggest adjustments if necessary - Develop and establish management and operations system - Establish and maintain monitoring system and implement MP - Prepare for initial verification and project commissioning	- Review monitoring and management system - Ensure project meets the Bank requirements and safeguards - Arrange for initial verification
Data Collection and Provision	- Establish and maintain data measurement and collection system and collect data for all MP indicators and inputs as required - Maintain valid permits and licenses and collect information on compliance with relevant Ugandan regulations - Collect relevant information on electricity generation and fuel consumption by power plants in Uganda	- Review date collection systems
Data Computation	- Enter data in MP worksheets - Use MP worksheets to calculate ERs	- Review completed worksheets
Data Storage Systems	- Implement record maintenance system - Store and maintain records (paper trail) - Forward completed worksheets to the World Bank - Complete brief annual report	- Receive copies of key records and reports - Maintain the Bank records
Performance Monitoring and Reporting	- Analyze data and compare project performance with project targets - Analyze system problems, recommend and implement improvements (performance management) - Prepare and forward periodic reports	- Review reports - Evaluate performance and assist with performance management, if necessary
MP Training and Capacity Building	- Develop and establish MP training, skills review and feedback system - Ensure that operational staff is trained and enabled to meet the needs of this MP	-
Quality Assurance, Audit and Verification	- Establish and maintain quality assurance system with a view to ensuring transparency and allowing for audits and verification - Prepare for and facilitate audits and verification process	- Supervise the Project - Arrange for initial and periodic verification

D.6. Name of person/entity determining the monitoring methodology:

Dr. Lasse Ringius
Senior Environmental Specialist
Carbon Finance Business
The World Bank
818 H Street, NW
Washington, D.C. 20433
USA

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SECTION E.: Estimation of GHG emissions by sources:

E.1. Formulae used:

E.1.1 Selected formulae as provided in appendix B:

N/A.

E.1.2 Description of formulae when not provided in appendix B:

E.1.2.1 Describe the formulae used to estimate anthropogenic emissions by sources of GHGs due to the project activity within the project boundary:

Project Component #2

For Project Component #2, the project emissions generated by the HFO-fired generator must be included. These emissions are calculated as follows:

It is assumed in this PDD that the HFO-fired generator will deliver 4,049 MWh annually during the construction phase of the Nyagak hydroplant (Project Phase #1) and that it will generate at full capacity (1.5 MW) for 30 per cent of the time when the hydroplant has become operational in Project Phase #2. (The project operator will implement the monitoring plan and continuously measure and record data on the fuel consumption and generation output from the HFO-fired generator over the life of the project).

Project Phase #1

This PDD assumes output and fuel consumption as given by recent generator performance data in Arua in the West Nile region.[25] Formula 2 is utilized in estimating the project emissions generated by the HFO generator:

$$E\ (\text{tonne } CO_2 / \text{yr}) = FC_{,j} * DEN_{prjct,\ fuel\text{-}j} * NCV_{fuel\text{-}j} * CEF_{fuel\text{-}j} * CF_{C\text{-}CO2} + FC_k * DEN_{prjct,\ fuel\text{-}k} * NCV_{fuel\text{-}k} * CEF_{fuel\text{-}k} * CF_{C\text{-}CO2} \quad (2)$$

Where:

E	=	CO_2 emissions per year (tonne CO_2 / yr)
$FC_{,j}$	=	quantity fossil fuel consumed (l). Measured and/or reported, if relevant for each fuel separately, by project operator.
$DEN_{prct\ fuel\text{-}j}$	=	Density (kg/l) of fossil fuel (j, k,..,n)

[25] Information from project proponent.

NCV_{fuel-} = net calorific value, IPCC ($TJ/10^3t$)
CEF_{fuel-j} = carbon emission factor (IPCC) (gC/MJ)
CF_{C-CO2} = carbon-CO_2 conversion factor (44/12)

The CO_2 emissions from fossil fuels – i.e., heavy fuel oil and diesel – burned in the generator are included:

E (tonne CO_2 / yr) = 1,042,896 l HFO * 0.943 kg/l * 41.21 $TJ/10^3t$ * 21.1 tC/TJ * 44/12 + 192,252 l diesel * 0.87 kg/l * 43.33 $TJ/10^3t$ * 20.2 C/TJ * 44/12
= 3,137 t CO_2 + 537 t CO_2
= 3,673 t CO_2

Project Phase #2

Assuming an HFO / diesel fuel ratio similar to that in Project Phase #1, the amount of CO_2 emitted in this phase is calculated as the emission reductions in Project Phase #1 times the estimated generation output in this phase.

Project Output Phase #2 = 8765 h * 1.5 MW *0.3
= 3,944 MWh

E (tonne CO_2 / yr) = 3,944 MWh/4,049MWh * 3,673 t CO_2
= 3,578 t CO_2

E.1.2.2 Describe the formulae used to estimate leakage due to the project activity, where required, for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities

Following methodology I. D (Renewable electricity generation for a grid): Given that the hydroelectric plant is not transferred from another activity, or the existing diesel gen-sets and engines are not transferred to another location or activity, the possibility of leakage can be ignored.

Following methodology II. B (Supply side energy efficiency improvements – generation): Given that the internal combustion unit is not transferred from another activity, or the existing diesel gen-sets and engines are not transferred to another location or activity, the possibility of leakage can be ignored.

In addition to the transportation-related emissions mentioned in section A.2, the proposed project activity will also result in a reduction in the consumption of kerosene for lighting and refrigeration purposes. However, given the project participants' intention to follow a conservative approach to emission reduction determination, they will not quantify and claim the amount of kerosene savings achieved by the project activity.

E.1.2.3 The sum of E.1.2.1 and E.1.2.2 represents the small-scale project activity emissions:

The project activity emissions are equal to E.1.2.1, as the project causes no leakage.

E.1.2.4 Describe the formulae used to estimate the anthropogenic emissions by sources of GHGs in the baseline using the baseline methodology for the applicable project category in appendix B of the simplified modalities and procedures for small-scale CDM project activities:

Project Component #1

First, concerning the hydroelectric component of the proposed project, the GHG emissions in the baseline scenario are estimated using the following formula and the baseline emission rate for diesel/petrol gen-sets and diesel engines (see B.5):

$$E\ (tonne\ CO_2\ /\ yr) = GEN_{Nyagak} * ER_{BL} \quad (3)$$

Where:
GEN_{Nyagak} = metered annual generation output from the Nyagak hydroplant (MWh)
ER_{BL} = baseline emission rate (CO_2/kWh).

$E\ (tonne\ CO_2\ /\ yr)$ = 19,500 MWh * 1.843 kg CO_2/kWh
= 35,934 t CO_2

As defined in B.5, ER_{BL} is calculated as follows:

$$ER_{BL}\ (tCO_2/MWh) = NCV * CEF * DEN_{BL} * HR_{BL}$$

Where:
NCV = net calorific value, IPCC (TJ/10^3t)
CEF = carbon emission factor, IPCC (tC/TJ)
DEN_{BL} = density of baseline fuel(s) (kg/l)
HR_{BL} = heat rate in baseline scenario.

$ER_{BL}\ (tCO_2/MWh)$ = 43.33 MJ/kg * 20.2 gC/MJ * 0.87kg/l[26] * 0.66 l diesel/kWh
= 1.843 kg CO_2/kWh

Project Component #2

In the case of Project Component #1, it is assumed that the HFO-fired generator will be delivering 4,049 MWh annually during Project Phase #1:

$$E\ (tonne\ CO_2\ /\ yr) = GEN_{TH} * ER_{BL}\ (tCO_2/MWh) \quad (4)$$

Where:
GEN_{TH} = metered annual generation output from thermal generator (MWh)

$E\ (tonne\ CO_2\ /\ yr)$ = 4,049 MWh * 1.843 tCO_2/MWh =
= 7,461 tCO_2

For Project Phase #2, where it is assumed that the generator will be delivering at full capacity (1.5 MW) during 30% of the time:

[26] Density figure is taken from Munday and Farrar, *An Engineering Data Book* (Macmillan Press, 1979).

$E\ (tonne\ CO_2\ /\ yr) = GEN_{TH}\ (MWh) * ER_{BL}\ (tCO_2/MWh)$
$= 3{,}944\ MWh * 1.843\ tCO_2/MWh = 7{,}269\ t\ CO_2$

E.1.2.5 Difference between E.1.2.4 and E.1.2.3 represents the emission reductions due to the project activity during a given period:

E.1.2.5 is determined as the baseline emissions plus any emissions associated with positive leakage effects minus the project emissions.

E.2 Table providing values obtained when applying formulae above:

Year	Nyagak hydroplant ERs	Baseline for Arua generator set	Arua generator set, emission	Aura generator set, ER	Total ERs	Cumulative ERs
2005	0	7,461	3,673	3,788	3,788	3,788
2006	0	7,461	3,673	3,788	3,788	7,576
2007	35,934	7,268	3,578	3,690	39,624	47,200
2008	35,934	7,268	3,578	3,690	39,624	86,824
2009	35,934	7,268	3,578	3,690	39,624	126,448
2010	35,934	7,268	3,578	3,690	39,624	166,073
2011	35,934	7,268	3,578	3,690	39,624	205,697
2012	35,934	7,268	3,578	3,690	39,624	245,321
2013	35,934	7,268	3,578	3,690	39,624	284,945
2014	35,934	7,268	3,578	3,690	39,624	324,570
2015	35,934	7,268	3,578	3,690	39,624	364,194
2016	35,934	7,268	3,578	3,690	39,624	403,818
2017	35,934	7,268	3,578	3,690	39,624	443,442
2018	35,934	7,268	3,578	3,690	39,624	483,067
2019	35,934	7,268	3,578	3,690	39,624	522,691
2020	35,934	7,268	3,578	3,690	39,624	562,315
2021	35,934	7,268	3,578	3,690	39,624	601,940
2022	35,934	7,268	3,578	3,690	39,624	641,564
2023	35,934	7,268	3,578	3,690	39,624	681,188
2024	35,934	7,268	3,578	3,690	39,624	720,812
2025	35,934	7,268	3,578	3,690	39,624	760,437
Total	682,752	153,022	75,337	77,685	760,437	760,437

SECTION F.: Environmental impacts:

F.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

The purpose of the project activity is to generate power safely and efficiently and in accordance with applicable environmental standards in Uganda. The design of the Nyagak hydroelectric power station will allow for a continuous ecological river flow of 100-500 l/s from the head pond, or another smaller value approved by the Ministry of Water, Lands and Environment. The head pond will have a storage capacity of at least 130,000 m^3. The expected gross head is 87 m.

In 2002, in accordance with Ugandan law, an environmental impact assessment was conducted for the Bondo-Nebbi transmission line and for the Nyagak and Olewa hydropower projects, for which the National Environmental Management Authority (NEMA) of Uganda issued a “Certificate of Approval of Environmental Impact Assessment”. Both the impact statement and the certificate of approval are on file for inspection by the validator.

SECTION G. Stakeholders’ comments:

G.1. Brief description of how comments by local stakeholders have been invited and compiled:

The World Bank contracted Action Aid (Uganda) as the lead NGO to undertake the Social Intermediation exercise for the West Nile Electrification Concession. Action Aid (Uganda) in turn contracted Community Empowerment for Rural Development (CEFORD) to carry out the Social Intermediation in the towns of Arua, Nebbi and Paidha.

The tasks of CEFORD in the Social Intermediation exercise included:

- Informing the community groups of the impending opportunities that could enable them access electricity.
- Facilitating a process through which communities can freely contribute to the business plan their opinions on power generation, transmission and distribution including strengths, weaknesses, opportunities and threats if any relating to ownership and management of the proposed investment that could impact on the successful implementation and sustainability of the project.
- Feed back to the financial and technical consultants views emanating from these consultative processes for consideration during the designing of the business plan.

For each of the towns, consultations in form of meetings were held with Local Council Executives (LC 1-LC5), Government Civil servants in the respective towns, Business Community representatives, Private Companies and individual interviews with randomly selected households.

G.2. Summary of the comments received:

According to the Report on Social Intermediation for the West Nile Electricity Concession (Utility) under the Energy for Rural Transformation Project (ERT) the main findings from the consultations were the following ones. The report is on file for inspection by the validator.

Main findings:

- People urgently want electricity power, regardless of the source. There was open sign of fatigue about the issue of providing electricity to West Nile and statements like “We now want actions instead of further talks” came from all consultations.
- There is a general feeling that the whole issue is highly political because it always comes when Elections are nearing. They expressed similar sentiments about the road issue (Karuma-Arua).
- People (both government officials and civilians) wish to be involved in the planning, implementation and management of the project through consultations and forging partnership with the main private investor.
- The population does not only want to benefit from the final service delivery in the form of electricity power but also from the implementation activities like supply of labour, materials and food. They also want to be shareholders in the project. In Arua, the proposal is to buy shares

through the West Nile Power Utility Company while Nebbi and Paidha are not very keen about this company.

- People in Arua seem to be more informed about the project and other opportunities for rural electrification than those in Nebbi and Paidha. Arua district has even gone ahead to form a Power Committee (30 members) at the district level to discuss, and create awareness on issues of power for the population.
- There is a strong recommendation to form a West Nile Power Committee to discuss and oversee the process of implementing and managing the project.
- The proposal to develop Nyagak hydro power site under survey should not bar any other interested private investor from developing other sites in West Nile like Olewa.
- While the people in Arua have no objection about the transmission line passing through Nebbi-Okollo-Bondo to Arua Municipality, there is strong objection from the people of Nebbi and Paidha. They prefer it to pass through Nyapea- Warr- Logiri.
- The people in Arua accept the installation of the 1.5 MW generator set in Arua but those in Nebbi and Paidha are against it.

G.3. Report on how due account was taken of any comments received:

The project sponsor and the World Bank have responded in detail to many comments received from stakeholders and concerned parties. World Bank staff has addressed issues concerning the project's status and CDM eligibility, as well as more technical questions concerning the design, site, generation output, environmental impacts etc.

The comments received were also taken into account by the validator when the project was first validated in 2001.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Industrial Promotion Services
Street/P.O.Box:	P.O. Box 3025
Building:	
City:	Kampala
State/Region:	
Postcode/ZIP:	
Country:	Uganda
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	General Manager
Salutation:	Mr.
Last Name:	Hirani
Middle Name:	J.
First Name:	Niazali
Department:	West Nile Rural Electrification Company Limited (WENREo)
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	hirani@ipsuganda.com

Organization:	Prototype Carbon Fund – The World Bank
Street/P.O.Box:	1818 H Street, NW
Building:	
City:	Washington
State/Region:	District of Columbia
Postcode/ZIP:	20433
Country:	USA
Telephone:	+1 (202) 458 5118
FAX:	+1 (202) 522 7432
E-Mail:	
URL:	www.carbonfinance.org
Represented by:	
Title:	Senior Manager
Salutation:	Mr.
Last Name:	Knudsen
Middle Name:	
First Name:	Odin
Department:	Carbon Finance Business Unit
Mobile:	
Direct FAX:	

Direct tel:	
Personal E-Mail:	oknudsen@worldbank.org

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The Government of Uganda, through the Rural Electrification Fund (REF), supports the WNEP with underlying financing. The REF is a Ugandan government fund established under the Uganda Electricity Act of 1999 which supports rural electrification in Uganda. Uganda, the World Bank (through IDA), and bilateral donors (Norway) contribute resources to the fund, and a number of eligible activities, including the WNEP, are supported through the REF. Other bilateral donors may also contribute to the on-going rural electrification activities in Uganda.

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