Document of
The World Bank

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Report No: 72689-PH

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CLEAN TECHNOLOGY FUND (CTF) GUARANTEE

IN THE AMOUNT OF US$44 MILLION

TO THE

LGU GUARANTEE CORPORATION

FOR A

PHILIPPINES RENEWABLE ENERGY DEVELOPMENT PROJECT

April 18, 2016

Energy and Extractives Global Practice
East Asia and Pacific Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective April 1, 2016)

Currency Unit	=	Philippines Pesos (PHP)
PHP46	=	US$1
US$0.022	=	PHP1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AFI	Accredited Financial Institution
AO	Account Officer
BP	Bank Policy
BSP	Bangko Sentral ng Pilipinas, the Central Bank of the Philippines
CFP	Credit Facility Proposal
CNC	Certificate of Non-coverage
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CPI	Credit Policy Issuance
CTF	Clean Technology Fund
DAO	DENR Administrative Order
DBP	Development Bank of the Philippines
DED	Detailed Engineering Design
DENR	Department of Environment & Natural Resources
DOE	Department of Energy
DP	Displaced Person
DSCR	Debt Service Coverage Ratio
EA	Environmental Assessment
EC	Electric Cooperative
ECA	Environmentally Critical Areas
ECC	Environmental Compliance Certificate
ECOP	Environmental Code of Practice
ECPCG	Electric Cooperative Partial Credit Guarantee
ECP	Environmentally Critical Projects
ECSLRP	Electric Cooperative System Loss Reduction Project
EDD	Environmental Due Diligence
EE	Energy Efficiency
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EIARC	Environmental Impact Assessment Review Committee
EMB	Environmental Management Bureau
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
EPIRA	Electric Power Industry Restructuring Act
ERC	Energy Regulatory Commission
ESSF	Environmental Safeguards and Social Framework
FI	Financial Intermediary
FIT	Feed-In Tariff
FM	Financial Management
FS	Feasibility Study

GEF	Global Environment Facility
GHG	Greenhouse Gases
IEE	Initial Environmental Examination
IEEC	Initial Environmental Examination Checklist
IEER	Initial Environmental Examination Report
IPP	Independent Power Producer
ISO	International Standards Organization
LGU	Local Government Units
LGUGC	LGU Guarantee Corporation
NCP	Non-Covered Projects
RE	Non-Conventional Renewable Energy
NEA	National Electrification Administration
NOL	No Objection Letter
NPC	National Power Corporation
OP	Operational Policy
ORED	Office of Renewable Energy Development, NEA
PCO	Pollution Control Officer
PCR	Physical Cultural Resources
PD	Presidential Decree
PD	Project Development Objective
PDR	Project Description Report
PHP	Philippines Peso
PMB	Project Monitoring Board, LGUGC
PMO	Project Management Office
PSALM	Power Sector Assets and Liabilities Management Corporation
RAP	Resettlement Action Plan
RCR	Resettlement Completion Report
RE	Renewable Energy
RESC	Renewable Energy Service Contract
ROW	Right of Way
RPP	Rural Power Project
RPS	Renewable Portfolio Standard
SA	Social Assessment
SECR	Social & Environmental Compliance Report
SEP	Sitio Electrification Program
SGL	Single Guarantee Limit
SMR	Self Monitoring Report
SPUG	Small Power Utilities Group (a division of NPC)
TA	Technical Assistance
WB	World Bank
WESM	Wholesale Electricity Supply Market

Regional Vice President:	Victoria Kwakwa
Country Director:	Mara Warwick
Senior Global Practice Director:	Charles Feinstein (Acting)
Practice Manager:	Julia Fraser
Practice Manager for Guarantees:	Pankaj Gupta
Task Team Leader:	Alan Townsend

PHILIPPINES
Renewable Energy Development

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PAD DATA SHEET

Philippines

Renewable Energy Development Project

PROJECT APPRAISAL DOCUMENT

Basic Information

Date:	April 18, 2016	Sectors:	Energy
Country Director:	Mara Warwick	Themes:	Renewable Energy and Energy Efficiency
Sector Manager/Director:	Julia Fraser/Charles Feinstein	EA Category:	FI
Project ID:	P147646		
Lending Instrument:	Guarantee		
Team Leader(s):	Alan Townsend		
Joint IFC:			

Responsible Agency: Department of Energy

Contact:	Mylene Capongcol	Title:	Under Secretary
Telephone No.:	(632) 840-2067	Email:	mycaps@doe.gov.ph

Guarantee Manager: LGU Guarantee Corporation

Contact:	Lydia N. Orial	Title:	President and CEO
Telephone No.:	(632) 751-8764	Email:	dengorial@lgugc.com

Project Implementation Period: Start Date: 09/01/2016 End Date: 08/31/2021

Expected Effectiveness Date: 09/01/2016

Expected Closing Date: 08/31/2021

Expected Guarantee Expiry Date 08/31/2036

Project Financing Data($M)

[ ] Loan	[ ] Grant	[ ] Other
[ ] Credit	[X] Guarantee	

For Loans/Credits/Others

Total Project Cost :	$560 million	Total Bank Financing :	$44 million
Total Cofinancing :	$516 million	Financing Gap :	0

Financing Source	Amount($M)
BORROWER/RECIPIENT (existing capital in GOP guarantee fund)	16
CTF (as guarantee)	44
Others (Private debt and equity)	500
Financing Gap	0
Total	560

Expected Disbursements (in USD Million, commitment schedule of CTF Guarantee)

Fiscal Year	2017	2018	2019	2020	2021	2022
Annual	11	11	11	11	0	0

Cumulative	11	22	33	44	44	44

Project Development Objective(s)

The project development objective is to catalyze private investment in renewable energy and electrification.

Components

Component Name	Cost (USD Millions)
Partial Credit Guarantee Fund (CTF)	44

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	Rating
1. Political and Governance	S
2. Macroeconomic	M
3. Sector Strategies and Policies	M
4. Technical Design of Project or Program	M
5. Institutional Capacity for Implementation and Sustainability	S
6. Fiduciary	L
7. Environment and Social	S
8. Stakeholders	M
9. Other	N/A
OVERALL	**S**

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [X]
Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [X]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04	X	
Forests OP/BP 4.36		X
Pest Management OP 4.09	X	
Physical Cultural Resources OP/BP 4.11	X	
Indigenous Peoples OP/BP 4.10	X	
Involuntary Resettlement OP/BP 4.12	X	
Safety of Dams OP/BP 4.37	X	
Projects on International Waterways OP/BP 7.50		X
Projects in Disputed Areas OP/BP 7.60		X

Legal Covenants

Standard covenants, representations and warranties for CTF-financed guarantees are proposed to be included in the legal documentation.

Team Composition

Bank Staff

Name	Title	Specialization	Unit	UPI
Alan Townsend	Sr. Energy Specialist	Team Leader	GEE02	186306
Roberto La Rocca	Energy Specialist	Team member	GEE02	383716
Aisha de Guzman	Financial Management Specialist	Financial Management	GGO20	366865
Cecilia Vales	Lead Procurement Specialist	Procurement	GGO08	112692
Gerardo Parco	Sr. Environmental Engineer	Environment	GEN02	331322
Marivi Ladia	Social Development Specialist	Social Development	GSU02	487927
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Elezor Trinidad	Program Assistant	Project preparation	EACPF	336966
Cristina Hernandez	Program Assistant	Project preparation	GEE02	184699
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Jukka-Pekka Strand	Senior Infrastructure Finance Specialist	Guarantees policy and pricing	GEEFS	333239

Non Bank Staff

Name	Title	Office Phone	City
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Locations

Country	First Administrative Division	Location	Planned		Comments
Philippines					

I. STRATEGIC CONTEXT

A. Country Context

1. The Philippines is a middle income, archipelago nation in Southeast Asia with a population of about 100 million and recent, strong economic growth of over 6 percent. The country has earned investment grade ratings from major credit rating agencies as a result of its sound macroeconomic fundamentals. It is increasingly characterized by robust inclusive economic growth, low and stable inflation, healthy current account surplus, adequate international reserves, and a sustainable fiscal position. The government is pursuing the following measures under its Philippine Development Plan 2011-2016: (i) attain high and sustained economic growth that provides productive employment opportunities; (ii) promote equal access to development opportunities through better education, primary health care and other basic social services; equal access to infrastructure, credit, land, technology, and other productive inputs; (iii) reduce the cost of doing business, consistent with upholding good governance and strong institutions to encourage competition; and (iv) establish effective and responsive social safety nets to assist those who are less capable of participating in economic activities. Adequate investment in the electricity sector, in which the service providers are mostly private companies and electric cooperatives, is essential. Reliable and affordable electricity supply is a top concern of both businesses and households. Half of the country's households, and many businesses, are served by 120 rural electric cooperatives (ECs). This project is focused on facilitating the flow of private commercial debt to support EC investments in electrification, expanded networks, and renewable energy.

B. Sectoral and Institutional Context

2. The Philippines has a rapidly growing electricity sector, but off of a low base. Generation capacity is nearly 16,000 megawatts and electricity demand has hit 80,000 gigawatt-hours. But per capita electricity consumption is only 800 kilowatt-hours per annum – very much at the lower end of what one would expect in a middle income country.[1] The country is making a major electrification push and is on track to reach its interim goal of 90% household electrification by 2017. The country essentially aims to be fully electrified within the next decade. This will be challenging, because the remaining unconnected households tend to be remote, dispersed, and poor; and because the key service providers will be electric cooperatives which themselves are still in the midst of a reform process begun 15 years ago.

3. The Philippines passed the Electric Power Industry Restructuring Act (EPIRA) in 2001. This law transformed the electricity sector from one with significant public sector ownership and operation of key components (generation, transmission) and little competition, to one that is almost completely privately owned and operated, and is increasingly competitive[2]. The Department of Energy (DOE) is the lead policy agency. The Energy Regulatory Commission (ERC) regulates retail electricity tariffs, transmission and distribution services and tariffs and monitors market competition. A Wholesale Electricity Spot Market (WESM) is currently in commercial operation in Luzon and the Visayas. The National Power Corporation (NPC) has been restructured and most assets and liabilities have been transferred to the Power Sector Assets and Liabilities Management

[1] By contrast, per capita consumption in China is over 4,000 kWh per year.

[2] The Government owns a dwindling share of hydroelectric and oil-fired capacity amounting as of end-2015 to about 8% of total dependable capacity.

(PSALM) Corporation. PSALM has successfully executed power generation sales and asset management agreements.

4. There are two major regional grids (Luzon-Visayas, and Mindanao), and many smaller islands with isolated networks. The National Grid Corporation of the Philippines (NGCP) is the private concessionaire for the high-voltage transmission network. There are 150 electricity distribution companies operating in the Philippines; of these, 22 of these are privately owned, including the largest distribution companies in the country – Meralco (serving Manila), Davao Light & Power (Davao City), and Visayas Electricity Company (VECO, in Cebu City). The 120 electric cooperatives provide the bulk of electricity services in smaller cities, rural areas, and unconnected islands. The country is fully electrified at the barangay (village or district) level, but there are many sitios (enclaves) that are currently being electrified under a large Government grant-funded Sitio Electrification Program (SEP). This is expected to be completed in 2016. Household electrification stands at 89.6% as of end-2015.

5. The generation mix has been balanced among renewables, coal and natural gas, but is changing as more coal-fired power plants come on-line. Prices are high by regional standards[3]. Only Japan, among the larger countries of East Asia, has average tariffs higher than the Philippines. Several factors explain high prices. EPIRA eliminated almost all subsidies. Generators face market prices for coal, natural gas, and oil. The country has only recently worked off a significant surplus of generation in the Luzon market. Certain contractual rigidities related to IPPs also increase average generation costs. Generation capital costs even for conventional power plants are at the high end of the range for East Asia. Transmission and distribution costs are also at the high end of the range, due to challenging geography. Prices have been coming down with better regulation, lower oil, gas, and coal prices, and greater competition in generation. Generation investment in the electricity sector since the mid-1990s has been private sector-led. Thousands of megawatts of capacity have been purchased from the state by private firms. Thousands more megawatts have been built, or are under construction, by those firms and others private companies, of both local and foreign origin. Chronic shortages in Mindanao will end as new coal-fired capacity comes on-line between now and 2019.

6. In this setting, Government wants to push through the remaining elements of market reform and generation privatization, achieve full household electrification, manage electricity costs and the related price risk to consumers, accelerate reform and restructuring of the electric cooperatives, and ensure that a diversified and clean mix of new generation is developed. Two significant issues can be highlighted. First, over 80% of all credible generation projects under construction or development are coal-fired. Second, moving new power plants from development to actual construction requires creditworthy buyers for that power – and some of the country's ECs remain financially weak. Because they are regulated on a non-profit basis, the ECs have a thin operating margin. Any strategy to meet electricity demand, improve the quality of power supply, and expand access in a sustainable manner will need to address the twin challenges of lessening the country's

[3] Retail tariffs are designed to cover costs, including recovery of generation fuel charges that change with the market prices of coal, oil, and natural gas. There is no national tariff. Retail tariffs over the last 12 months for the country's 140 distribution utilities averaged about 20 US cents per kilowatt/hour.

dependence on coal-fired power plants for incremental generation needs, and improving EC governance, operations, and finances.

7. The National Renewable Energy Plan (NREP, formulated in 2012 and currently being updated) aims to triple the installed capacity of renewable energy (RE) by 2030, to over 15,000 MW of capacity, from the 2010 level. There is a good base of larger geothermal and hydro projects on which to build, and in 2015 and 2016 hundreds of megawatts of wind and solar were commissioned as high feed-in rates were set to expire. The Renewable Energy Act 2008 aims to accelerate the development of renewable energy (RE) sources. The Act provides a diverse set of policy incentives including feed-in tariffs (FIT) for specific on-grid emerging technologies, and a Renewable Portfolio Standard (RPS) and associated market for Renewable Energy Certificate (REC) trading. The first rounds of FITs expired in March 2016, and the achievement against the installation target is still being tallied, as operating megawatts are assessed. There is an increasing likelihood that in the next round of FITs, auction processes will be used to set prices; but this decision will be left to the next administration. The ERC-approved FITs and the corresponding installation targets as amended by DOE are shown below:

RE Technology	FIT	Installation target
Run-of-River Hydro	5.90 PHP/kWh	250 MW
Biomass	6.63 PHP/kWh	250 MW
Wind	8.53 PHP/kWh	400 MW
Solar PV	9.68 PHP/kWh 8.69 PHP/kWh	50 MW 450 MW
Total		**1,400 MW**

8. The key challenges in the Philippines electricity sector are (i) to complete the electrification of the country; and (ii) to meet growing electricity demand with a balanced, sustainable mix of generation. Both challenges imply a significant focus on the electric cooperative sector. ECs already serve over half the households in the country (approaching 12 million households in total). More than half the remaining unconnected households will wind up being served by ECs. ECs, regulated on a not-for-profit basis and still emerging from a legacy of poor governance, will struggle to electrify households while simultaneously preserving their hard-won financial gains of recent years. They also need alternatives to the coal-heavy mix that now represents over 80% of incremental generation in the Philippines. The proposed project addresses these challenges. It will facilitate the flow of affordable financing for EC network expansion, so that the current customer base and new connections can be adequately and efficiently served. It will also help to finance renewable energy projects, so that ECs can source more of their generation requirements from local, sustainable sources.

9. This project is proposed for financing by the Clean Technology Fund (CTF). The CTF Trust Fund Committee approved the Philippines CTF Investment Plan in December 2009, with an allocation of $250 million. A portion of this total was allocated for energy efficiency and renewable energy. The proposed project seeks to help finance renewable energy projects that are less likely to obtain commercial financing – especially in the small hydro sector – while also supporting supply-side energy efficiency in the rural electricity sector. The country's ECs are at the heart of this approach, as developers and/or offtakers (for generation projects) and as operating companies (for energy efficiency investments). This approach is aligned with a key element of the CTF investment plan – that of improving the financial strength of the ECs so that they will be

more reliable buyers of renewable energy over time. The CTF Trust Fund Committee, for its part, approved PHRED on August 8, 2013.

10. The proposed project is designed to expand the capacity of the Government's Electric Cooperative Partial Credit Guarantee (ECPCG) program which has been successful in reducing the commercial banks' perceived risks of lending to ECs and leveraging private investment into the sector, thereby enabling ECs to increasingly connect new consumers and improve operational performance. ECPCG has essentially made a market for commercial lenders. With 5 year capital expenditure needs of the ECs[4] (excluding grant financing by the government for electrification) estimated at over $1 billion for network and operational performance improvement investments alone, and NEA able to finance only around 10% of this, leveraging commercial finance into the EC sector is critical. Capital requirements for renewable energy investments are even higher, and NEA will not lend to this sector. ECPCG was originally established by a Global Environmental Facility (GEF) grant, under the Electric Cooperative System Loss Reduction Project, or ECSLRP, with IBRD as the implementing partner. The proposed instrument for ECPCG expansion is a CTF Guarantee of $44 million.[5]

11. The project reflects the energy sector engagement strategy of the World Bank, which is to focus on ECs and help improve governance, operations, and finances, so that electricity service in secondary cities and rural areas keeps pace with that of the major urban areas. On this platform, the Bank focuses on access and renewable energy. Access is supported by mobilizing network investment to complement the electrification grants of Government, and by supporting alternative access approaches when grid expansion is not economically sound. Renewable energy is supported with technical assistance, institutional strengthening, and investment mobilization. PHRED supports expansion of a successful Government guarantee facility that helps enhance the flow of commercial credit to the ECs, both for network investment and for renewable energy projects that will directly supply ECs. A parallel, grant-funded project complements PHRED: i.e. the Access to Sustainable Energy Project (ASEP), which is funded on a grant basis by the European Union (EU) and the Global Partnership on Output-Based Aid (GPOBA), and administered by the World Bank. ASEP will provide performance-based grant support for remote electrification (solar home systems) and small, grid-connected solar power plants. ASEP also includes a Bank-executed package of technical assistance supporting ECs, NEA, ERC, and DOE in a range of technical areas.

12. While PHRED and ASEP are each designed to be implemented as stand-alone projects, there are important synergies that will be realized if they are undertaken in parallel. Both focus on EC governance, access, and clean energy issues, and help bolster the enabling environment for private investment and effective oversight and regulation. ASEP supports off-grid electrification (solar home systems), solar energy (which still needs a small subsidy), technical assistance (including through the parallel Bank-executed grant from the EU), and introduces an output-based subsidy approach to Government electrification and renewable energy programs. PHRED focuses on leveraging approximately $500 million in commercial lending that will fund EC grid extension and privately developed small hydropower plants (least-cost, so no subsidy). It is highly commercially-oriented and demand-driven. Together, the operations provide an array of

[4] Excluding grant financing of sitio electrification by the government.

[5] $1 million of the $45 million allocation for this project has been provided to the Philippines as a CTF grant to assist with project preparation. This $45 million is included in an annex to the CTF Investment Plan that covers a total of $75 million; the other $30 million is being implemented through IFC.

interventions that reflects the diversity of circumstances involved in the electrification of the last 10%, and the institutional development requirements of 120 electric cooperatives that will be key service delivery agents. The operations together will benefit a majority of the ECs ranging from top-rated cooperatives to the financial struggling ECs of Muslim Mindanao. There is no one-size-fits-all; and the complementary designs of ASEP and PHRED reflect this reality.

C. Higher Level Objectives to which the Project Contributes

13. The proposed Project is linked to the Bank's Country Partnership Strategy (CPS) for the period FY15-18, supporting two pillars: (i) Climate Change, Environment, Disaster Risk Management; and (ii) Rapid, Inclusive & Sustained Economic Growth. The project's enhancement of investment flows to electric cooperatives will (i) help expand rural electrification; (ii) increase the country's renewable energy capacity; and (iii) reinforce the governance reforms that are on-going in the electric cooperative sector. The project will contribute to Government objectives of inclusive growth and job creation by virtue of the investment in more and better quality electricity supply serving secondary cities and rural areas. Leveraging investment in infrastructure is critical, as this has been an area of chronic underperformance. Such investment represents growth in and of itself, but the resulting boost in power supply will support increased activity in other areas of the economy. By improving the prospects for investment, new opportunities for IFC and MIGA will evolve, including in disadvantaged parts of the country such as Mindanao. Electrification will also open up new possibilities for health, education, and social development interventions that could be supported by IBRD. These linkages to broader development challenges are intrinsically related to PHRED's targeted beneficiaries, namely ECs and their customers.

14. At a country level, the project will also contribute directly to shared prosperity and poverty reduction by supporting broadening of access to reliable electricity. Although not geographically or poverty level targeted, the project is demand-driven and, as already seen in ECPCG uptake, will naturally focus on Mindanao and other moderate to high poverty areas since these are the areas with low levels of household access to electricity. The proposed project will also help the Philippines to shift to a lower carbon emissions path, thus avoiding some future carbon emissions, and this result is a key global objective of the Clean Technology Fund.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

15. The project development objective is to catalyze private investment in renewable energy and electrification.

16. The project will bolster private sector lending to ECs that will support the broadening of access to reliable electricity, including in off-grid areas, by enabling them to invest in improving their operational and financial efficiency and increasing their use of distributed renewable energy generation. While the capital costs of most new connections to poorer households are being grant financed by the Government under SEP, such connections necessitate running long lines to remote areas to very low consumption consumers, ultimately degrading the ECs' losses and collections

performance and increasing their operating costs. Private sector lending under PHRED will help ECs to strengthen their networks and add distributed renewable generation. This ultimately assures EC sustainability, allowing them to provide more reliable, and better quality power supply to more customers while still maintaining or improving their creditworthiness.

B. Project Beneficiaries

17. The beneficiaries are electric cooperatives and their current and new customers. The current ECPCG program supports investments that are concentrated in regions of the Philippines where poverty is relatively more prevalent. These areas are also associated with relatively lower electrification rates. This pattern is expected to continue in the future, when PHRED is active, as there continues to be strong demand for investment support in Mindanao and parts of the Visayas. There is also growing interest in ECPCG coming from EC's that are not connected to either of the two main grids. However, it should be noted that some certain areas of poverty concentration are served by ECs that are not presently creditworthy. ECPCG, as a program designed to support commercial financing approaches, will not be relevant unless there is a creditworthy borrower. Nonetheless, there are indirect benefits from the project that do arise. First, reducing losses and increasing generation in power-short areas of the country produce network effects that benefits all entities connected to the particular network (for example, all ECs in Mindanao benefit, even if only marginally, when one or more ECs engage in loss reduction). Second, the program facilitates the peer to peer flow of knowledge and exchange of experience between and among ECs, including knowledge related to commercial operations.

C. PDO Level Results Indicators

18. Achievement of the development objective will be assessed by:

a) Private capital mobilized (US$ million)
b) Generation capacity of renewable energy constructed (MW)
c) People provided with access to electricity under the project by household connections (Number)

These will be complemented by a set of Intermediate Indicators. Both PDO and Intermediate Indicators are presented in Annex 1.

III. PROJECT DESCRIPTION

A. Project Component

19. The project has one component – a $44 million guarantee (technically, a CTF-funded contingent finance facility) that will provide callable cash to an existing Government facility, i.e. the Electric Cooperative Partial Credit Guarantee (ECPCG) facility. ECPCG provides credit guarantees to commercial banks in the Philippines that make term loans to electric cooperatives. ECPCG is a $16 million fund that directly guarantees over $50 million in loans. It needs to be expanded if it is to meet the demand in the market for guarantees to support lending to ECs. PHRED would provide the financial resources for this expansion. With capital of $60 million, ECPCG will be able to prudently increase its exposure ECs that are investing in expanded

distribution networks; ECPCG will also be able to provide guarantees for loans that support investment in renewable energy plants. To date, ECPCG has made loans to 30 ECs, and another 20 ECs have indicated strong interest in also using the program to help leverage commercial debt. A similar number of renewable energy developers are also interested in using the facility.

20. The project is designed as a stand-alone CTF-financed guarantee in the amount of $44 million. The guarantee will be provided to the LGU Guarantee Corporation, a private entity that operates ECPCG for the benefit of the Republic of the Philippines, which owns ECPCG. The CTF Guarantee will be contingent finance that is callable cash, and as such, counts as Tier 1 capital. It can therefore be leveraged in the same manner as the cash which is today sitting in ECPCG-owned accounts, which are managed by an escrow agent (the Development Bank of the Philippines provides escrow services).[6] In terms of financial risk, the guarantee only covers 80% of regular principle and interest payments and there is no option for accelerated payment, both of which provide incentives to keep the lender in the deal. ECPCG cash will be first loss; the CTF Guarantee will be second loss, and will only be drawn upon in the event that ECPCG's cash in escrow is insufficient to pay a call. There have been no defaults to date in the ECPCG program, through more than five years of exposure.

21. The proposed project will greatly expand the capacity of the ECPCG program. As stated above, ECPCG has approximately $16 million in Tier 1 capital. This capital can be leveraged five times, meaning that $80 million in lending can be covered. ECPCG covers 80% of the underlying loans to ECs, so the program leverages the other 20% of the total debt, and leverages additionally up to 20% equity required from the borrowing EC or renewable energy developer. $44 million from the CTF will increase ECPCG capital to $60 million. At five times leverage, over $440 million in total investment could be supported and with reflows a total of $500 million should be achievable. The default rate of ECPCG will be closely monitored and, if the defaults remain low, higher levels of leverage can be allowed.

22. *The Market for Financing Electric Cooperative Network Investments:* ECs need over $1.8 billion in investment over the period 2015-2019, according to the consolidated investment requirements model that is maintained by NEA. Government grant-funding of electrification will provide some funding; another portion will come from the limited lending of NEA. Residual financing requirements are estimated at $1.2 billion. Creditworthy electric cooperatives account for at least 60% of this requirement, or about $720 million, and only a small portion of this can realistically be financed by commercial lenders without the ECPCG guarantee. Financing needs will continue to be significant from 2019 onward.

23. *The Market for Renewable Energy Projects:* ECPCG's goal is to build the market in embedded generation (RE projects connected at distribution voltages and selling to the local EC) when those projects are least-cost, for the purchasing utility. Lower cost technologies will be favored, and it is anticipated that hydro and solar projects will be preferred. These will typically be projects of 1 to 10 megawatts in size and located within the service territories of specific electric cooperatives. For many ECs, these investments will directly back out expensive oil-fired

[6] DOE and DOF have been the joint owners of ECPCG since its inception; "ownership" in this case has two meanings: (i) ECPCG as a part of the policy program is the concern of two Departments; and (ii) DOE and DOF are joint account holders of the ECPCG escrow account and "own" the program capital.

generation. They will help to connect previously un-electrified enclaves, while providing load-area generation that will help reduce distribution losses. At least 41 of the 119 ECs have identified potential small hydro projects within their franchise territories. Generation developers from the private sector have identified additional potential projects. A screening of over 350 MW of projects at some level of preparation yielded a first-cut pipeline of 17 projects, amounting to about 44 MW. Detailed screening of these and other projects is now well advanced and has produced the shortlist of seven bankable projects seeking ECPCG support shown in Annex 2. These projects amount to about 31 MW and will require a total investment of about $110 million. In addition a strong pipeline of developer-led solar projects has started to appear as panel costs have fallen.

B. Project Financing

Guarantee Instrument

24. The instrument will be a stand-alone guarantee from the Clean Technology Fund of $44 million. In designing the guarantee (see Annex 2 for details) internalization of all costs from the outset of the project has been emphasized. Pricing is risk-based which will help encourage more sophisticated approaches to EC credit risk with an enhanced focus on governance aspects. A provision for expected portfolio losses is included in the pricing, and in the base case, this provision is sufficient to pay for all anticipated losses of the program over 20 years.

25. Policy Compliance – The project is being prepared as a guarantee under OP/BP 10, the Bank's operational policies for guarantees. It is proposed for approval on the basis of an approved term sheet, consistent with policy and normal practice (see Annex 2, Table 2-1: Terms and Conditions of a CTF Guarantee). Under the CTF policy of "Financial Products, Terms and Review Procedures for Public Sector Operations", the CTF resources may be deployed for two types of guarantee projects: (a) loan guarantee or (b) contingent finance. The Project proposes to utilize the second type of the CTF Guarantee; CTF does not require a sovereign counter-guarantee. IBRD, as Implementing Entity of the CTF issues the CTF Guarantee for the benefit of LGUGC as the ECPCG Program manager. The CTF Guarantee in the aggregate amount of $44 million is made available to cover the risk of shortfall of funds held in the ECPCG's escrow accounts for LGUGC to meet any eligible claim under the ECPCG Guarantees. If the balance in the relevant ECPCG escrow accounts is not sufficient to meet any eligible claim under the ECPCG Guarantees, LGUGC may submit a demand notice to the Bank as implementing entity of the CTF, and draw down on the CTF Guarantee. The CTF guarantee would not directly cover a debt service default, but instead backstops a Government facility which is covering debt service defaults of loans made by commercial banks on a portfolio basis. The CTF guarantee in essence is covering loans from private lenders to private borrowers.

Project Cost and Financing

26. Total project cost is estimated to be $500 million, the entirety of which is sourced from the private sector, over the 5 year availability period of the CTF Guarantee.[7] This amount is net of the capital resources of ECPCG, which with PHRED financing will grow to as much as $60-million.

[7] The availability period of five years is the period in which ECPCG may book new guarantees based in part on the capital provided by the CTF Guarantee. The term of the CTF is 20 years; this means that at any point in the five year availability period at the start of the project, ECPCG will be able to cover loans of up to 15 years in tenor.

Private financing leveraged by ECPCG funds is sourced from commercial banks (senior debt) and ECs (equity) for the EC distribution networks; and from commercial banks (senior debt), ECs (equity, in some cases), and private developers (equity) for renewable energy.

Project Components	Project cost*	CTF Financing	Counterpart and private sector funding**	% IBRD Financing
1. Expansion of ECPCG program	$500 million	$44 million (CTF guarantee) in addition to $16 million existing program capital	$300 million commercial debt covered $75 million commercial debt uncovered $75 million equity $50 million reflows	n/a

*Project cost is an estimate of the investment flow to electric cooperative and renewable energy investments that will be directly supported by ECPCG over the five year open commitment period of the CTF guarantee.
**Estimates only; overall the estimated investment flow is based on ECPCG operating at 5x leverage.

C. Lessons Learned and Reflected in the Project Design

27. The project builds on the lessons learned from the Rural Power Project (RPP) and the Electric Cooperative System Loss Reduction Project (ECSLRP). RPP highlighted the difficulties that IBRD-financed credit lines face in today's credit market in the Philippines. Accordingly, consideration of including an IBRD-financed credit line in the operation was dropped. Instead of introducing wholesale financing into the market that could potentially crowd out private commercial finance, the success of ECPCG in leveraging private lending for the EC sector suggests that renewable energy as well could be more effectively supported with guarantees rather than IBRD or CTF lending. This has been validated by extensive consultations with the commercial finance sector, in which leading banks universally welcomed the extension of ECPCG to the renewable energy sector.

28. The main lesson of ECSLRP is that the ECPCG program is meeting a market need and should be expanded and extended. The reason that it is working so well is that key stakeholders have found a way to work together and collaborate, rather than compete. Banks want to lend, but want the guarantee; and ECs want to borrow. To support these willing entities, LGUGC and NEA crafted a co-financing agreement in 2009. This agreement, encouraged by DOE, integrates the ECPCG origination process with the NEA-facilitated investment planning and ERC approval mechanism. The co-financing agreement has led directly to all of the loans that have been supported under ECPCG. The proposed project will deepen the working arrangements with NEA, with enhancements at the origination stage, revamped guarantee pricing, enhanced step-in rights (for NEA), strengthened monitoring, and other measures. The project will also internalize all costs, so that it will move forward on a fully sustainable basis.

29. RPP and ECSLRP also provide additional lessons from the subprojects they supported. Under RPP two of the three mini-hydro investments financed ran into major cost and time overruns and also underperformed against feasibility study expectations. PHRED has therefore focused, through parallel trust fund-supported TA, on capacity building of NEA to assure the quality of technical and economic analysis of renewable energy subprojects, to encourage joint ventures with private RE developers, and to properly optimize project financing. NEA has established a new Office of Renewable Energy Development (ORED) for these purposes. ORED has now been in operation for two years, and is proactive in working with the ECs. Delays at ERC in approving

capital expenditure plans that justify network investments were also identified as a major problem in ECSLRP. ERC and the World Bank are now working together, utilizing trust funds mobilized by the Bank, on regulatory process efficiency and other aspects of regulatory reform.

30. ECPCG is a Government-owned program overseen by DOE with assistance from DBP. As such, PHRED is not suitable as an IFC operation. However, ECPCG as a fund structure is firmly rooted in commercial approaches, with a private sector fund manager (LGUGC), an escrow agent for the cash reserve, and risk-based approach to pricing guarantee products and for measuring value-at-risk.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

31. The implementing agency is the LGU Guarantee Corporation. LGUGC is a private entity owned by the Philippines Banker's Association and the Development Bank of the Philippines. LGUGC has been managing guarantee operations with multiple donors and in multiple sectors for well over a decade. It maintains strong relationships with fourteen commercial banks or Accredited Financial Institutions (AFIs) and is resourceful in leveraging its existing systems to diligently monitor investment projects that it guarantees. It has deep knowledge of the EC sector and continually strengthens its capacity through learning-by-doing. LGUGC will continue in its role as the program manager of ECPCG. The Guarantee Agreement will be with LGUGC, acting on behalf of ECPCG. It will include references to the program management agreement between Government and LGUGC, the LGUGC-NEA co-financing agreement, and the Cooperation Agreement between IBRD and Government.

32. In planning the transition from ECPCG as it developed under GEF financing, to the new, expanded ECPCG supported by PRHED, lengthy delays were encountered primarily related to the confirmation of LGUGC in its role as Guarantee Program Manager. In parallel, new Government rules mandated the transfer of the escrow reserve account from a private Bank to a Government Financial Institution (GFI). Two GFIs competed to offer the escrow services, and the Development Bank of the Philippines (DBP) emerged as the preferred entity. DBP has then stepped forward to assist DOE with certain aspects of managing the program, the key role of which is to be a co-signatory, along with DOE, in the Guarantee Program Implementation Agreement (GPIA) with LGUGC; this allows DBP's procurement systems to be used. The GPIA has been reviewed by the Bank, and is acceptable to LGUGC, and provides a level of autonomy and accountability comparable to the previous GPIA which had underpinned the successful evolution of ECPCG.

33. The National Electrification Administration (NEA) has emerged as a key partner agency in ECPCG and this role will be strengthened going forward. NEA is the apex agency of the electric cooperative sector, and works with ECs on development of investment plans and on identification of potential generation options. NEA plays a key role in the loan origination process. Once an EC investment plan has been identified for potential financing through ECPCG, the EC in question is briefed on the merits of the program, and LGUGC is brought in to perform the initial due diligence activities. If everything is positive, an offering memorandum is presented to several of the accredited financial institutions – AFIs, the commercial banks that make the loans that ECPCG

backs – while in parallel the investment plan is put through the ERC approval process. NEA's ORED is also working closely with other government agencies and the Bank team on the development of the renewable energy pipeline. NEA, through ORED, will therefore play a similar role in RE loan origination.

34. Ultimately, the lending bank (AFI) is responsible for its own due diligence on a project loan. Over-reliance on due diligence by LGUGC and NEA must be guarded against particularly for RE projects which carry different risks than EC network investments. AFIs will need to invest in their own capacity building on RE projects or retain third party consultants to provide the necessary due diligence. In the current high liquidity, low interest rate macro-environment with banks competing hard to place loans, the need to prevent such over-reliance is even higher.

B. Results Monitoring and Evaluation

35. Results monitoring and evaluation will be the primary responsibility of LGUGC. NEA will make an important contribution to the monitoring effort and is implementing a new Key Performance and Governance Standards system for its membership that LGUGC will be able to draw upon. DOE, as the primary ECPCG program owner, will monitor ECPCG performance as well and, through the Guarantee Program Implementation Agreement with LGUGC, will receive direct and regular reporting on accomplishments and challenges.

C. Sustainability

36. The sustainability of service delivery is supported by continuing efforts to enhance the financial viability of participating ECs. Investment plans are focused on loss reduction, energy sales increases, and reliability improvement, all of which contribute to financial strengthening. ECs will have additional incentive to operate efficiently given the ERC's move to performance benchmarking in determining tariff paths (though EC margins will continue to be low, and their ability in aggregate to self-finance investments will be limited). For ECs that contract with renewable energy generators, the availability of more locally generated energy should also help with service reliability.

37. The sustainability of the ECPCG program is ensured by the shift to fully cost-reflective pricing for the ECPCG program. Internalizing the cost of running these programs will mean that ECPCG will be self-sustaining when CTF resources are no longer available (the GEF grant was made in perpetuity; and the Government has kept the interest earned on the initial $10 million in the program).

V. KEY RISKS

38. The various risks faced by the project have been preliminarily assessed through the Systematic Operations Risk-Rating Tool (SORT). In light of this analysis, the overall project risk is assessed to be Substantial. A number of risks of rating 'M' or higher were identified, including: (i) Political and Governance; (ii) Macroeconomic; (iii) Sector Strategy and Policies, (iv) Institutional Capacity for Implementation and Sustainability; (v) Stakeholder Risks; (vi) Technical Design of Project or Program; and (vii) Social and Environmental. Key mitigation measures have

been proposed, including implementation of corporate best practices and technical assistance activities.

39. *Political and Governance:* As the EC sector has a legacy of governance issues, it will be critical for the new Government to continue policies that have produced a demonstrable increase in operating and financial performance in the EC sector. The project will be implemented with a five year open commitment period, until 2021, and some guarantee commitments could extend to 2036. Policies supportive to commercial financing and good governance of the EC sector will need to continue and evolve as needed so that risks in the sector remain manageable. Political and governance risks are rated Substantial.

40. *Macroeconomic:* The primary risk to this credit enhancement project is a sustained interest rate rise that would cause ECs to lose interest in commercial financing and seek alternatives such as public sector loans. At this time the risk of a sustained rise in interest rates looks low, but this is a risk that, though assessed as moderate at this time, will be with the project all of the way through the open commitment period of the CTF guarantee.

41. *Sector Strategy and Policies:* Policies have been quite good in the areas of concern of this project. Successive Governments have been consistent and effective in advancing electrification, in part through an emphasis on EC governance improvement. Government has also taken many steps to implement the Renewable Energy Act 2008, as evidenced by the successful first round of FIT projects. However, there is a pending change in Government; and there is an unfinished agenda in RE, especially the implementation of the Renewable Portfolio Standard.

42. *Institutional Capacity for Implementation and Sustainability:* Project financing support is very heavily geared to the EC community. There are therefore substantial (governance-related) risks that stem from the exposure of the project to EC borrowers. In past analytic work and in the detailed preparation work associated with this project, the Bank team has conducted a thorough review of the EC sector including the role and responsibilities of NEA. This work has helped to inform the design of the project but has also more closely aligned NEA and prospective EC borrowers with the project. A more transparent and accountable EC sector is emerging and emerging fast, in part because individual ECs will not be able to attract either lending or bulk power unless they are more efficient, commercial and transparent in their operations. This amounts to a revolution in the Philippines rural electricity sector; with nobody to bail them out anymore, more and more ECs are stepping up to the challenges and transforming their organizations. It is this process that PHRED seeks to reinforce and accelerate. Through project design, risks in this area are mitigated by the rigorous processes which enable ECs to qualify for support, by active monitoring processes that ensure that money is spent for its intended purposes, and by the fact that lenders are protected by NEA step-in rights which have now been further strengthened. This means that a defaulting entity could see NEA dissolve its Board and replace its management in the event of a default.

43. *Stakeholders:* The risk rating is moderate. PHRED is a multi-stakeholder project, with ECs, commercial banks, government agencies, consumers, investors, regulators and other stakeholders interacting in the course of financings and investments. However, ECPCG has proven to be a well-adapted vehicle for managing these stakeholder interactions since the first guarantee was completed in 2010.

44. *Technical Design of Project or Program:* There are two dimensions of technical design risk to be considered here. Risks related to ECPCG program design are considered low, because the guarantee mechanism has been operating and PHRED is intended to scale-up a successful credit enhancement architecture. Risks related to the subprojects that will be financed are generally moderate. EC network investments will mostly be low risk; with regard to renewable energy, technical risks should be moderate. The RE technology in question is proven, and the risks related to technical aspects of these projects should be very manageable as long as other aspects, like social and environmental risks, are well managed.

45. *Social and Environmental:* The risks are considered substantial, but manageable. A natural screening process will eliminate most if not all high-risk projects at an early stage. In the Philippines, there is a lot of collective experience in developing such projects, and a sophisticated regulatory environment that ECs and private companies are used to dealing with. ECPCG is a demand driven program designed to support least-cost investments. Project development risks are with ECs and private companies. Projects that, for whatever, reason, have high risks – especially related to social and environmental issues – are generally unlikely to be competitive versus other sources of supply. It is likely that low or moderate social and environmental risks will be a source of competitive advantage for projects that are successful in being financed through ECPCG.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analyses

46. Financial assessment of the guarantee program was carried out on a blended basis for the two investment windows, recognizing the different average guarantee sizes and realistic annual volumes for each window. This analysis (see Annex 6) shows that ECPCG will be financially robust other than in a scenario of financial meltdown in the EC sector.

47. Support under the program for the ECs is premised on investment programs that improve the financial condition of the EC. Demand for these investments was estimated by a two-step process. First, the investment requirements of the sector were analyzed for all ECs on an individual and aggregated basis. Second, the net borrowing capacity of the individual ECs was assessed. The expansion of ECPCG has been calibrated to fund the estimated demand for financing from creditworthy ECs in the sector, and to additionally finance a portfolio of renewable energy projects. These investments and their financial impacts will be screened not just by the ECPCG program but also by NEA, ERC, and the participating commercial bank that ultimately makes the underlying loan guaranteed by ECPCG.

48. Sub-project financial and economic analysis is detailed in Annex 6. EE investments result in modest financial returns for ECs, due to the regulatory framework in which they are financed. Excess returns, with some lag, are returned to customers in the form of lower tariffs (or, in many cases, avoided increases). Economic returns are estimated at 12%. The EIRR is very sensitive to the assumption used for system loss reductions achieved from the EE investments. RE investments show robust FIRRs in the 17-20% range in the base case, but these are sensitive to capital costs/MW and capacity factors which vary widely in the Philippines. These factors will be used to help screen for bankable projects in the ongoing trust-funded assistance to NEA for RE project pipeline development. The EIRR of typical mini hydro projects is just over 18 percent.

B. Technical

49. The existing ECPCG program has been reviewed and enhanced. First, pricing will be risk-based but remains affordable to users. Second, guarantee resources have been enhanced with maximum financial efficiency, through the use of the CTF guarantee. Third, the partnership between LGUGC and NEA has been strengthened and, critically, NEA's step-in rights have been clarified and enhanced so that lender and borrower expectations are aligned as to what will follow in the wake of a default. For RE projects, NEA's oversight and step-in rights would be limited to ECs, either as joint venture partners or off-takers, in cases where the borrower is an RE developer. Readiness for implementation is high under the EE window because of the number and quality of financeable EC investment plans in the current pipeline and the limited guarantee capacity remaining in the existing ECPCG program. The current portfolio of ECPCG is presented in Table 2-7 in Annex 2.

C. Financial Management

50. Based on the FM assessment of the project carried out in accordance with the "Financial Management Practices in World Bank-Financed Investment Operations," LGUGC FM systems meet the Bank's requirements, provided the recommended mitigating measures are incorporated. The risk rating is low. Full details of the FM Arrangements are in Annex 3.

D. Procurement

51. Following the Bank's Procurement (Section 3.18) and Consultant Guidelines (Section 3.14) for the "Procurement Under Loans and Payment Obligations Guaranteed by the Bank", goods, works, non-consulting and consulting services financed by guaranteed payment obligation shall be procured with due attention to economy and efficiency. Procurement capacity assessments of 3 selected electric cooperatives showed that there is sufficient capacity to undertake economic and efficient procurement for prospective loan borrowers; the risk rating is low (Procurement Capacity Assessments of Electric Cooperatives on file). The electric cooperatives follow commercial practices that are generally acceptable to the Bank. The Bank may conduct a review of the procurement transactions under the guaranteed payment obligations at any time when necessary during implementation.

E. Social (including safeguards)

52. The main beneficiaries of the project are new and current consumers of rural electric cooperatives. In the project areas, the improvements will support meeting local development objectives including accelerating economic and social development, increasing productive uses of electricity while holding down power costs, and improving quality of life. The risk rating is substantial, due to the possibility of involuntary resettlement.

53. **Poverty** – The project is expected to support investments throughout the Philippines. Investments that ECPCG has supported so far are mostly located in provinces with relatively high concentrations of poverty (more than 20% incidence of poor households). This reflects the fact that ECPCG has to date been about 60% focused in Mindanao. This pattern is likely to continue with the heaviest demand for ECPCG coming from Mindanao and Visayas as opposed, for

example, some of the relatively prosperous parts of Luzon. But it should be noted that relatively few investments are likely in some of the very poorest provinces, mainly because the electric cooperatives in those provinces are often not creditworthy. The project also seeks to support electrification of 400,000 households from 2017-2021. Most unelectrified households tend to be poor; in part this can be seen in their consumption patterns after getting connected, where new connections, overwhelmingly, consume only within the lifeline category of consumption (100 kWh per month or less – indicative of households with a limited number of lights and appliances and managed consumption, to keep bills down).

54. **Gender** – Visits and discussions with officers and consumers of some electric cooperatives in Mindanao showed that the project will benefit underserved residential households, including women who rely on electricity to carry out domestic functions. Reliable supply of electricity will help lead to new opportunities and improved efficiency in livelihood opportunities. Longer productive time for livelihood and education due to presence of better lighting may translate to more income in the hands of women. The availability of street lighting is also expected to promote better safety to women. It is agreed that gender responsiveness through women dedicated consultations will be done at sub project level so that practical recommendations for gender equality may be incorporated in the design and operation of the subproject thereby effectively addressing risks and constraints and enhancing opportunities for both genders to equally share the project benefits.

55. **Gender Assessments** – It was agreed with LGUGC, DOE, and NEA that assessments would be done over the course of the project looking at the intersection of gender and utility service issues. Each assessment would be done at the level of a specific EC that is a participant in the ECPCG program. While there have been some delays in the approval of PHRED, the Bank and the Government counterpart team have been able to initiate the first three of these gender assessments, involving three ECs (one each from Luzon, the Visayas, and Mindanao). The assessments have been financed from trust funds administered by the Bank and will be completed within 2016. Following these assessments, two more EC-level studies will be done over the course of PHRED. This work is highly innovative as there is really no other examples of such detailed gender-focused work in energy being done in the context of utility service specifically.

56. **Involuntary Resettlement (OP 4.12)** – Subprojects, which will mostly involve construction of mini hydro run-of-river electric plants, will not involve significant flooding of land because they have very little water storage. However, occasional unavoidable involuntary resettlement impacts on people's assets or access to livelihood sources may occur. Construction of new energy facilities such as substations may require temporary and permanent land acquisition from commercial, residential and agricultural land. Rehabilitation of existing structures may also require small land acquisition for some expansion. Overall, however, scales of impacts are quite limited and can be minimized due to the flexibility in site selection. Existing road paths for setting up distribution lines will also be used to further minimize impacts. For substations, the present practice is to use the open purchase approach in land acquisition where a willing seller is able to freely negotiate the term of purchase with the particular electric cooperatives which are private entities and do not have the power of eminent domain. For activities that will trigger OP4.12, the Environmental and Social Safeguards Framework (ESSF) of the project provides specific guidance to address involuntary resettlement issues in a manner that is compliant with the policy. The ESSF specifies principles and objectives, eligibility criteria of displaced persons (DP), modes of compensation

and rehabilitation, potential relocation of these persons, participation features and grievance procedures. No subprojects have been firmly identified for year 1 implementation and so no specific Resettlement Action plans have been required for review as of appraisal.

57. **Indigenous Peoples (IP) (OP 4.10)** – The potential location of the subprojects in rural and remote areas will likely be in areas inhabited by indigenous peoples. Subproject impacts on Indigenous Peoples are expected to be mostly positive with minimal negative impacts including elite capture of subproject benefits. The IP Framework for PHRED is integrated into the ESSF. It provides guidance on how to engage with Indigenous Peoples, enhance positive impacts on them, and mitigate potential risks to ensure subproject compliance with OP 4.10. Some subprojects, particularly mini-hydropower plants, may be in ancestral domains of Indigenous Peoples. The Indigenous Peoples' Rights Act (IPRA) of the Philippines mandates that any project that impinges on ancestral domains must secure a free and prior informed consent from affected IP communities and not just broad community support. ECs are very familiar with these requirements and pride themselves in their close and collaborative relationships with IP communities.

F. Environment (including Safeguards)

58. **Applicable World Bank Environmental Safeguard Policies.** The Environmental Assessment (EA) category of the project is FI (financial intermediary). The risk rating is substantial given the expectation of small hydro financings. The project is targeting sub-projects that involve the construction, expansion and rehabilitation of renewable energy projects, existing distribution lines and substations for energy efficiency. It is expected that since most of the projects that qualify under the ECPCG program are small-scale, potential impacts are assessed to be moderate, localized, and temporary. For sub-projects with significant, adverse impacts, a full-blown Environmental Impact Assessment (EIA) and a comprehensive Environmental Management Plan (EMP) will have to be prepared by the proponents to be submitted as part of the proposal package, in accordance with the Philippine EIA Law. Otherwise, for those sub-projects with manageable and short-term impacts, a simplified Environmental Assessment or an Initial Environmental Examination (IEE) will be required. Project impacts can be mitigated through the measures in the Environmental Management Plan (EMP), the adoption of good construction and management practices and implementation of the Environmental Codes of Practice (ECOP) which will be included in the bidding documents. The program of work of the contractor will be conducted under the supervision of field engineers and in consultation with local communities. Distribution network investments are also expected to trigger OP/BP 4.01, with interventions limited to the extension of electricity distribution networks and sub-transmission lines (power towers, poles, and wiring) and substations (transformers and other electrical equipment), metering, IT systems or smart grid investments.

59. For this project, the renewable energy investments are expected to trigger the following Bank safeguard policies: OP/BP 4.01 on Environmental Assessment, OP/BP 4.04 on Natural Habitats, OP 4.09 on Pest Management, OP/BP 4.11 on Physical Cultural Resources and OP/BP 4.37 on Safety of Dams. ECPCG is designed to guarantee projects utilizing small hydro, biomass, solar, and wind technology. Depending on the type of technology, scale and project location, the subprojects may fall under the World Bank's Environmental Assessment Categories A, B or C and under the Philippine EIS System Project Categories II and III.

60. **Environmental and Social Safeguards Framework (ESSF).** The overall objective of the ESSF is to guide the project planners, the LGUGC, NEA, the project proponents and contractors in sub-project screening, and assessing and mitigating adverse environmental and social impacts during project siting, design, construction, operation and decommissioning. The ESSF contains the applicable Bank's safeguard policies' requirements, the Philippine laws and regulations on environmental impact assessment and other related policies as well as the environmental due diligence policies of LGUGC, the implementing agency. The ESSF covers the requirements for (i) safeguards screening and scoping; (ii) impact assessment and development of environmental management plans (EMPs), mitigating measures and environment codes of practice (ECOPs) for the subprojects; (iii) public consultation and disclosure; (iv) safeguards review and clearance; (v) safeguard implementation and budget supervision; (vi) monitoring and reporting and (vii) institutional arrangements and capacity building. The EMP and the ECOPs will be incorporated into the bidding and contract documents and monitored by supervision engineers.

61. **Public Consultation and Information Disclosure.** The Bank safeguard policies OP/BP 4.01, 4.04, 4.09, 4.10. 4.11. 4.12 and 4.37 require the proponents to facilitate public consultation and information disclosure, including consultation with project affected people (PAPs), local government units (LGUs), local NGOs, appropriate national government agencies (NGAs) and university departments. The draft ESSF (publicly disclosed in 2013), incorporating both the environmental and social frameworks of the project, including the template EMPs and ECOPs was subject to public consultations with LGUGC, DENR, DOE, NEA, the League of Cities and Municipalities, NCIP, prospective proponents, specialists in renewable energy projects and NGO representatives or civil society organizations. The final ESSF and Annexes take into consideration the feedback from the consultations. These final documents have been made publicly available at public places accessible to project-affected-groups, NGOs and other interested stakeholders (on April 13, 2016), and through the World Bank's InfoShop (April 7, 2016).

62. **Safeguard Implementation, Monitoring and Reporting.** LGUGC will be responsible for coordinating the supervision and monitoring of the implementation by the proponents of the ESSF and other safeguards documents such as EMP and ECOPs. LGUGC and the Project Monitoring Board (PMB) will carry out site visits during the pre-construction, construction and operations of the sub-projects to ensure that the procedures set out in the ESSF are being followed. NEA will be providing technical support to the screening of the sub-projects' applications and the monitoring of the construction activities. The project proponents, assisted by their construction supervision engineer and their pollution control officers (PCO), will be responsible for preparing and ensuring effective implementation of safeguard instruments such as the EMPs/ECOP and will maintain regular liaison with local authorities and communities. LGUGC shall conduct a Mid-Term Review report on the implementation of the ESSF and submit this to the World Bank.

G. Carbon Analysis

63. The carbon analysis assumes a conservative emissions factor of 0.504 tons CO_2e / MWh typical of higher efficiency new build coal plant running on high grade imported coal from Australia. Unusually in the Luzon-Visayas grid, coal is not base loaded but is load following. Base load is instead provided by gas and geothermal capacity that is must run for contractual reasons that will not change for at least a decade. In the Mindanao grid capacity is short and the deficit will also be filled by new coal projects. A more aggressive emissions factor of 1.034 tons

CO_2e / MWh, commensurate with the avoided dispatch of Philippines coal plants which are relatively small and not generally high in efficiency, could arguably be used as a higher bound for carbon benefits, and analysis using this figure is presented for sensitivity purposes.

64. With a guarantee leverage of five times and with $250 million of investments supported by each window, 96 MW of coal capacity is displaced in total. The cost effectiveness of the EE investments is estimated at $8.57 / ton CO_2e assuming an emissions factor of 0.504 tons CO_2e / MWh (or $4.18 / ton CO_2e at the higher emissions factor). For the RE investments, cost effectiveness is estimated at $4.32 / ton CO2e (or $2.11 / ton CO_2e at the higher factor). Overall PHRED cost effectiveness is $5.13 / ton CO_2e based on $44 million of CTF supporting 40 year CO_2e reductions of 8.57 million tons CO_2e , or $2.50 / ton CO_2e for 40 year reductions of 17.6 million tons CO_2e at the higher emissions factor. The use of CTF to provide a guarantee is highly cost effective compared to typical loan operations in these fields.

H. World Bank Grievance Redress

65. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring
PHILIPPINES: RENEWABLE ENERGY DEVELOPMENT

Project Development Objectives
The Project Development Objective (PDO) is to catalyze private investment in renewable energy and electrification.

These results are at	The Project Level

Table 1: Project Development Objective Indicators

Indicator name	Core	Unit of Measure	Baseline	Cumulative Target Values (fiscal years)					Data Collection and Reporting			Description
				2017	2018	2019	2020	2021	Frequency and Reports	Data Collection Instruments	Responsibility of Data Collection	
Private Capital Mobilized	X	USD millions	0	50	150	250	375	500	Yearly	LGUGC Monitoring Framework	LGUGC	Capital leveraged through the project interventions
Generation Capacity of Renewable Energy		MW	0	0	0	10	30	71	Yearly	LGUGC Monitoring Framework	LGUGC	
People provided with access to electricity under the project by household connections (Number)	X	Number	0	100,000	500,000	1,000,000	1,500,000	2,000,000	Yearly	LGUGC Monitoring Framework	LGUGC	Number of people gaining access to electricity as a result of the project interventions

Table 2: Intermediate Results Indicators

Indicator name	Core	Unit of Measure	Baseline	Cumulative Target Values (Calendar years)					Responsibility of Data Collection			Description
				2017	2018	2019	2020	2021	Frequency and Reports	Data Collection Instruments	Responsibility of Data Collection	
Household connections		Number	0	20,000	100,000	200,000	300,000	400,000	Yearly	LGUGC Monitoring Framework	LGUGC	
Direct Project Beneficiaries	X	Number	0	100,000	500,000	1,000,000	1,500,000	2,000,000	Yearly	LGUGC Monitoring Framework	LGUGC	Number of beneficiaries as a result of the project interventions
Of which % Female Beneficiaries	X	Percentage	0	50%	50%	50%	50%	50%	Yearly	LGUGC Monitoring Framework	LGUGC	Number of female beneficiaries as a result of the project interventions
Estimated GHG emission reduction compared to a business-as-usual scenario		Tons CO_2e	0	20,000	50,000	200,000	500,000	890,000	Yearly	LGUGC Monitoring Framework	LGUGC	
Cumulative avoided non-renewable GWh generated as a result of both investments in EE and in RE generation supported by the ECPCG program		Gigawatt-hours	0	36	90	360	900	1770	Yearly	LGUGC Monitoring Framework	LGUGC	
RE Projects reaching financial closures		Number	0	0	2	8	20	20	Yearly	LGUGC Monitoring Framework	LGUGC	
Average reduction in system losses across ECs participating in the ECPCG program		%	0	0.1	0.2	0.4	0.6	0.8	Yearly	LGUGC Monitoring Framework	LGUGC	

Annex 2: Detailed Project Description
PHILIPPINES: Philippines Renewable Energy Development (PHRED)

1. The Electric Cooperative Partial Credit Guarantee (ECPCG) program was originally designed to offer partial credit guarantees to enable ECs to access loans from commercial banks for system loss reduction investments in energy efficiency (EE). The Government has requested assistance in expanding this program, as most of its current capital is being used in support of commercial lending to the EC sector. There have been no defaults since the first guarantee was booked in 2010. Program expansion is justified by the continuing investment needs of the ECs for network efficiency, including system loss reduction, and network expansion, including sub-transmission. There is also an opportunity to participate in development of renewable energy (RE). The proposed expansion of ECPCG is based on market demand and incorporates enhancements to the program design and implementation. The use of a CTF guarantee does not pose additional risk to the Government since no indemnity agreement/counter guarantee is required.

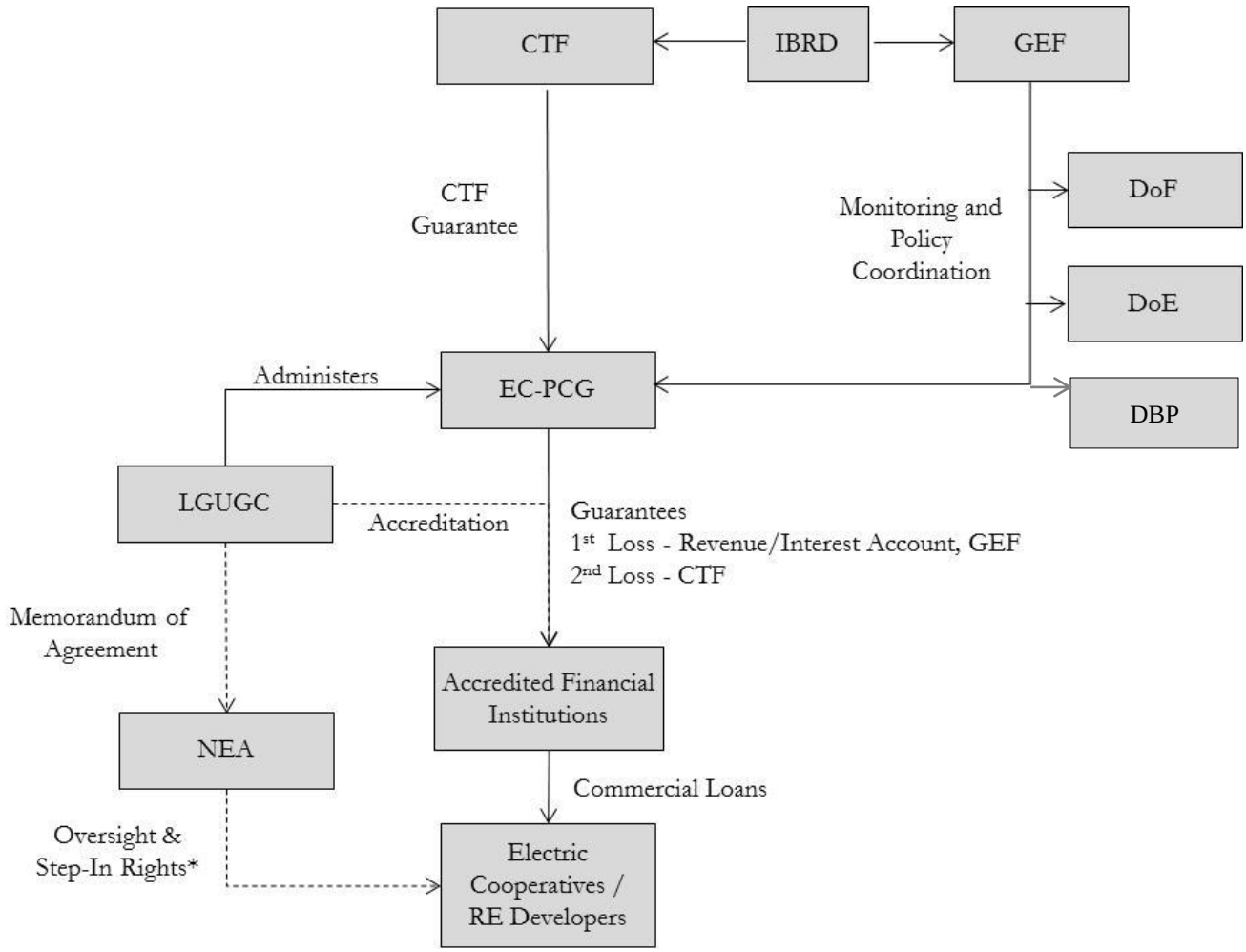
2. The ECPCG program will be expanded through a capital increase provided by a stand-by CTF guarantee. The guarantee acts like additional capital in the ECPCG program, against which more guarantees could be issued. The funds already existing in the ECPCG program would be used first to meet guarantee calls until they are insufficient to pay a call.[1] At this point, ECPCG would call upon the CTF resources to provide funds to meet obligations.

3. The proposed mechanism uses the same structure as the current ECPCG program, incorporating its key success factors while improving certain aspects based on transaction experience with the current program. The expanded program is expected to retain the Bangko Sentral ng Pilipinas (BSP, the Central Bank of the Philippines) zero risk weighting, which was one the original program's key attractions to commercial banks. The accredited financial institutions (AFIs) and ECs would continue to benefit from the program through risk mitigation and lower borrowing costs, respectively. The structure integrates the CTF and GEF funds into a single program to achieve the objective of helping ECs and RE developers access commercial financing.

4. The structure of the ECPCG program as shown in Figure 2-1 remains largely identical to the existing structure. The funds that are currently in the program, including the GEF funds originally used to capitalize the ECPCG program and the interest income and guarantee revenue accrued under that program, are incorporated into the expanded option. CTF funds are then provided as a guarantee to LGUGC as program manager of the ECPCG Program. LGUGC would continue to administer the program and issue guarantees on behalf of the expanded ECPCG.

[1] ECPCG program capital is made up of the original GEF grant of $10 million, plus accrued interest, plus retained guarantee program revenues. Total cash held in escrow amounts to about $16 million, and LGUGC, as ECPCG program manager, is currently booking guarantees against this amount.

Figure 2-1: Structure of ECPCG



** Note that NEA's oversight & step-in rights would be limited to ECs, either as joint venture partners or off-takers, in cases where the borrower is an RE developer.*

5. Key terms of the guarantee are given in Table 2-1 below:

Table 2-1: Terms and Conditions of a CTF Guarantee

INDICATIVE TERMS AND CONDITIONS OF IBRD/CTF COMMITMENT IN SUPPORT OF THE PROPOSED PHILIPPINES RENEWABLE ENERGY DEVELOPMENT (PHRED)(THE PROJECT)

CTF Guarantee

CTF Guarantee Provider:	IBRD as an implementing entity of the CTF (hereinafter referred to as the IBRD/CTF)

Beneficiary:	LGU Guarantee Corporation as the Guarantee Program Manager of the ECPCG Program of the Government of the Republic of Philippines (hereinafter referred to as LGUGC)
ECPCG-Program:	The Electric Cooperative – Partial Credit Guarantee Program (hereinafter referred to as ECPCG Program) was established by the Republic of the Philippines (the Philippines), through its Department of Finance and Department of Energy, with the funding support from the Global Environment Facility (the GEF) through its grant, for the purpose of a) guaranteeing commercial loans from accredited financial institutions (AFIs) to the Electric Cooperatives (ECs or investors in the ECs) as borrowers, for the financing of economic power distribution system upgrades (Energy Efficiency); and b) guaranteeing commercial loans from accredited financial institutions (AFIs) to ECs (or where ECs are co- sponsors in joint venture with private developers) and private developers (where ECs are offtakers) as borrowers, for the financing of renewable energy projects (Renewable Energy). ECPCG is managed by LGUGC, whereby LGUGC may issue the guarantees under the ECPCG Program (hereinafter referred to as ECPCG Guarantees) up to the pre-defined leverage ratio (Leverage Ratio) of the outstanding ECPCG Guarantees committed to the ECPCG Escrow Accounts (*see ECPCG Escrow Accounts below*).
Purpose:	To support the expansion of the existing ECPCG Program and further issuance of ECPCG Guarantees to eligible AFIs lending to the ECs or renewable energy private developers (in projects where ECs are co-sponsors or offtakers), by providing contingent finance (hereinafter referred to as CTF Guarantee) for the benefit of the ECPCG Program and made available in the event that there is a shortfall of available funds in the ECPCG Escrow Accounts for LGUGC to meet eligible claims under the ECPCG Guarantees issued (*see further Covered Event below).*
CTF Guarantee:	The IBRD/CTF agrees to pay up to the Maximum IBRD/CTF Commitment Amount (covering any payments for eligible claims under any ECPCG Guarantees in respect of principal and/or interest payments defaults), following receipt of any conforming demand notice by LGUGC (herein after referred to as Demand Notice) following the occurrence of any Covered Event.[2]

[2] Consistent with the relevant CTF policy, the IBRD/CTF will retain CTF funds in an account held at the IBRD/CTF, in an amount equal to the IBRD/CTF committed amount, and will not be disbursed until the occurrence of a Covered Event and receipt of a conforming Demand Notice.

Use of Proceeds:	Proceeds from the IBRD/CTF Guarantee will be used solely for the purpose of paying eligible claims in full submitted by eligible AFIs on the ECPCG Guarantees. Under no circumstance may they be used for covering operating expenses of LGUGC or any other costs or expenses.
Currency:	US Dollars
Maximum IBRD/CTF Commitment Amount:	The aggregate of $44 million, which will be committed in four tranches of $11 million each, with tranches to be committed at the request of LGUGC when aggregate commitments of ECPCG exceed three times capital. LGUGC may also request (with prior written consent of DOE) a reduction of the Maximum IBRD/CTF Commitment Amount by notice to the IBRD/CTF pursuant to the terms of the CTF Guarantee Agreement.
Covered Event:	LGUGC may submit a Demand Notice for payment, in the event that the balance in the relevant ECPCG Escrow Accounts[3] (*see ECPCG Escrow Accounts below*) is not sufficient to meet any eligible claim submitted by an eligible AFI under the ECPCG Guarantee.
CTF Guarantee Availability Period	The IBRD/CTF agrees to make available the CTF Guarantee for a period starting on the Effective Date and ending on the date falling on the date that is five years from the Effective Date[4].
IBRD/CTF Guarantee Period:	IBRD/CTF Guarantee will be available for a payment where a Demand Notice is submitted to IBRD/CTF no later than the twentieth (20^{th}) anniversary of the effective date of the IBRD/CTF Guarantee (herein after referred to as the IBRD/CTF Guarantee Effective Date).
ECPCG Escrow Accounts:	Escrow accounts have been 1) created and maintained in the name of the Philippines [through its Department of Finance and Department of Energy][5], at the Development Bank of the Philippines (DBP), as the escrow agent appointed by the Philippines, and 2) made available to LGUGC for the sole purpose of making and receiving payments related to the ECPCG Program (including payments to meet eligible claims by AFIs under ECPCG Guarantees). The existing escrow

[3] Details of the ECPCG Escrow Accounts arrangements and their applicability to the IBRD/CTF Guarantee coverage, to be determined, and conforming amendments to be made to the Guarantee Program Implementation Agreement, Guarantee Reserve Escrow Agreement, Operations Manual and any other relevant documents.
[4] Further extension of another 5 years may be feasible, should there be a demand for the IBRD/CTF Guarantee and is mutually agreed between IBRD/CTF and the Government of Philippines.
[5] To be confirmed if any change is to be made to the current arrangements under the Guarantee Program Implementation Agreement and the Guarantee Reserve Escrow Agreement.

	accounts consist of Guarantee Reserve Account, Interest Income Account, and Guarantee Revenue Account. In addition to these three accounts, a new CTF Account (together with Guarantee Reserve Account, Interest Income Account and Guarantee Revenue Account, collectively referred to as the ECPCG Escrow Accounts) will be established for the purpose of receiving the payments from the IBRD/CTF and making payments to the relevant AFIs for eligible claims under the ECPCG Guarantees.
Funds recovered by LGUGC:	If any amount is recovered by LGUGC from the ECs or investors in ECs or private developers as borrowers, AFIs as lenders or any third parties on their behalf, in respect of any payouts for eligible claims under the ECPCG Guarantees, such amount (net of eligible recovery costs incurred by LGUGC) will be remitted first to the CTF Account, up to the amount paid by IBRD/CTF[6]. Unless otherwise requested by IBRD/CTF to return such funds to IBRD/CTF, any such remitted amount may be used for meeting any further eligible claims under the ECPCG Program if there are not sufficient funds available in the relevant ECPCG Escrow Accounts[7].
Claim process:	LGUGC may submit a Demand Notice to the IBRD/CTF following any Covered Event, certifying, together with relevant documentary evidence, *inter alia* that an eligible claim by the relevant AFI under the ECPCG Guarantee is made in compliance with all relevant conditions under the ECPCG Program, and that there is not sufficient amount in the relevant ECPCG Escrow Accounts. IBRD/CTF will pay within a certain number of days after IBRD/CTF's receipt of a conforming Demand Notice in accordance with the terms of the CTF Guarantee Agreement.
Reimbursement by the Beneficiary:	If, at the expiry of the IBRD/CTF Guarantee Period, any amount is remaining in the CTF Account, LGUGC will return any such funds to the IBRD/CTF within a certain number of days of the expiry of the IBRD/CTF Guarantee Period.
Counter-Guarantee:	Sovereign government counter-guarantee is not required for the IBRD/CTF Guarantee, consistent with the relevant CTF policy.

[6] Any portion of CTF guarantee proceeds paid to LGUGC but unused may be also held in the CTF Account together with recovered amounts.

[7] Details of the ECPCG Escrow Accounts arrangements and their applicability to the IBRD/CTF Guarantee coverage, to be determined, and conforming amendments to be made to the Guarantee Program Implementation Agreement, Guarantee Reserve Escrow Agreement, Operations Manual and any other relevant documents.

Management Fee:	One-time charge of $200,000 payable by LGUGC to cover IBRD/CTF's appraisal, negotiation, supervision, disbursement and reporting costs.
CTF Guarantee Charge:	0.1% per annum of (i) the applicable World Bank/CTF commitment amount plus (ii) any additional commitment amount to become part of the applicable World Bank/CTF commitment amount following the payment of the CTF Guarantee Charge, payable semi-annually in advance by LGUGC.
Exclusions, Limitation/Suspension & Termination Events:	Standard exclusion, limitation/suspension and termination events for transactions of this nature.
Conditions Precedent:	IBRD/CTF Guarantee's effectiveness conditions would include *inter alia* the following: (a) Execution, delivery and effectiveness of the CTF Cooperation Agreement between the Philippines and IBRD/CTF, in form and substance satisfactory to IBRD/CTF; (b) Execution, delivery and effectiveness of Amendments to the Guarantee Program Implementation Agreement and Guarantee Reserve Escrow Agreement, respectively, the Memoranda of Co-financing Agreements between NEA and LGUGC, and all other relevant agreements or amendments related to the ECPCG program, all in form and substance satisfactory to IBRD/CTF; (c) Delivery of all legal opinions, satisfactory to IBRD/CTF, including legal opinions from: (i) Department of Justice of the Philippines relating to the CTF Cooperation Agreement and amendments/revisions to the Guarantee Program Implementation Agreement and the Guarantee Reserve Escrow Agreement, respectively; (ii) counsel to LGUGC relating to the IBRD/CTF Guarantee Agreement and amendments/revisions to the Guarantee Program Implementation Agreement and Guarantee Reserve Escrow Agreement; and (iii) counsel to the Escrow Agent relating to amendments/revisions to the Guarantee Reserve Escrow Agreement.

IBRD/CTF Documentation

CTF Guarantee Agreement:	The terms and conditions of the CTF Guarantee will be set out in the CTF Guarantee Agreement to be entered into between the

	IBRD/CTF and LGUGC. The CTF Guarantee Agreement also sets out certain warranties, representations and covenanted undertakings by LGUGC in connection with the Project, including, but not limited to, provision of relevant Project information, compliance with applicable World Bank environmental and social safeguards requirements, World Bank requirements relating to Sanctionable Practices and the ECPCG operations manual in form and substance satisfactory to IBRD.
CTF Cooperation Agreement:	The CTF Cooperation Agreement will be entered into between the IBRD/CTF and the Philippines, under which the Philippines *inter alia* 1) agrees that the IBRD/CTF Guarantee will be made available to LGUGC for the benefit of the ECPCG Program and the CTF Account will be used for this purpose, and 2) provides Project related covenants, including provision of relevant information.

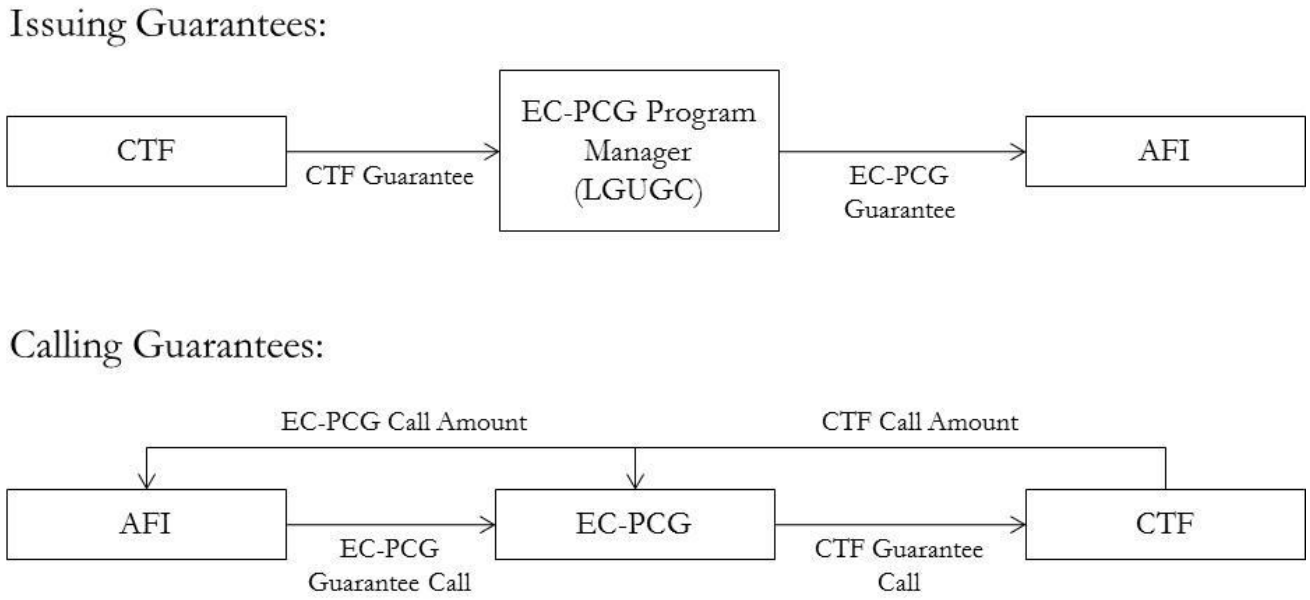
ECPCG Documentation

Guarantee Program Implementation Agreement	The Guarantee Program Implementation Agreement, entered into between DOF, DOE, DBP and LGUGC, sets out the responsibilities and obligations of DOE, DOF, DBP and LGUGC, in respect of the ECPCG Program. The GPIA has been revised and submitted to the Bank for review and will be finalized prior to effectiveness of the Guarantee.
Guarantee Reserve Escrow Agreement:	The Guarantee Reserve Escrow Account, entered into between DOE, DOF, LGUGC and Development Bank of the Philippines (DBP) as the Escrow Agent, sets out the terms and conditions of administration of the Escrow Accounts. The GREA has been revised and submitted to the Bank for review and will be finalized prior to effectiveness of the Guarantee.
Memoranda of Co-financing Agreements:	National Electrification Administration (NEA) and LGUGC would enter into a Memorandum of a Co-financing Agreement for each of the Energy Efficiency Window and the Renewable Energy Window, to formalize the arrangement between LGUGC (in its own capacity and as the ECPCG Guarantee Program Manager) and NEA: (i) to jointly co-finance investment programs of ECs which are too large for the ECPCG program to guarantee individually, and (ii) to determine responsibilities of each of LGUGC and NEA with regard to the ECPCG Program.
Operations Manual:	The Operations Manual of ECPCG has been adapted for the expanded ECPCG program by LGUGC. Once the revised

	Operations Manual is final, any amendments, clarifications, additions and instructions notified by LGUGC and agreed with IBRD, as applicable, from time to time. The Operations Manual has been revised and submitted to the Bank for review and will be finalized prior to effectiveness of the Guarantee.

6. The CTF guarantee would act as additional program capital. If and when an ECPCG guarantee is called, the first losses will be paid from ECPCG cash held in escrow. If ECPCG cash is insufficient to meet an obligation, the CTF guarantee would be called. CTF is therefore exposed only to second loss. The ECPCG program will exercise best efforts on behalf of CTF to recover paid-out funds from the borrowers. CTF will not have recourse to Government for repayment. Supported by DOE, LGUGC as program manager of ECPCG and NEA would be expected to seek recoveries under rights subrogated from AFIs, with NEA very likely exercising step-in rights and taking over the management of the EC in default to restore payments on the underlying loan, to make up arrearages, and to recover ECPCG payouts (including those funded by CTF). The transaction steps in issuing and calling the guarantee are shown below in Figure 2-2.

Figure 2-2: Calling the Guarantee [8]



7. The re-designed ECPCG is designed to be Basel III compliant. Under Basel III, a guarantee fund with the characteristics of ECPCG can be leveraged up to 9.5 times Tier 1 capital. Under PHRED, ECPCG will be initially limited to the same 5 times leverage of the current program. The $44 million injection from CTF will provide significant capacity to ECPCG to expand its portfolio; but even this capacity could be exhausted within the five years of the open commitment period. The CTF Guarantee to ECPCG will therefore allow an increase in leverage, provided that the

[8] Note: CTF Guarantee will be called only when ECPCG cash reserves have been exhausted.

actual default rate in the program is low enough to justify such an increase in risk exposure. Future increases in allowed leverage, which could be done only with the consent of the World Bank, would allow for an additional expansion of capacity of ECPCG without an injection of new capital. The Guarantee Program Implementation Agreement will specify that the maximum leverage would be no more than 8 – comfortably below the 9.5 times allowed by Basel III or other relevant regulation at the time of the proposed change.

8. Three new features of the expanded ECPCG program will be introduced as part of the initial implementation stage: (1) improved pricing of guarantees; (2) improved fund management; and (3) foreign exchange risk management.

9. **Improved guarantees pricing policy**: A new pricing structure will be introduced to ensure that ECPCG is self-sustaining and compliant with Basel III rules. In line with the current structure, two types of fees will be charged on the guarantee:

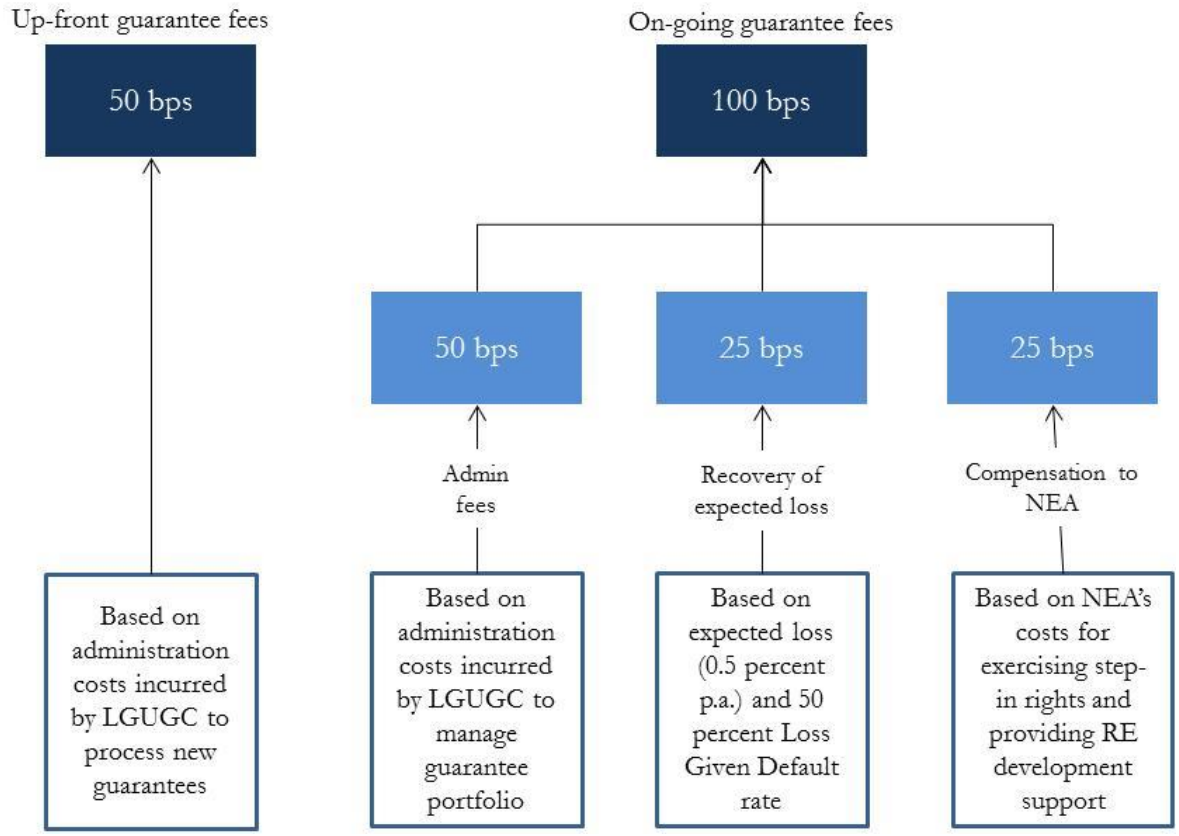
- Up-front Guarantee Fee – estimated at 50 basis points; to be finalized before effectiveness.
- On-going Guarantee Fees – estimated at 90 to 110 basis points for the EE Window and 115 to 135 basis points for RE, also to be finalized before effectiveness. Table 2-2 demonstrates the expected new pricing structure.

Table 2-2: Target Pricing for ECPCG

NEA's EC Power Offtaker Credit Rating			
	AAA	AA	A
EE Guarantees	90bps	100bps	110bps
RE Guarantees	115bps	125bps	135bps

In determining pricing, two cost analyses were done. One was based on bottom up pricing, with pricing simply designed to cover expenditures, based on assumptions of deal flow, overheads and other factors. The other approach was risk-based pricing, based on expected losses, and incorporating a return on capital for the original GEF funds and for the CTF. While the return on capital components were dropped from the final pricing position, ECPCG has opted for risk-based pricing. This will produce a modest surplus over projected expenditures, with the surplus to be paid into the cash reserves of ECPCG. These surplus revenues will enable ECPCG cash reserves to grow faster than they otherwise might.

Figure 2-3: Guarantee Fees



10. The current ECPCG guarantee fee is only 25 bps. For the sustainability of ECPCG, a guarantee of 100 bps may be needed. The front-end fee, however, has been reduced by two-thirds. Changes in pricing have been discussed with borrowers and lenders who have indicated acceptance of the pricing revisions.

11. **Foreign Exchange Risk Management:** ECPCG's capital from GEF and CTF is in US dollars. ECPCG's disbursements, guarantees, and income are in Philippine pesos. Because of this currency mismatch, ECPCG has foreign exchange risk. If the peso appreciates against the US dollar, the level of capital cover will decrease, adversely affecting ECPCG's leverage. The foreign exchange risk management strategy to manage this risk is to provide for the option to convert some portion of the cash balance tranche of its capital, that is the GEF Funds (the Guarantee Reserve Account), from US dollars to pesos. The approach is based on the following:

- All inflows (interest, fees, etc.) and outflows (guarantee payments) in ECPCG are in pesos. Converting the capital in pesos therefore creates a natural hedge addressing the risk of peso appreciating against US dollar.
- The GEF grant has been provided in perpetuity for the benefit of the Philippines (subject to its being used for approved purposes), and as such some portion can reasonably be held in pesos as there is no repayment obligation.

- The GEF funds are only about 25 percent of the total capital base of ECPCG. Since the balance capital is in US dollars, this creates a natural hedge against depreciation of the peso which can potentially limit the size of the guarantee facility (in dollar terms).

12. **Expanding ECPCG:** In line with the existing ECPCG program, the expansion starts with an initial leverage of 5 times its capital (5x). On the demand side, the expanded ECPCG is expected to have further room for expansion since the funding requirements for ECs are likely to increase in the coming years. The leverage could be increased in two phases (6.5x and 8x) if the conditions described in **Table 2-3** are met. As per the Operations Manual, increases in leverage would require the consent of the World Bank.

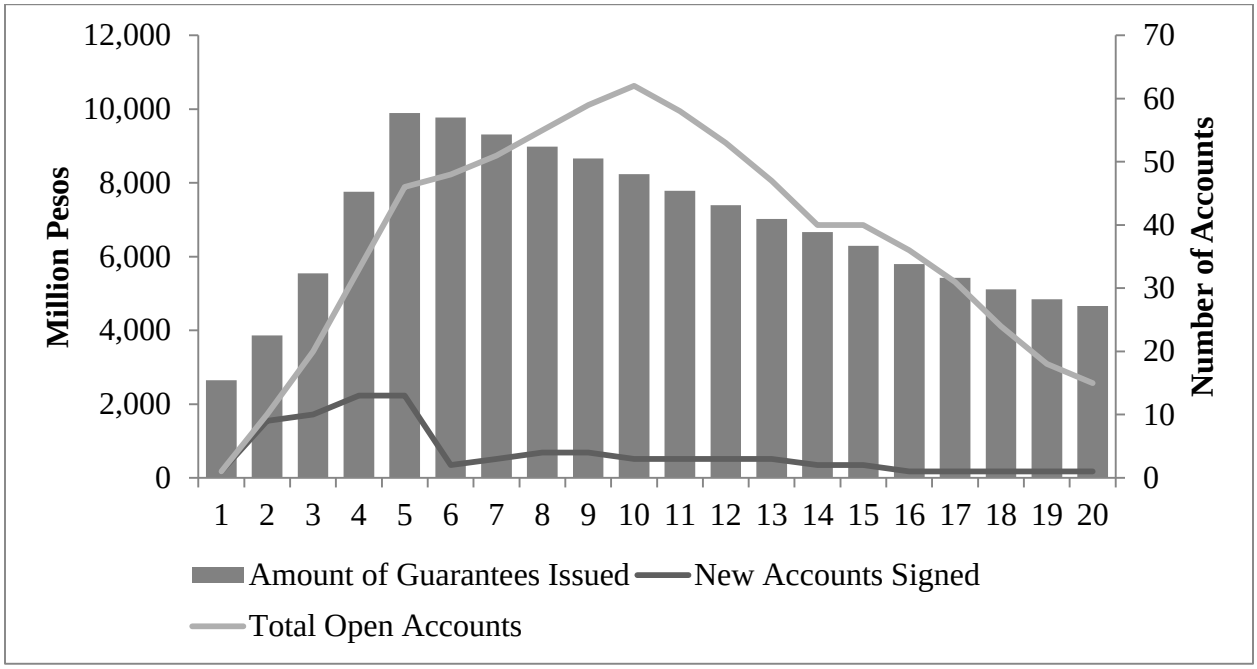
Table 2-3: Conditions for Increasing ECPCG Leverage

Conditions	Increase to 6.5x leverage	Increase to 8x leverage
Continued Strong Risk Rating	BSP confirms that the zero percent risk weighting will continue to apply to the expanded scheme.	BSP confirms that the zero percent risk weighting will continue to apply to the expanded scheme.
Demand	Strong demand as evidenced by issuance of guarantees more than 4X capital within the Guarantee Availability Period	Strong demand as evidenced by issuance of guarantees more than 5.5X capital within the Guarantee Availability Period
Enhanced Risk management	LGUGC appoints a Credit Risk Manager (CRM) who will review all guarantees	CRM continues to be in place
Low Default Rate	▪ Less than 5 percent of the portfolio has been rated "watchlist" or below. ▪ Less than 1 percent of the overall portfolio are rated "doubtful" or below.	▪ Less than 3 percent of the portfolio has been rated "watchlist" or below. ▪ Less than 0.5 percent of the overall portfolio are rated "doubtful" or below.

13. **Co-financing between ECPCG and NEA:** The co-financing agreement between ECPCG and NEA is being enhanced to ensure that EC financings are more efficient and better coordinated. A key change is to ensure that for all EC network financings in the program, ECPCG's tranche is processed in parallel or ahead of the NEA tranche, and not behind it. This will help will deal flow in ECPCG and help NEA in being selective with its lending. A parallel, new agreement has been developed that covers cooperation on renewable energy projects. This agreement specifies that NEA will not be lending to RE projects, but will be supporting origination of loans through a variety of mechanisms, including the revitalization of the NEA renewable energy department to work more actively with ECs.

14. **ECPCG Program Wind Down**: The CTF guarantee has a 20 year term, with an initial five year availability period for issuance and booking of ECPCG guarantees against the CTF guarantee resources. This means that at all points during the initial period, ECPCG will be able to utilize CTF resources to back loans of up to 15 years. In the base case, new guarantees will be issued during the first five years utilizing the full CTF capital commitment of US$ 44 million and the existing ECPCG cash. The final 15 years will see straight-line amortization of the CTF guarantee commitment with new guarantees issued from program reflows on the basis of ECPCG cash which will remain in the program. **Figure 2-4** shows the proposed plan for issuing and unwinding guarantees during the base case period of 20 years.

Figure 2-4: Issuing and Unwinding of Guarantees Under ECPCG

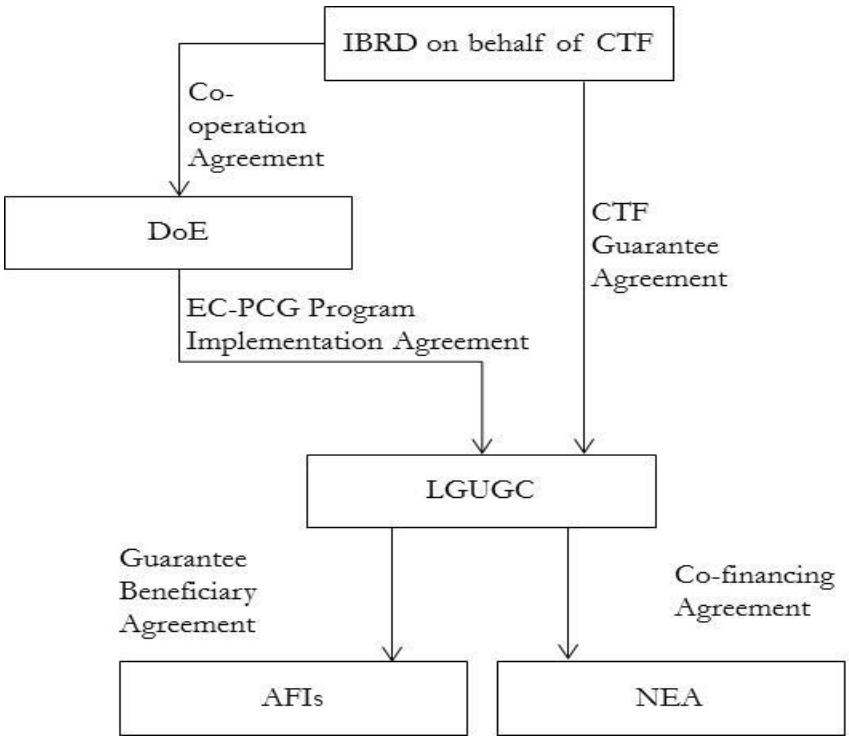


15. As Figure 2-4 shows, the assumption is that 13 new guarantees on average are issued every year until year 5. After that new guarantees are issued at a lower rate due to winding down of CTF capital. The guarantee portfolio keeps building until year 5 and winds down gradually after that such that the remaining portfolio is only supported by ECPCG cash, and not CTF capital, by the end of year 20. This is based on four times leverage; in the event that the default rate remains low (presently, the default rate is zero), then the leverage rate could be increased to as much as 8 times capital. This would allow for higher issue rate after the CTF open commitment period lapses.

16. **Treatment of Portfolio Profits:** The new pricing policy includes a component to cover expected losses of portfolio. If during the ECPCG tenor the portfolio incurs no loss, or incurs losses which are less than the combined reserves accumulated to cover expected losses, there will be a surplus in the Guarantee Revenue account at the end of the program tenor. Further, the ECPCG cash accounts will continue to earn interest during this period. Any such excess funds will remain in the program as additional ECPCG cash at the end of year 20 for continued program operation without CTF capital.

17. **Key Agreements and Terms:** LGUGC, as the guarantee program manager of the ECPCG program, and all financiers to ECPCG such as CTF through IBRD as implementing entity of the CTF, and the Government, will need to sign new agreements to implement the expanded ECPCG. In addition, some of the current contracts will need to be amended to accommodate the CTF tranche of capital. Contractual Arrangements are shown in Figure 2-5 below.

Figure 2-5: Contractual Arrangements for PHRED



18. All contracts to be signed or amended are listed in **Table 2-1** below:

Table 2-4: Contracts Required for ECPCG

CTF Guarantee Agreement (between IBRD and LGUGC)	The terms and conditions of the CTF Guarantee would be embodied in a Guarantee Agreement between IBRD, acting for CTF, and LGUGC, as the program manager of ECPCG.
ECPCG Cooperation Agreement (between IBRD and DOE)	Under the Cooperation Agreement between the Government of the Philippines and IBRD, DOE would provide relevant project information, and make warranties, representations and covenanted undertakings, including in respect of compliance with applicable Philippine environmental laws and IBRD environmental and social safeguard requirements and IBRD requirements relating to Sanctionable Practices.
ECPCG – Guarantee Program Implementation Agreement (between LGUGC and DOE)	This existing agreement is being revised to reflect the re-design, expansion and extension of ECPCG. LGUGC will be extended as ECPCG program manager, based on its satisfactory performance to date.
LGUGC-NEA Agreements (between LGUGC and NEA; one for EC financing, one for renewable energy)	This agreements provide for NEA's step-in rights and other roles and responsibilities in respect of the guarantees issued by ECPCG. The agreements have been adapted from the existing co-financing agreement to reflect ECPCG re-design, and to strengthen the partnership between the entities.

19. **Investment Windows – Market Size and Eligibility Criteria:** ECPCG will have two investment windows – one for energy efficiency (EE) and one for renewable energy (RE).

20. **EE Investments Window:** The expanded ECPCG is intended to finance EC network investments related to network expansion and strengthening, voltage level upgrading, power quality and reliability investments, efficiency improvements (including loss reduction), and sub-transmission. EC investment requirements are projected in NEA's Integrated Computerized Planning Model (IPCM), which aggregates data for the ECs as a whole. The latest runs of this model show that, after Government grants for electrification are taken into account, the residual investment requirement for the sector for network investment is at least PHP 54 billion, or $1.2 billion through 2019. Creditworthiness analysis suggests that about 60% of these requirements come from the creditworthy ECs that are the focus of this project, so the total demand for borrowing through the ECPCG window is as much as $720 million; PHRED aims to support investment of $250-milllion in network investments over the 5-year open commitment period.

21. ECs wishing to access ECPCG need to be creditworthy and the aggregate additional borrowing capacity of the ECs is therefore the key determinant of the guarantee market size. This additional borrowing capacity was determined by analyzing the financial statements and plans of all the ECs to determine which ECs are creditworthy and what additional debt they can take on.

22. Table 2-5 shows the current portfolio (released, committed and approved loans) and pipeline of EE Capex loans. Delays in both extension of the existing ECPCG program and in approval of PHRED have slowed guarantee uptake and loan release of late. Interest and releases are expected to accelerate again once these approvals are obtained.

Table 2-5: EE Capex Project Pipeline as of December 31, 2015

EC	Total Loan Amount (PHP Million) (A)	*Covered Loan Amount (80%) (PHP Million) (B)*	Other Capex Funding Sources (PHP Million)		Residual Funding Need (PHP Million) = (D) – (A + C)
			Other Lending (NEA and Commercial Banks with Regular LGUGC Guarantee) (C)	Total EC Capex Program Requirement (D)	
PORTFOLIO					
MORESCO I	115.0	*92.0*	116.0	1,056.7	825.7
PANELCO I	113.0	*90.4*	0	435.8	322.8
SOCOTECO I	102.4	*81.9*	0	509.0	406.6
SURNECO	85.0	*68.0*	0	137.3	52.3
FIBECO	143.0	*114.4*	190.4	595.4	262.0
BUSECO	135.9	*108.7*	189.6	911.0	585.5
BOHECO I	109.6	*87.7*	0	400.4	290.8
DANECO	172.4	*137.9*	516.6	2052.2	1,363.2
MORESCO II	135.5	*108.4*	197.3	423.5	90.7
CANORECO	133.3	*106.6*	170.0	516.9	213.6
LUELCO	173.1	*138.5*	193.4	479.6	113.1
MOELCI I	167.7	*134.2*	124.4	356.0	63.9
CAMELCO	140.0	*112.0*	204.6	467.8	123.2
NEECO I	173.5	*138.8*	177.4	588.6	237.7
BENECO	163.5	*130.8*	201.8	575.7	210.4
BUSECO (additional)	43.5	*34.8*	170.4	585.5	371.6
FICELCO	106.1	*84.9*	0	120.6	14.5

EC	Total Loan Amount (PHP Million) (A)	*Covered Loan Amount (80%) (PHP Million) (B)*	Other Capex Funding Sources (PHP Million)		Residual Funding Need (PHP Million) = (D) – (A + C)
			Other Lending (NEA and Commercial Banks with Regular LGUGC Guarantee) (C)	Total EC Capex Program Requirement (D)	
LEYECO V	185.9	*148.7*	411.5	920.0	322.6
PALECO	167.0	*133.6*	0	632.7	465.7
BOHECO II	184.1	*147.3*	133.3	317.4	0.0
GUIMELCO	44.0	*35.8*	57.0	101.0	0.0
BOHECO I (additional)	81.1	*67.2*	137.5	359.7	141.1
AKELCO	181.7	*150.7*	276.6	564.2	105.9
CENECO	191.7	*158.9*	393.9	585.6	0.0
MORESCO I (additional)	80.0	*66.3*	803.0	1542.0	659.0
COTELCO	180.0	*149.3*	396.5	740.2	163.7
INEC	156.8	*130.0*	242.3	703.8	304.7
CAGELCO I	179.9	*149.2*	261.3	475.8	34.6
DORELCO	184.8	*147.9*	174.8	359.6	0.0
ANTECO	179.7	*143.7*	172.2	351.9	0.0
SOCOTECO I (additional)	91.9	*76.2*	329.9	421.8	0.0
TOTAL	**4,301.1**	**3,474.8**	**6,241.7**	**18,287.7**	**7,744.9**

Note: The cumulative leverage ratio on the current ECPCG Portfolio (Released, Committed and Approved loans) is 1:4.95. Actual leverage is less because of amortization but is expected to approach 1:5 by early 2015. If all Pipeline accounts were realized, the cumulative leverage ratio would increase further to 1:6.18, and the actual leverage rate would exceed five times capital. ECPCG therefore would require new capital to make all of these loans.

23. **Renewable Energy Investment Window:** A credit market assessment of Philippines RE projects identified a market failure in the RE segment where projects with Electric Cooperative (EC) and Small IPP sponsors have difficulty securing appropriate debt financing. ECs struggle to raise sufficient equity because of the cash flow tariff methodology they operate under, and Small IPP Developers find the commercial banks' stringent collateral requirements (e.g. personal guarantees and joint and several liability) hard to satisfy. Both sponsor groups therefore have difficulty securing long tenor, high leverage loans to match the cash flows of their projects.

24. The RE window will help to "make a market" in this segment by guaranteeing commercial lending to RE projects with an EC off-taker. The sub-project sponsor in most cases will be a small IPP, with the possibility that a joint venture is formed that includes an EC on a minority, non-operating basis. The vast majority of projects seeking financing are run-of-river hydro. Typically these projects are connected directly at the distribution voltage level of an EC – whether on a larger island with a transmission grid or a smaller isolated off-grid island.

25. Targeting the RE window specifically at projects with EC off-takers directly supports the Project Development Objective of increasing the supply of electricity from renewable sources to on or off-grid member-consumers of the Electric Cooperatives on a commercially, environmentally and socially sustainable basis that supports ongoing rural electrification efforts in the Philippines. The specific goals of the window are:

- To develop an RE market by using demonstration projects to prove its viability – specifically to attract commercial bank lending for 1-10 MW projects on longer tenor, higher leverage terms that are appropriate to RE project needs.

- To encourage appropriately structured joint ventures of ECs and Small IPPs to increase ECs' access to equity as well as their technical capacity to properly analyze, prepare and structure RE projects.
- To provide more local and low cost power generation capacity to support electrification.
- To reduce GHG emissions – including in Small Power Utilities Group (SPUG) off-grid island situations where RE directly substitutes for bunker fuel and diesel.

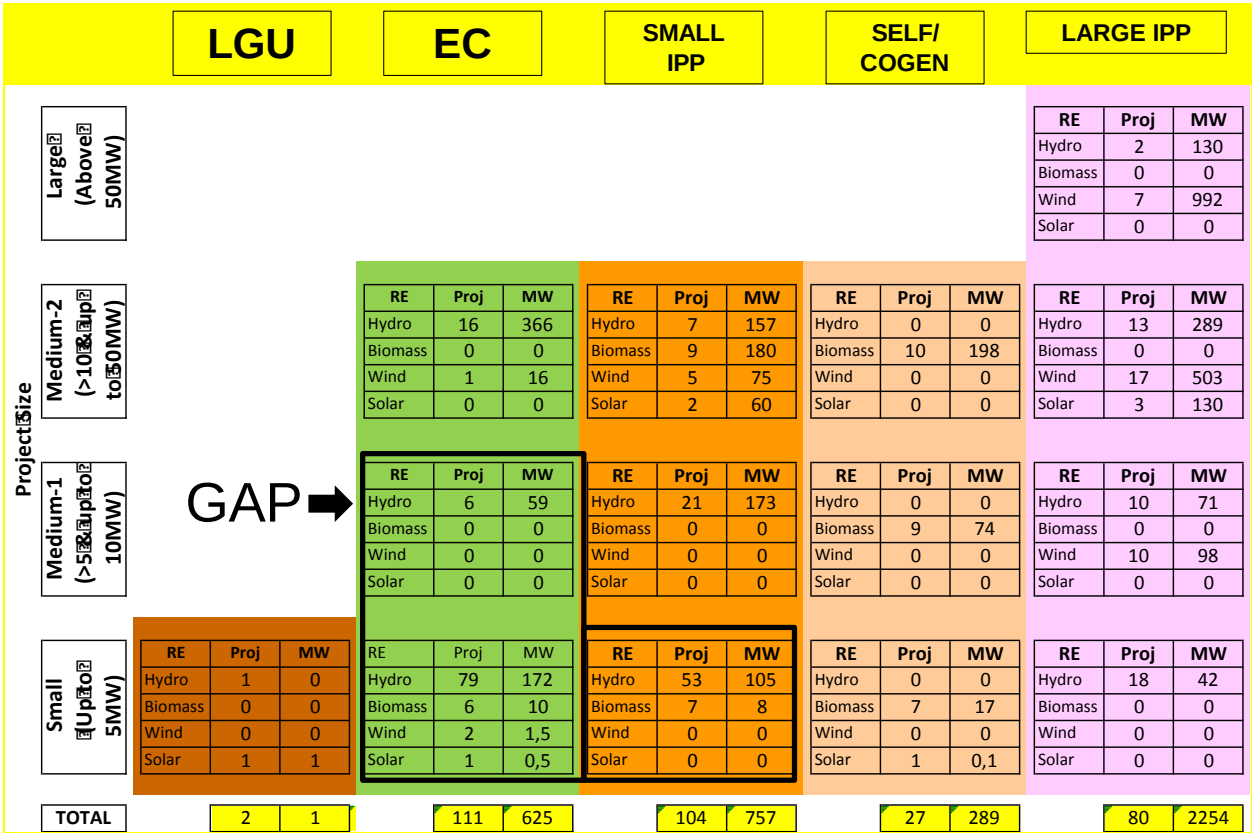
26. **RE Sub-Project Demand for Credit**: The Renewable Energy Act, 2008 (RE Act) mandates the DOE to coordinate plans for RE exploration and development and, in particular, to establish a project registration system as well as a transparent and competitive system of Renewable Energy Service Contracts (RESCs)/Operating Contracts that would take a project from pre-development through development and into commercial operation. The RESC gives the developer a time-bound exclusive right to explore, develop and bring into operation an RE resource in a particular area. Registering for an RESC is a necessary step for any RE project to be developed. If the project does not move from pre-development to development/commercial within a certain period, DOE will rescind the RESC.

27. The ECs are focused on minimizing the cost of generation to their member-consumers. Projects that are connected at distribution voltage levels ("embedded" projects) are cost-effective as they contribute avoided transmission wheeling charges. With typical blended costs of purchased power in the PHP 5 - 8/kWh range for the ECs and generation costs levelized over a 25 year lifetime for an embedded project in the PHP 3.5 – 4.5/kWh, one or two small projects of 1 – 10 MW can make a significant difference to blended costs of generation for an EC.

28. During project preparation, the team identified 268 RE projects which had been awarded RESCs with a potential capacity of 4,763 MW. Another 222 projects with a potential capacity of 3,234 MW were pending RESC application. DOE is well into a process to cancel moribund RESCs – those on which contractors have either ceased work or never initiated it. This is part of the reason that the proposed project targets projects that sell directly to ECs at prices lower than FITs. Direct polling of the ECs identified 112 projects in preparation (over 70% of which are run-of-river hydro) with a potential capacity of 633 MW. Most do not have RESCs.

29. A detailed segmentation of the combined pipeline of RE projects already awarded RESCs and the EC pipeline identified informally is shown in Figure 2-6 below. Segmentation is by project size vertically and by sponsor type horizontally. Large established IPPs with blue-chip company backing and large projects have many financing options and are not a target of the RE window. However, access to financing for small to medium sized projects (identified as the "gap" in the diagram) is difficult because of their higher per MW capital investment costs and local commercial bank apprehension to finance sponsors with less familiar risk profiles like ECs and small IPPs. This credit market gap is the target of the RE guarantee which aims to "make a market" in small RE projects in the EC/Small IPP space.

Figure 2-6: RE Project Segmentation



30. Demand summary: The size of the credit market gap is estimated at 356 MW with 243 MW of these being sponsored by ECs and the remainder by Small IPP developers. 61% of projects (94 out of 154) are sponsored by ECs and about one third of these (about 75MW) have either completed, or have ongoing, full feasibility studies. These projects include many run-of-river small hydro projects averaging 2.5 MW in size; it is expected that once the expanded ECPCG is operational, most of the demand will come developers of hydro and solar projects.

31. **Existing Credit Supply to the Credit Market Gap**: To date, Philippine commercial banks (mostly the larger ones) have mainly worked with either Large IPP developers with strong balance sheets (mostly in geothermal or large hydropower generation projects) or with self /co-generation sponsors that can offer their production facilities as collateral (mostly biomass projects). These market segments may continue to have good access to financing. Overall though there is limited experience in financing renewable energy projects in the banking sector as a whole, particularly related to projects that would supply ECs directly.

32. A market survey of the commercial banks participating as Accredited Financial Institutions (AFIs) in the existing ECPCG program found them targeting several larger (>10MW) projects – but only on the basis of those projects being FIT-eligible and having a well-known and financially strong Large IPP developer as sponsor. Smaller projects with uncertain FIT-eligibility and less well known sponsors were considered much less attractive. Typical terms offered for the larger projects were: 70/30 debt/equity, 7 – 10 years tenor (including a 2 year grace period, floating rates

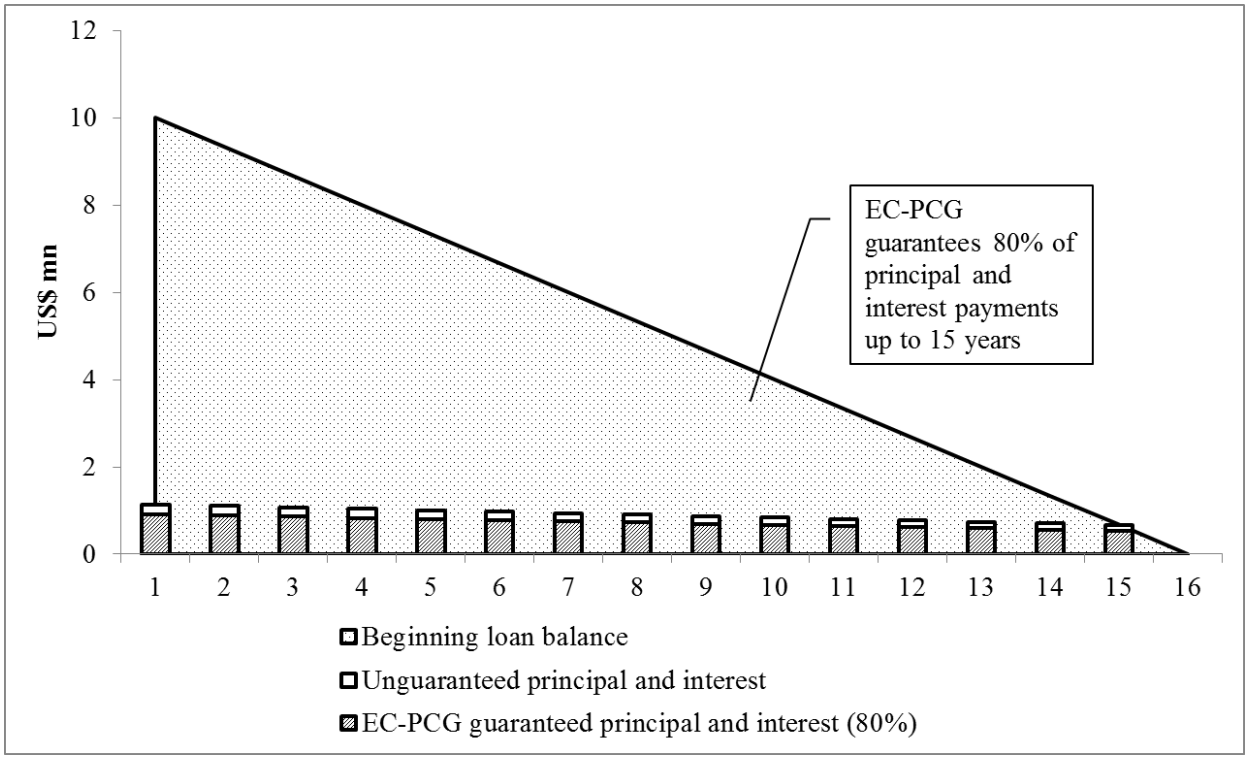
with initial rates of around 6%, a minimum debt service coverage ratio (DSCR) of 1.4 – 1.5X and up to 100% collateral cover. Such terms are a very poor match to the needs of a small hydro project which are typically 12 – 15 year tenors, higher leverage, lower minimum DSCRs, and more flexible collateral requirements. International experience has clearly shown the importance of banks offering better financing terms (longer tenor being the most important) if they are to provide suitable conditions for viable small RE projects sponsored primarily by small developers. ECPCG also offers a one-time rate fixing option, meaning that project sponsors have the ability to convert variable rate loans from the banks into a long-term, fixed rate loans. With ECs as offtakers looking for some certainty in generation costs, that rate-fixing option would be attractive for developers looking to sell to ECs.

33. Recent commercial soundings with the AFI's indicate strong interest from almost all the AFIs in lending to smaller RE projects with EC involvement, provided that an ECPCG guarantee is available. With the current high liquidity in the banking sector, and backed by a guarantee, the same banks also indicated they could offer much more attractive terms to such projects: 80/20 debt/equity, 10 – 12 year tenors, interest rates on similar or slightly better terms as before but re-priced every 5 years by the lender with a one-time rate fixing option by the borrower, minimum DSCRs of 1.2 or even lower, and less stringent collateral requirements. To attract longer maturities, guarantee coverage can be made flexible to include features such as put option to refinance, say at 10 years, in a 15 years tenor.

34. Guarantee Structure: Mindful of the required long tenors for small RE projects, the RE window of ECPCG provides an 80 percent debt service (principal and interest) non-accelerable guarantee for up to 15 years of the eligible commercial loan term. The ECPCG guarantee will be effective from the start of the construction period on 80 percent of annual debt service payments. During the construction period, the guarantee covers defaults arising from non-insurable risks9. After construction is completed, the ECPCG guarantee provides a comprehensive coverage on debt service defaults, which means that the guarantee can be called for up to 80 percent of any due and unpaid debt service payments.

[9] Non-insurable risks include political risks and certain hydrological, geological and force majeure risks but exclude risks related to construction completion (construction all-risks), natural disasters (typhoon, flooding), terrorism and other insurable events.

Figure 2-7: Debt Service Guarantee for RE Investments



35. **Guarantee Risk Mitigation**: Projects eligible for the ECPCG RE window are expected to be riskier than EE projects. This stems from the risks inherent in various stages of RE project development, from the quality of the feasibility studies to asset construction and operation. To mitigate these risks, the ECPCG program will incorporate specific risk management requirements at each stage of project development. During the pre-construction phase, all feasibility studies will undergo independent quality review as an eligibility requirement for ECPCG. As most risks will be concentrated on the construction phase, the ECPCG program will expect project developers to acquire insurance for all insurable risks and may be able support them in acquiring the necessary insurances[10]. ECPCG will only provide debt service coverage against non-insurable risks. To be able to make a guarantee claim to ECPCG, the guarantee beneficiary has to provide evidence that the specific risk leading to the default event was indeed non-insurable on commercially reasonable terms[11]. ECPCG will also require that appropriate contingent lines of credit and equity will be made available for possible cost overruns. During the operation phase, the guarantee will be available for default events arising for any reason.

36. Eligibility Criteria for RE Investments: Sub-projects shall meet the following criteria:

(a) RE resource: wind, mini hydro, biomass or solar.

[10] ECPCG program may require that it be co-insured for any insurance cover acquired.
[11] The ECPCG program will determine whether such insurance was available rather than if it was actually acquired. Developers who forego all insurances assume the risks for such insurable events on themselves and lenders will not be able to call the ECPCG guarantee for defaults arising from such risks.

(b) Off-taker: Must be an Electric Cooperative, at least in part, with a PPA approved by ERC.

(c) Project size: No specific limit, but projects are anticipated to be in the range to 1 to 10 MW. The ECPCG single guarantee limit of 25% of total capital applies in any case.

(d) EC risk rating: Any EC sponsor will be considered regardless of risk rating with the commercial banks left to set their risk-adjusted loan pricing accordingly.

(e) Tariff: The RE project in question should be least-cost from the perspective of the purchasing EC. Note that under the RE Act, it is possible for a project to have a PPA with an offtaker, and be eligible for the FIT. Such FIT-eligible projects will be financeable under ECPCG.

(f) Type of grid connection: Both on and off-grid projects are eligible but preference will be given to embedded projects directly connected to the distribution system.

(g) Legal conditions: Projects must have all the permits and legal requirements ready.

37. **RE Project Preparation**: Support for project preparation is an issue for the ECs. The EC pipeline is in its 'infancy' with many projects still to demonstrate full feasibility. ECs find it difficult to allocate scarce resources to project preparation especially when there is a risk that the result may not be favorable. A Bank-financed technical assistance to NEA has established a new Office of Renewable Energy Development (ORED) whose staff are now trained to make detailed technical and economic assessments of mini-hydro projects, ensuring that quality is built into projects at the outset before they advance to the financing stage. ORED collaborates closely with LGUGC to advise project proponents of ECPCG's availability, to scrutinize any projects brought forward by LGUGC, and to assist ECs in availing of the guarantee.

38. ORED has begun to track a promising small hydro pipeline that now totals 17 projects with a capacity of 44 MW and a total financing need estimated at over $150 million. As shown in Table 2-6 below, seven projects of these projects totaling about 31 MW in capacity and requiring almost $110 million in capital have already reached the stage where they are actively considering the ECPCG option. On the lender's side, commercial banks are also keen to access the guarantee especially as it covers non-insurable construction risk. Other entities, including some willing to take developer risk in return for equity, are also looking at this market, in part because of the availability of guarantees through ECPCG.

Table 2-6: Mini-Hydro Project Pipeline

Project Name	Municipality, Province	EC / Other Sponsor *Possible EC Offtaker*	Capacity (MW)	Stage of Development	
				Technical	RESC
LUZON					
Dupinga	Gabaldon, Neuva Ecija	**Smith Bell** NEECO-II is offtaker	3.0	FS complete, DED ongoing	Secured
Tubao	Tubao, La Union	**LUELCO** JV with LGU	1.5	FS complete, DED under revision	Secured
MINDANAO					
Palilan	Jiminez, Misamis Occidental	**MOELCI-II**	1.7	FS complete, DED complete	Secured
Singalat	Calamba, Misamis Occidential	**MOELCI-I**	5.0	FS complete	Application under preparation
Salug Daku 1	Josefina, Zamboanga Sur	**Clean & Green Energy Solutions, Inc and LGU** ZAMSURECO-I is offtaker	6.0	FS complete, DED complete	In Process
Upper Manupali	Valencia, Bukidnon	**BUSECO** JV with IPP	4.4	FS complete DED ongoing	Secured
Magpet 1	Magpet, Cotabato	**COTELCO**	9.8	FS ongoing	In Process

Note: All the above projects have passed detailed technical and economic screening and have expressed strong interest in availing of the ECPCG guarantee. Delays in PHRED approval may in fact result in the Tubao project being guaranteed directly off LGUGC's balance sheet. In addition a long list of over 20 other mini-hydro projects totaling more than 100MW are in process of technical-economic screening. A strong solar project pipeline is also emerging.

Annex 3: Implementation Arrangements
PHILIPPINES: Philippines Renewable Energy Development (PHRED)

Project Institutional and Implementation Arrangements

1. The term of the CTF guarantee is 20 years. For the first five years of this period, ECPCG may make new loan guarantee commitments, meaning that at any point in the five years, it will be able to provide coverage to loans of 15 years tenor. The Implementing Agency (IA) will be the LGUGC, with which IBRD will have a Guarantee Agreement. IBRD will have a policy support agreement, dubbed the Cooperation Agreement, with DOE and DOF. The purpose of this agreement is to help ensure that the good policy of Government that have contributed to the success of ECPCG are continued. Two policy principles have been rigorously observed. First, NEA is no longer the lender of last resort; NEA lending is limited to reflows, and it can barely meet about 10% of the overall demand for lending in any given year. Second, NPC-PSALM is no longer the bulk supplier of last resort; ECs have to contract for and pay for supply from private generators.

2. LGUGC's responsibilities for ECPCG include marketing, originating, processing, approving, and monitoring guarantees. LGUGC is also responsible for managing the portfolio of ECPCG guarantees and the funds in the ECPCG program, including provisioning for expected losses, capital allocation, and taking appropriate action to mitigate default risks. This experience and expertise has been considered in pricing costs and risks into the expanded guarantee on a market basis. LGUGC will continue performing the same role in the expanded guarantee program with the existing agreements with Government modified to accommodate the additional capital tranche of CTF, and to allow investments through separate windows in RE as well as EE. LGUGC has been functioning as the ECPCG Guarantee Program Manager since 2005 and has project management in place under the existing ECPCG program.

3. The DOE and the Department of Finance (DOF) co-chair the Project Supervisory Committee for the ECPCG program which also includes representatives from LGUGC, NEA and the Escrow Agent, which is the Development Bank of the Philippines. The Project Supervisory Committee has three basic functions: (a) to provide over-all policy guidance; (b) to provide oversight of institutional reforms, and; (c) to approve the annual budgets of LGUGC.

4. The Development Bank of the Philippines (DBP) will serve as the escrow agent and will be a counterparty to Guarantee Reserve Escrow Agreement with Government; the GREA provides access to LGUGC as the Guarantee Program Manager of ECPCG such that commercial banks availing of the guarantee have a high degree of comfort that ECPCG is run professionally and in a non-discriminatory fashion. DBP and DOE together are the counterparties to the Guarantee Program Implementation Agreement (GPIA) with LGUGC, which appoints LGUGC as the Guarantee Program Manager.

5. The other key actor in the ECPCG program is the National Electrification Administration (NEA) which oversees the ECs. NEA was historically the sole lender to the ECs for capital expenditure projects in distribution and many ECs still have outstanding loans with NEA. In 2009, NEA and LGUGC signed a Memorandum of Agreement (MOA) to clarify the role of NEA, LGUGC, and commercial lenders in lending to ECs. The success of the ECPCG program can be attributed in part to this MOA since it was only after its signing that the guarantee facility really

took off. Under the MOA, NEA has two major roles. First, NEA determines which ECs are eligible for the ECPCG program, which are currently the ECs with A or A+ ratings under the NEA EC Categorization system. This Categorization is evolving, and now includes a Key Performance Scorecard system which builds on the same principles applied in categorization but includes more operational indicators and gives more weighting to governance factors. Secondly, NEA executes step-in rights on behalf of LGUGC and the lenders. Step-in rights are the ability to take over the management of the EC in the event of a default on NEA or commercial loans (to bring the EC back to financial viability).

6. In preparation of this project, the need for NEA to support the ECs in preparing their RE projects to the necessary technical quality standards, to ensure that preparation is in compliance with Bank procurement and safeguards procedures, and to expedite project development through to financing has been clearly identified. Adequate and experienced resources exist within NEA to take on this critical role. NEA also has capacity to educate and inform the ECs about the optimum financial structuring of RE projects – from both the perspective of lending terms and potential joint venturing with small IPP partners. Technical assistance is already being provided to NEA to refine and expedite the quality preparation of the pipeline of RE projects identified during preparation. NEA is working collaboratively on a hands-on basis with the technical assistance consultant, and the participation of outside partners who can bring additional technical expertise, and potentially equity for project development, is being actively encouraged.

7. **Single guarantee limit (SGL):** ECPCG has operated with a single guarantee limit of 25% of total capital and it is proposed to retain this limit. 25% of total ECPCG capital of $60 million ($16 million in cash plus $44 million from the CTF in callable cash) is $15 million, or PHP 675 million (at PHP 45 = 1 USD). The underlying loan could have a maximum value of PHP 843 million, which will give ECPCG the ability to support ECs with large approved capex plans (many now have approved capex plans of over PHP 1 billion). The single guarantee limit will also support loans that are adequate for small hydro projects of around 5 MW and solar projects of around 10 MW, at the full 80% coverage limit. For larger projects, either co-financiers would be needed, or lenders would need to accept that less of the underlying loan would be guaranteed.

Financial Management and Disbursements

Financial Management

8. FM Assessment Scope and Objective: A financial management assessment of PHRED was carried out in accordance with the "Financial Management Practices in World Bank-Financed Investment Operations" issued by the Financial Management Sector Board on November 3, 2005 and as further rationalized in the "Principles Based Financial Management Practice Manual" issued by the Board on March 1, 2010 and retrofitted on February 4, 2015. Under the Bank's OP/BP 10.0 with respect to projects financed by the Bank, the project implementing agency is required to maintain financial management systems — including budgeting, internal control, accounting, financial reporting, and auditing systems — adequate to provide the Bank with assurance that funds will be used in an efficient and economical way to enable project development objectives to be met. Overall, LGUGC financial management systems as Guarantee Program Manager meet the Bank's requirements provided the recommended mitigating measures are incorporated.

9. Risk Assessment and Mitigation. The assessed FM risk of the project is considered moderate but could be reduced to low after the proposed mitigating measures as follows:

a. An Operations Manual for the project shall be patterned after the ECSLRP project and adopted on or before guarantee effectiveness which shall include the following features:
   i. An FM section that describes funds flow, accounting, recording and reporting at LGUGC
   ii. Review by LGUGC of the guarantee proposals for eligibility of the projects to be enrolled under PHRED before being submitted to relevant credit committees for review and approval
   iii. Documentation of eligibility criteria and processing procedures
b. The template of the guarantee agreement shall be agreed with the Bank prior to loan negotiation.
c. Annual audited project financial statements on the guarantee funds held by the escrow agent shall be submitted to the Bank no later than six months after the end of each fiscal year together with the auditor's management letter or audit observations and recommendations.

10. FM Organization and Staffing. The FM functions of the project shall be mainstreamed and thus shall be performed by the FM department of LGUGC. FM staff shall be assigned to the Project to ensure that the financial reports are prepared and submitted to the Bank on time.

11. Budgeting. The project shall be included in LGUGC's annual plans and budget as prepared by the Corporate Planning Officer and Accounting Unit Head.

12. Accounting. LGUGC has an FM manual that documents its accounting systems, policies and procedures, which includes the duties and responsibilities of staff and officers in terms of the processing of transactions. In addition, LGUGC has Board approved policies on investments, portfolio risk management and treasury which guide day-to-day operations. Its books of accounts are maintained following Philippine Accounting Standards (PAS) which are in accordance with International Accounting Standards (IAS). The project will use the entity's accounting system with recording of transactions done through Quickbooks accounting software.

13. Internal Controls / Internal Audit. The control environment in which DOE and LGUGC operates is adequate. Basic internal controls such as separation of conflicting functions, segregation of bookkeeping functions from custodianship of assets, reconciliation of subsidiary records with the corresponding general ledger control account, and a multilevel system of review and approval of transactions before their execution are required.

14. LGUGC, being a private corporation, will hire an external auditor acceptable to the Bank with the task of providing an audit opinion regarding the financial statements on the guarantee funds held in trust by the escrow agent.

15. Financial Reporting and Monitoring Covenants. Under this project, LGUGC will maintain adequate FM arrangements throughout the life of the project and shall submit the following reports to the Bank throughout the life of the project:

a. Semestral Interim Financial Reports (IFRs) within 45 days after the end of each calendar semester which shall consist of the following: (a) financial report on the balance and performance of the funds held in trust by the escrow agent; and (b) progress report on the guarantees issued and in the pipeline including a risk assessment of the active portfolio. Formats of these IFRs will be included in the Operations Manual.

b. Annual audited project financial statements on the guarantee funds held by the escrow agent shall be submitted to the Bank no later than six months after the end of each fiscal year together with the auditor's management letter or audit observations and recommendations.

c. Annual LGUGC and escrow agent entity financial statements shall be submitted to the Bank no later than 6 months after the end of each fiscal year.

d. LGUGC will maintain adequate FM arrangements throughout the life of the project.

16. Supervision Plan. FM implementation review mission visits will be in line with the Operations Manual and is dependent on the FM risk rating of this project in any given year during project implementation. The scope of the supervision is left to the professional judgment of the FM specialist. It may cover any of the following among others: (1) review of the continuous maintenance of adequate FM system by LGUGC; (2) review of selected transactions, where deemed necessary; (3) follow up of timeliness of FM reporting and actions taken on issues raised by external auditors; (4) review of financials reports of the project; (4) follow of the status of the agreed actions; and (5) review of compliance with the financial covenants. In addition, the FM implementation review should include desk review of the semestral IFRs, and audited financial statements and management letter submitted to the Bank.

Procurement

17. Following Section 3.18 of the Procurement Guidelines for the Procurement Under Loans and Payment Obligations Guaranteed by the Bank, goods, works and non-consulting services financed by said loan or said payment obligation shall be procured with due attention to economy and efficiency, and in accordance with procedures which meet the requirements of paragraph 1.5 of the Procurement Guidelines. For the procurement of said contracts, the beneficiaries may adopt their own rules and procedures, provided the Bank is satisfied that the procedures to be used will fulfill the beneficiaries' obligations to cause their project to be carried out diligently and efficiently.

18. Correspondingly, random procurement capacity assessments (PCA) of electric cooperatives will be conducted during the life of the project. Initial procurement capacity assessments of three selected electric cooperatives were conducted as part of project preparation and appraisal. The PCA report showed that there is sufficient capacity to undertake economic and efficient procurement for prospective loan borrowers as the risk rating is low (Procurement Capacity Assessments of Electric Cooperatives on file). The electric cooperatives follow commercial practices that are generally acceptable to the Bank. The Bank may conduct a review of the procurement transactions under the guaranteed Loan at any time during the preparation and implementation stages of the sub-projects.

Disbursement Arrangements

19. The maximum guarantee term will be 20 years, initially with an open commitment period of five years during which new guarantee booking may be made against the CTF resources.

Category	Amount of the Loan (Expressed in Dollars)	% of Expenditures to be Financed
EC-PCG Expansion	44,000,000	100%
TOTAL	**44,000,000**	

Category	Amount of the Loan (Expressed in Dollars)	% of Expenditures to be Financed
EC-PCG Expansion	44,000,000	100%
TOTAL	**44,000,000**	

20. The $44 million from CTF will be activated on the date of effectiveness of the project. Given capacity limitations on the number of guarantees that can be processed by LGUGC, DOE has requested that disbursement be done in four tranches of $11 million each; tranche release would be triggered whenever ECPCG aggregate commitments exceed three times capital.

21. The Project funds are composed of CTF Trust Fund funds for which the Concessional Finance and Global Partnerships Vice Presidency of the World Bank serves as a Trustee pursuant to the term of the CTF Governance Framework Document adopted on November 18, 2008. Before project effectiveness, the Implementing Entity will make a Cash Transfer Request[12] to the Trustee for the full amount of the CTF Guarantee. On receiving the Cash Transfer Request, the Trustee will transfer the full $44 million to the account of the Implementing Entity. After five years, unless the project is extended, the amount of the CTF Guarantee committed to LGUGC will be reduced in stages based on the amortization schedule[13]. Following such reduction, the World Bank as Implementing Entity will return the corresponding amounts to the Trustee. If LGUGC calls on the CTF Guarantee by making a Demand Notice to the World Bank as Implementing Entity, the Implementing Entity will transfer the funds to LGUGC in accordance with the CTF Guarantee Agreement. If LGUGC recovers any funds in respect of the ECPCG guarantee payouts on defaulted loans, LGUGC will return any such recovered funds to the Implementing Entity up to the amount of CTF Guarantee payments if requested.

Social (including Safeguards)

22. The project will have substantial effects in achieving more inclusive growth in the Philippines. The main beneficiaries of the project are new and current consumers of the rural ECs. The country is on track to meet its goal of 90% household electrification by 2017, but significant investment will be needed to achieve the next target, which is full household electrification within the next decade. Demand for and increasing access to, affordable and reliable electricity will be

[12] As per the Financial Procedures Memorandum dated August 13, 2009 between Sustainable Development Network of the International Bank for Reconstruction and Development acting as an Implementing Entity of the Trust Fund for the Clean Technology Fund and Concessional Finance and Global Partnerships Vice Presidency of the International Bank for Reconstruction and Development as Trustee of the Trust Fund for the Clean Technology Fund.

[13] Straight-line amortization over project years 6-20. If the project is extended by 5 years, the commitment is amortized on a straight-line basis over years 11-25.

met in a sustainable manner by providing low cost distributed generation connected locally at distribution voltages, or in dedicated mini-grids; and by minimizing the impact of increased losses through grid expansion into remote areas under the electrification program being funded by Philippines government grants and managed by NEA. This will help meet the large inequalities that result in continuing poverty. In the project areas, the improvements will support meeting local development objectives such as accelerating economic and social development, increasing productive uses of electricity, and improving quality of life.

23. Gender and Poverty. Visits and discussions with officers and consumers of some electric cooperatives in Mindanao showed that the project will benefit underserved residential households, including women who rely on electricity to carry out domestic functions. Reliable supply of electricity will help lead to new opportunities and improved efficiency in livelihood opportunities. Longer productive time for livelihoods and education due to presence of better lighting may translate to more income most of it in the hands of women. It is seen that there is a direct correlation between the amount of money decided on by women and the magnitude of benefits to the household, especially children. The availability of street lighting is also expected to promote better safety to women. It is agreed that gender responsiveness, at the least, through women dedicated consultations will be done at sub project level that will be supported by the project so that practical recommendations may be incorporated in the design and operation of the subproject. Five assessments of the intersection of gender and utility service issues will be conducted over the course of the project, with five ECs that are ECPCG participants, and the first three of these gender assessments have already started as of April 2016.

24. **Involuntary Resettlement (OP 4.12)** – Subprojects, which will mostly involve construction of mini hydro run of river electric plants, will not involve significant flooding of land because they have very little water storage. However, occasional unavoidable involuntary resettlement impacts on people's assets or access to livelihood sources may occur. Construction of new energy facilities such as substations may require temporary and permanent land acquisition from commercial, residential and agricultural land. Rehabilitation of existing structures may also require small land acquisition for some expansion. Overall, however, scales of impacts are quite limited and can be minimized due to the flexibility in site selection. Existing road paths for setting up distribution lines will also be used to further minimize impacts. For substations, the present practice is to use the open purchase approach in land acquisition where a willing seller is able to freely negotiate the term of purchase with the particular electric cooperatives which are private entities and do not have the power of eminent domain. For activities that will trigger OP4.12, the ESSF of the project provides specific guidance to address involuntary resettlement issues in a manner that is compliant with the policy. The ESSF specifies principles and objectives, eligibility criteria of displaced persons (DP), modes of compensation and rehabilitation, potential relocation of these persons, participation features and grievance procedures. No subprojects have been firmly identified for year 1 implementation and so no specific Resettlement Action plans have been required for review as of appraisal.

25. **Indigenous Peoples (IP) (OP 4.10)** – The potential location of the subprojects in rural and remote areas will likely be in areas inhabited by Indigenous Peoples. Subproject impacts on Indigenous Peoples are expected to be mostly positive with minimal negative impacts including elite capture of subproject benefits. The IP Framework for PHRED is integrated into the ESSF. It provides guidance on how to engage with Indigenous Peoples, enhance positive impacts on them,

and mitigate potential risks to ensure subproject compliance with OP 4.10. Some subprojects, particularly mini-hydropower plants, may be in ancestral domains of Indigenous Peoples. The Indigenous Peoples' Rights Act (IPRA) of the Philippines mandates that any project that impinges on ancestral domains must secure a free and prior informed consent from affected IP communities and not just broad community support. ECs are very familiar with these requirements and pride themselves in their close and collaborative relationships with IP communities.

Environment (including Safeguards)

26. Applicable World Bank Environmental Safeguard Policies. The EA category of the project is financial intermediary. EE investments, i.e., loss reduction and performance improvement by electric cooperatives (ECs) are expected to trigger only OP/BP 4.01 since interventions will be limited to the extension of electricity distribution networks and sub-transmission lines (power towers, poles, and wiring) and substations (transformers and other electrical equipment), metering, IT systems or smart grid investments. Since the project mainly involves small scale construction and rehabilitation of existing distribution lines and substations, impacts are assessed to be moderate, localized, and temporary, and can be mitigated through the measures in the Environmental Management Plan (EMP), the adoption of good construction and management practices and strict implementation of the Environmental Codes of Practice (ECOP) which will be included in the bidding documents and the Technical specifications for inclusion in the contract and program of work of the contractor under a close supervision of contractor performance by field engineers and in close consultation with local communities.

27. RE subprojects being renewable energy investments are expected to trigger the following Bank safeguard policies: OP/BP 4.01 on Environmental Assessment, OP/BP 4.04 on Natural Habitats, OP 4.09 on Pest Management, OP/BP 4.11 on Physical Cultural Resources and OP/BP 4.37 on Safety of Dams. These subprojects cover small hydroelectric facilities, biomass, solar power plants and wind power plants as well as energy efficiency investments. Depending on the type of technology, scale and project location, the subprojects will fall under the World Bank's Environmental Assessment Categories A, B or C and under the Philippine EIS System Project Categories II and III.

28. OP/BP 4.01 Environmental Assessment (EA): This policy is triggered. The environmental category of *Financial Intermediary* (FI) will apply. Individual sub-projects will be screened and assigned the appropriate environmental categorization and environmental due diligence (EDD) will be conducted in accordance with OP 4.01. It is expected that the significant adverse direct impacts of the sub-projects will be related to: (i) localized environmental and social impacts and potential site-specific damages due to construction activities (water, noise, safety, air pollution); (ii) management of environmental flow and habitat alterations in the case of mini hydropower projects, (iii) change in land use or disturbance in protected areas (iv) management of the health and safety of workers during construction and operation; and (v) interaction of workers with the local community. The ESSF provides guidance for the preparation of the applicable Environmental and Social Assessment instruments, Environmental Management Plans (EMP) and Environmental Codes of practice (ECOPs) and appropriate social safeguards instruments for subprojects. This also contains a Grievance Redress Mechanism. The ESSF presents screening and scoping checklists and describes detailed plans for mitigation, monitoring and reporting of all identified impacts. It also lays out

institutional responsibilities of the Borrower and sub-project proponents as well as the relevant policy and legal framework, financing, monitoring and reporting. The EMPs and ECOPs will be included in the bidding documents and the design and construction of the sub-projects, the details of which will be incorporated in the PHRED Project Operations Manual and project training to reflect lessons learned and previous implementation experiences.

29. OP/BP 4.04 Natural Habitats: While the project will not fund any sub-project proposed to be located in critical natural habitat or will cause to convert or degrade such, this policy is triggered because by the nature of the proposed sub-projects, it is most likely that a number of them are located in places considered as natural habitats, as defined in this policy. Thus, all sub-project proposals will be screened for potential adverse impacts on natural habitats and necessary mitigation measures will be prepared as part of the sub-project specific EA and EMP. Adequate natural habitats conservation/protection measures will be spelled out in the EMP and the ECOPs.

30. OP 4.09 Pest Management. The policy is triggered when the procurement and use of pesticides will be involved in plantations for providing source materials or feedstock for biomass plants and in the control of vegetation cover along transmission lines, power plants and ancillary facilities.

31. OP/BP 4.11. Physical Cultural Resources (PCR). PCRs include resources of archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance. All construction activities will include mechanisms to address chance finds to avoid or mitigate adverse impacts on PCRs. The environmental assessments will confirm whether PCRs are affected and when present, the policy is triggered. Annexes contain Technical Specifications for Contractors including chance find procedures.

32. OP4.37 Safety of Dams. While the project is expected to finance only small dams, those fewer than 15 meters in height, in relation with 1 to 10 MW, run-of-river mini-hydropower plants, OP 4.37 policy is triggered as it is possible that one or more subprojects could involve the construction of a dam higher than 15 m or a dam that has high hazards associated with it. This policy also applies to water storage dams of mini-hydropower facilities or ash impoundment dams for biomass plants. All sub-projects will be screened to identify any structure under the sub-projects that will involve the impoundment of water to ensure that the appropriate environmental assessment instrument is prepared and that the EMP should contain the appropriate dam safety measures. For dams considered to pose significant risk, regardless of height, a dam safety framework will be required that will specify the process to be followed for screening the hazardous nature of the dams to be financed and determination of the dam safety instruments required under the Policy (Panel of Experts (PoE) for high hazard dams, generic dam safety measures designed by qualified engineers for other types of dams etc.). The framework includes the proposed institutional arrangements for preparation, implementation, monitoring and reporting requirements for the dam safety instruments. It should be noted that none of the small hydro projects that has been identified as a potential candidate for financing involves a dam with a height of over 5 meters. It should also be noted that high risk small hydro projects will tend to be expensive and therefore will not usually be good candidates for a project like this, which will only finance RE projects when they are least-cost from the perspective of the purchasing utility.

33. Environmental and Social Safeguards Framework (ESSF). The ESSF is incorporated in the Environmental and Social Framework (ESSF). The overall objective of the ESSF is to guide the project planners, LGUGC, the project proponents and contractors in sub-project screening, and assessing and mitigating adverse environmental and social impacts during project siting, design, construction, operation and decommissioning. The ESSF contains the applicable Bank's safeguard policies' requirements, the Philippine laws and regulations on environmental impact assessment and other related policies The ESSF covers the requirements for: (i) safeguards screening; (ii) impact assessment and development of environmental management plans, mitigating measures and environment codes of practice (ECOPs) for the subprojects; (iii) public consultation and disclosure; (iv) safeguards review and clearance; (v) safeguard implementation and budget supervision; (vi) monitoring and reporting and (vii) institutional arrangements and capacity building. The EMP and the ECOPs will be incorporated into the bidding and contract documents and will be closely monitored by supervision engineers.

34. Environmental Management Plans (EMPs) and Environment Codes of Practice (ECOPs). The ESSF also provides guidelines and templates for the preparation of the EMPs for individual subprojects, and requires subprojects to comply with the Bank and the Philippine Government regulations on Environmental Impact Assessment (EIA), its implementing rules and regulations and its Revised Procedural Manual as well as related environmental laws and policies. Templates of the ECOPs of the subprojects are also included in the ESSF. The project proponents and their contractors will be required to comply with the terms and conditions in their respective Environmental Compliance Certificate (ECCs), EMPs and the ECOPs. These will be included in the bidding and contract documents, and will be closely monitored by supervision engineers.

35. Public Consultation and Information Disclosure. The Bank safeguard policies OP/BP 4.01, 4.04, 4.09, 4.10. 4.11, 4.12 and 4.37 require the project proponents to facilitate public consultation and information disclosure, including consultation with project affected people (PAPs), local government units (LGUs), local NGOs, appropriate national government agencies (NGAs) and university departments. The draft ESSF, incorporating both the environmental and social frameworks of the project, including the template EMPs and ECOPs was subject to public consultations with LGUGC, the DENR, DOE, NEA, the League of Cities and Municipalities, NCIP, prospective project proponents, specialists in renewable energy projects and NGO representatives or civil society organizations. The final draft ESSF, the subproject EMPs and ECOPs take into consideration the feedback from the consultations. At the scoping stage, for environmentally critical projects, the individual subprojects are subject to public hearing or consultations at the local level. The Bank's policy requires that for Category A projects, the Project proponents should consult the PAPs, LGUs, NGAs and NGOs at the local level, about the project's environmental aspects and takes their views into account at least twice: (a) shortly after environmental screening, i.e., at the scoping stage as defined by DAO 03-30, and before the terms of reference for the EA (or EIA) are finalized; and (b) after the draft EA (or EIA) report is prepared. In addition, the Project proponents is to consult with such groups throughout project implementation to address environment-related issues that affect them. Documents to be disclosed include the ESSF, EMP and ECOPs. These documents are made publicly available at public places accessible to project-affected-groups, NGOs and other interested stakeholders through the World Bank's InfoShop. Pertinent project documents will also be posted in the websites of LGUGC and the concerned project proponents.

36. Safeguards Implementation and Budget Supervision. LGUGC will be responsible for coordinating the supervision and monitoring of the implementation by the project proponents of the ESSF and other safeguards documents such as EMP and ECOPs for both the EE and RE windows. The LGUGC PMO and the Project Monitoring Board (PMB) shall carry out site visits during the pre-construction, construction and operations of the sub-projects to ensure that the procedures set out in the ESSF are being followed. The project proponents, assisted by their construction supervision engineer and their pollution control officers (PCO), will be responsible for preparing and ensuring effective implementation of safeguard instruments such as the EMPs/ECOP and will maintain regular liaison with local authorities and communities. The project proponents will also require their contractors to comply with these safeguard documents.

37. Monitoring and Reporting on Safeguards Implementation. The focus of environmental safeguards monitoring will be compliance with the ECC terms and conditions, the EMP or Impact Management Plan and the ECOPs of the project proponents and their effectiveness in mitigating the subproject's environmental impacts, as described in the ESSF. Each project proponent will monitor compliance with the conditions of the ECC and the EMP and carry out the requisite data collection during the pre- construction, construction and operations phases. The project proponents shall submit a Project proponents Social and Environmental Compliance Report (SECR), which will include an Environmental Monitoring Plan (EMoP) and a Self-Monitoring Report (SMR) on a quarterly, semi-annual and annual basis to LGUGC for both the EE and RE windows. For the environmental aspects, the project proponents shall adopt the DENR Environmental Compliance Monitoring Report (CMR) format (Annex 3-1 of the DAO 03-30 Revised Procedural Manual) and the DENR SMR formats for air and water quality monitoring as part of the SECR. The project proponents must submit to LGUGC its SECR and SMR for reference and review purposes. The LGUGC PMO will be responsible for monitoring and evaluating the SECRs and SMRs submitted by the project proponents to ensure compliance with the ESSF. They will transmit one copy of the project proponent's SECR to the Bank for further review. These documents shall also serve as the basis for the LGUGC PMB to assess the safeguards performance of the sub-projects. The LGUGC PMO shall submit to the Bank a Consolidated Social and Environmental Compliance Report (SECR), stating how the Bank's policies are being met and what corrective actions, if any, are being taken, on a semi-annual basis and annual basis. The LGUGC PMO shall conduct a Mid-Term Review report on the implementation of the ESSF and submit this to the World Bank.

Monitoring & Evaluation

38. Annex 1: Results Framework and Monitoring identifies the Intermediate Outcome Indicators for each Component. For both windows, the financial indicators on guarantee and loan volumes will come directly from LGUGC. Physical indicators will need to be collected from individual ECs and collated by NEA. These should already be forecast in the annual Integrated Planning Computer Models (ICPMs) prepared by the ECs to justify their capital investment plans to NEA so collation should be straightforward. Actuals can be verified with ECs (again coordinated through NEA) as well.

39. LGUGC is already experienced at providing these types of data given their involvement in the ECPCG program. NEA may require some additional guidance on data collection but this could

be handled as part of a small technical assistance to strengthen their coordinating role and oversight role in the EC RE pipeline.

40. The Monitoring & Evaluation (M&E) framework will assess the progress in implementing the project and achievement of the PDO. The M&E system will include sources of information, data validation and calculation of indicators, and progress reporting. Funding for the IA and associated agencies to implement and report the M&E will be provided internally.

Annex 4: Implementation Support Plan
PHILIPPINES: Philippines Renewable Energy Development (PHRED)

Strategy and Approach for Implementation Support

1. LGUGC has many years of experience in working with the Bank on operations. It is a commercially-oriented organization that is working in fundamentally commercial spaces within the electricity sector. Accordingly, the project has been designed to emphasize the commercial sustainability of the LGUGC programs. In that context, the choice has been made in project design to emphasize cost-reflective pricing of financial products, and execution of the project by core staff of both DOE and LGUGC (without reliance on consultants to run project implementation units). Technical consultants to assist in due diligence will still have a role, but the costs of these inputs will be passed on to borrowers. Accordingly, the Implementation Support Plan (ISP) has been developed taking this into account, as well as the following factors:

(a) The ECPCG Program Manager LGUGC has considerable experience and proven capacity to implement ODA projects;

(b) LGUGC is also recognized for its diligent approach to compliance with Bank procurement and safeguards procedures and standards;

(c) Pricing reflects not just program running costs but also incorporates appropriate risk premiums.

2. Project Monitoring Boards – for each loan that is supported by an ECPCG guarantee, a Project Monitoring Board or PMB is established. The PMB is composed of LGUGC, NEA, the lending AFI, and the borrowing EC. DOE and DOF may participate as observers, should they so choose. The PMB meets as needed during the course of implementation of the loan, but in any case not less than once per year, to monitor implementation progress, loan drawdown, compliance, and other issues. PMB meetings are held both in Manila and in or near the service territory of the borrowing EC, so they have provided good opportunities for the Bank task team to observe and participate, as part of implementation support. This practice will continue in PHRED.

3. Based on the factors mentioned above, the ISP would focus on:

(a) Continue training of program staff (including partner staff at NEA, in certain areas) and project company staff on procurement, financial management and safeguards, which started during preparation;

(b) Pricing changes to ensure that LGUGC has program revenue to pay for program costs, including due diligence and supervisory responsibilities

(c) In preparation, selective provision of consultants to assist the project companies for the preparation and implementation of RE subprojects;

(d) On-going Bank team participation in Project Monitoring Board (PMB) meetings for both EE and RE investment windows.

4. The Implementation Support Plan is presented in the following table (Table 4-1).

Table 4-1: Implementation Support Plan

Time	Focus	Skills Needed/ Functional Specialist	Est. Staff week /year	Notes
	Procurement: Bank to support implementing agencies and borrowers on procurement aspects. Regular post-review will be conducted in instances where national practices are used (expected to be most of the procurement under the project).	Bank Procurement specialist	4	
	ECPCG Portfolio Monitoring	Guarantee Officer from Financial Solutions	3	Specifically for monitoring of ECPCG financial performance, include review of annual value-at-risk (VAR) report.
	Training PMUs and PComs: The Bank will provide updated training for fiduciary and safeguards.	Bank procurement, FM, and safeguards specialists.	2	
	Project Management and Coordination: The Bank will work with DOE, NEA, and LGUGC to ensure effective coordination	Project Management	4	
	Project Monitoring and Evaluation: The Bank will work with LGUGC to develop and put in place a template for monitoring project implementation progress	Project Management M&E framework expert	4	
	Environment, Social, and Technical: Participate in ECPCG project monitoring board (PMB) meetings, on a selective basis	Safeguards Specialists and other members of task team	4	This ensures regular trips to project areas as PMB meetings are held usually in the service territories of the borrowers.
	Inputs on hydro project preparation and implementation	Hydro engineer/specialist	3	Support will come from Bank staff and (if needed) outside consultants

Annex 5: Clean Technology Fund

PHILIPPINES: Philippines Renewable Energy Development (PHRED)

Table 5-1 - PHRED Key Results Indicators by Investment Window[21]

KEY RESULTS INDICATORS	EE Partial Credit Guarantee ($14 million CTF)	RE Partial Credit Guarantee ($30 million CTF)	TOTAL ($44 million CTF)
Displaced coal capacity in MW	24.7	71.4[22]	96.1
Reduction in GWh generated [23] as a result of technical system loss reduction investments (over 20 year project impact).	3,239	n/a	3,239
GWh supplied to EC member consumers by RE generation sub-projects (over 40 yr project lifetime)	n/a	13,766	13,766
Annual reduction in GHG emissions from investments in energy efficiency and RE generation (tons CO_2e / year).	81,634 (167,480)	173,448 (355,891) [24]	255,082 (523,370)
Lifetime reduction in GHG emissions from investments in energy efficiency and RE generation (million tons CO_2e).	1.63 (3.35) over 20 yrs	14.2 (6.94) over 40 yrs	8.57 (17.6) over 40 yrs
CTF investment cost effectiveness ($ / ton CO_2e)	8.57 (4.18)	4.32 (2.11)	5.13 (2.50)
Financing leveraged through CTF intervention ($)	$500 million ($300 million commercial debt covered, $75 million commercial debt uncovered, $75 million equity, $50 million reflows)		
CTF investment leverage ratio	Up to 1 : 6.9[25]	Up to 1 : 7.8[26]	Up to 1 : 7.4
Increased access to electricity (new connections)	400,000		
Environmental co-benefits	Lower local pollutants due to elimination of SOx and NOx from avoided coal generation.		
Other Co-benefits	• Network expansion and strengthening • Tariff minimization • Improved EC financial condition • Capacity building of EC community on gender analysis	• Poverty alleviation through sitio electrification • Tariff minimization • Avoided losses through distributed generation • Capacity building of EC community on gender analysis	

[21] **GHG emissions targets are based on a conservative average grid emissions factor of 0.504 tons CO_2e / MWh; with figures in parentheses using the higher marginal emissions factor for displaced coal generation of 1.034 tons CO_2e / MWh.**

[22] Assuming average small hydro capacity factor of 55%

[23] Assuming average coal capacity factor of 75%

[24] With all plants financed in operation

[25] Based on the guarantee covering 80% of the loan and assuming a 90/10 average debt / equity ratio (the EC is the only equity source)

[26] Based on the guarantee covering 80% of the loan and assuming an 80/20 average debt / equity ratio (assuming an EC-small IPP joint venture)

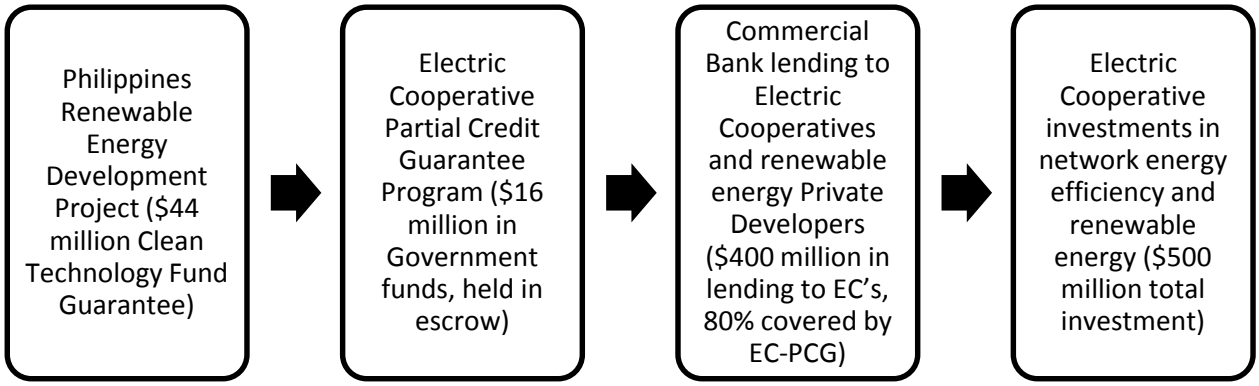
Project Summary

1. PHRED will be implemented as a stand-alone guarantee operation with two investment windows backed by $44 million of CTF. Details of the guarantee design and terms for each window can be found in Annex 2 of this PAD.

2. The operation will provide capital, in the form of callable cash, to the Electric Cooperative Partial Credit Guarantee (ECPCG) program. ECPCG was originally supported by a Global Environment Facility (GEF) grant that included $10 million for capitalization of the fund; the GEF grant was implemented with assistance from the World Bank. These resources were put in an escrow account, and with interest and program revenues, have grown to about $16 million. ECPCG provides partial credit guarantees to commercial banks in the Philippines that make term loans to electric cooperatives. Up to 80% of regular principal and interest payments are guaranteed through maturity. ECPCG is currently directly covering about $50 million in lending, and there have been no defaults.

3. PHRED will increase the capital of ECPCG from $16 million to $60 million; this capital can be leveraged many times, with up to $500 million in new investment (covered loans, uncovered loans and equity contributions) expected to be supported in the five year period 2014-2018. The program will expand financing for EC network investments and, for the first time, extend financing to renewable energy. 70 megawatts of clean energy projects, located within the franchise territories of the EC's, would be developed; 400,000 new connections will be supported by investments in renewables and rural distribution networks. CTF does not require indemnification against losses for guarantees. CTF's risk is mitigated by placing it in a second-loss position, in the event of calls on ECPCG. Under this approach, ECPCG cash, held in escrow accounts in Manila, will cover first losses of the program. Only when that cash is fully exhausted is the CTF guarantee, which will be managed by the Bank as trustee, callable. A simplified schematic can be seen here:

Figure 5-1: Leveraging Schematic



Sector Context

4. Growth in energy use and associated greenhouse gas (GHG) emissions has accompanied the economic expansion seen after the recovery from the Asian financial crisis. Renewable energy (RE) accounts for about a none-third share of power generation in the Philippines. But the share

of coal in is rising rapidly – over 80% of incremental capacity is coming from new investments in coal-fired generation. The business-as-usual case presented by the Philippines at the COP-21 meetings in Paris in late 2015 implies that power sector emissions will increase from 40 million tons in 2015 to 140 million tons per year by 2030. Better access to gas will help the Philippines avoid some of these coal-related emissions. More renewable energy that is supplied to better run Electric Cooperatives will also help – ECPCG directly supports this goal by enhancing EC credit, lowering interest rates and extending tenors, so that more least-cost renewables projects can be developed.

5. Most of the existing renewable capacity is large hydro and geothermal in the Philippines. The contribution of wind and solar has increased under the first full round of feed-in tariffs (FITs), but at a fairly high cost to consumers.[27] The Government enacted the Renewable Energy Act of 2008 to accelerate commercial development of RE, and wants to triple the installed capacity of RE by 2030. Another round of FITs may attract more investment, though its timing and format are uncertain at this time (and it is possible that it an auction will be used to drive prices down). It is likely that the FIT mechanism will continue to favor big players, with larger projects being connected at transmission voltages and benefiting from at least some economies of scale. PHRED seeks to supplement such developments with smaller, more distributed projects connected at distribution voltages. These projects will sell directly to ECs and will not be eligible for FIT rates – but, with access to long-term financing supported by ECPCG, will be least-cost from the perspective of the purchasing EC.

6. Smaller distributed generation investments, embedded at the distribution voltage, complement sitio electrification by helping to mitigate the higher losses that network expansion into these remote locations will cause. In addition, ECs have the opportunity to lower their overall cost of generation (in part by avoided transmission charges), improve their energy security and improve system reliability and power quality. Access to debt financing that matches the needs of these projects is the key barrier to developing these RE opportunities. Long tenors and high leverage are particularly important (the latter because the tariff regulation of the ECs as non-profit organizations makes accumulation of retained earnings to provide equity very difficult) and commercial banks cannot offer this kind of financing without credit enhancement, such as is proposed to be provided by PHRED.

7. Participation of the private sector in small RE investments depends on the ECs being creditworthy and viable off-takers. The financial and operational position of the 120 ECs varies widely. Based on the latest understanding of aggregate data compiled by NEA, up to half of the ECs had insufficient revenues to cover their operating and reinvestment costs[28], and about 20 are were unable to cover even their operating costs. Poor performers typically have system losses greater than the 12 percent regulatory cap, with a small number reporting losses over 20%. As many as one-third of the ECs report collections efficiencies of less than 95%. Both system loss

[27] Developers responded to the Government "build first" approach, under which they were required to bring capacity on-line by March 15, 2016. It is thought that much if not all of the expanded allocations of 400 MW of wind and 500 MW of solar have been delivered, but the final tally has not yet been determined.

[28] The Reinvestment Fund for Sustainable Capex (RFSC) is an allowance nominally set by the ERC at 5% of operating revenue which is added to the retail tariff. However an EC is free to adjust this allowance according to its projected capital expenditure plans which must be approved by the ERC. The average RFSC for 2012 was 3.6%.

reduction and collections improvement are key drivers of improvements in creditworthiness; better and more efficiency regulation will help as well.

Compliance with CTF Investment Criteria

I. Potential for GHG Emissions Reductions

8. The Rural Power Project (RPP) implemented through the Development Bank of the Philippines (DBP), and the Electric Cooperative Partial Credit Guarantee (ECPCG) program implemented through the LGU Guarantee Cooperation (LGUGC), have demonstrated that CO_2 emissions reductions can be delivered—and sustained—by ECs investing in EE and RE. PHRED intends to build on successful elements of those programs – in the RE case by establishing an easily replicable business model for small RE distributed and embedded generation. In the EE case, the scope of eligible investments has been widened beyond system loss reduction into smart grid (load management), advanced metering infrastructure (AMI) and management systems investments aimed at further reductions in both technical and non-technical losses as well as improving the creditworthiness, and therefore the financial sustainability and borrowing capacity, of the ECs enabling them to be more capable purchasers of RE. The potential GHG savings for the two windows are described below.

Energy Efficiency Window

9. The carbon benefits of EE investments by the ECs arise principally from reduced thermal power purchased or generated by the ECs as technical losses are reduced, leading to a fall in carbon emissions. Technical losses and non-technical losses may be further reduced by any smart grid and AMI investments. Other metering and management systems investments may also reduce non-technical losses. Between 30-50% of any reduction in non-technical losses typically translates to demand reduction when customers are regularized and billed – with the remainder contributing to increased revenues. The GHG emissions calculations have not considered these additional investments as demand for them among the ECs is uncertain and is only now emerging. Only reductions in technical losses through targeted systems loss investments and network strengthening made under the ECs' ERC approved capital expenditure plans ("capex plans") are included in the analysis.

10. The 60 or so most creditworthy ECs targeted by the program are seeking a reduction in average losses from 10.62% to 9.13% progressively over five years. PHRED will help to fund over half of this total loss reduction. Of the 1.49% loss reduction figure, PHRED EE investments account for 0.83%. This is a conservative assumption because, to the extent that the EE window can be leveraged to include additional borrowing capacity from CDA[29] and marginally creditworthy ECs, the technical loss reduction may be significantly increased. These additional ECs have a much higher average loss (in the mid 12% range) than the most creditworthy ECs (10.5%). Their capex investments will therefore be targeted to bring substantially higher reductions in losses and therefore GHG emissions. Sitio electrification, involving long MV line extensions into remote areas, will also tend to increase losses by perhaps 0.5% and these increases

[29] The Cooperative Development Authority (CDA); ECs registered with the CDA have become subject to full supervision by NEA as a result of recent reforms.

have to be mitigated also. Finally any smart-grid, advanced metering infrastructure, and demand side response investments supported by the guarantee will also reduce losses.

11. The EE investment kWh savings and emissions reductions are produced by a series of overlapping guarantee-backed loans introduced progressively over the first five years of the program with each investment assumed to have a 20 year lifetime. Total investments supported at a guarantee leverage of five times are $250 million which is specifically sized to the estimated residual demand for investment funding of the 60 or so creditworthy ECs. Cumulative avoided generation benefits are estimated to be 3,239 GWh over the 20 year program (equivalent to 24.7 MW of displaced coal generation at a capacity factor of 75%. Using a conservative value of 0.504 tons CO_2e / MWh corresponding to the grid emissions factor, cumulative emissions reductions from the EE window are estimated at 1.63 million tons CO_2e over 20 years. If the emissions factor for coal of 1.034 tons CO_2e / MWh, corresponding to the new coal plants that are often the marginal capacity and energy in the system is used instead, cumulative emissions reductions are increased to 3.35 million tons CO_2e over the same period.

Renewable Energy Window

12. The RE Window will support a total of PHP 7.7 billion or $188 million in debt assuming a guarantee leverage of five times. Adding the equity component, and allowing for reflows, the total supported RE investment is $250 million. At an assumed $3,500/kW capital cost of a small hydro in the Philippines, the RE guarantee will support 71.4 MW of small hydro investment. Total generation over an assumed 40 year project lifetime at an average capacity factor of 55% is 13,766 GWh. Applying the emissions factor of 0.504 tons CO_2e / MWh, the total emissions savings are estimated at 6.94 million tons CO_2e over 40 years. This is increased to 14.2 million tons CO_2e if the higher emissions factor of 1.034 tons CO_2e / MWh is used instead.

II. Cost Effectiveness of GHG Emissions Reductions

13. Based on the emissions reductions calculated above that assume a guarantee leverage of five times and with $250 million of investments supported by each window, and assuming an emissions factor of 0.504 tons CO_2e / MWh, the cost effectiveness of the EE investments is estimated at $8.57 / ton CO_2e . This reduces to $4.18 / ton CO_2e using the higher coal emissions factor. For the RE investments, cost effectiveness is estimated at $4.32 / ton CO_2e , or $2.11 / ton CO_2e using the higher emissions factor. Overall PHRED cost effectiveness is $5.13 / ton CO_2e based on $44 million of CTF supporting 40 year CO_2e reductions of 8.57 million tons, or $2.50 / ton CO_2e supporting 17.6 million tons using the higher emissions factor. The use of CTF in a financial intermediary operation to provide a guarantee is highly cost effective compared to typical loan operations in these fields.

III. Demonstration Potential at Scale and Transformational Impact

14. Capital investments that are supported by the EE guarantee are an established method for system loss reductions used by distribution utilities worldwide. Under a normal cost of service tariff methodology, as the ECs reduce their system loss they would become more profitable – in other words there would be a clear return on investment accruing to the utility. In the Philippines, as the ECs are non-profit this return on investment currently flows back to the member-consumers as reduced tariffs. The challenge in the Philippines is to make the ECs more creditworthy, less dependent on continued guarantees, and more able to fund their own capital investments for further

efficiency improvements using equity from internally generated funds. Without changes to the tariff methodology allowing the ECs to retain some return on investment, the EC cannot build equity. This issue is being addressed in separate Bank-funded technical assistance to the ECs and NEA. To the extent that the guarantee encourages some pioneer smart grid, advanced metering infrastructure and similar investments in the ECs another level of transformational impact will begin to emerge with additional reductions in both technical and non-technical losses and further GHG emissions reductions.

15. On the RE guarantee, the proposed project aims to increase renewable energy generation as well as bolster private sector lending to ECs for this purpose. The project is expected to support construction of 71 MW of RE, mostly small hydro; the DOE has estimated that the run-of-river resource potential in the Philippines is 1,780 MW over 888 sites (so averaging around 2 MW and similar in size to the demonstration projects here). This offers a potential scale up of the GHG emissions reductions by almost 25X with potential annual reductions of almost 9 million tons CO_2e per annum. While it is unlikely that all of these projects will prove technically feasible and financially attractive, the potential for transformational impact is clear. Even if only 30% of these projects were built, they have the potential to reduce emissions by 26 million tons CO_2e (53 million tons at the higher emissions factor) over 20 years. This is a significant contribution to the 97 million tons CO_2e needed by 2030 to move from the baseline to the low-carbon scenario for the power sector as described in the 2009 CTF Investment Plan for the Philippines.

IV. Development Impact

16. PHRED has a strong linkage to the Philippines' Government agenda for the energy sector as laid out in the DOE's Philippine Energy Plan 2012 – 2030. The project will support increased energy security, expand energy access, promote a low-carbon future and promote private investment in the energy sector. PHRED's focus on the EC community means that, by definition, its impacts will be mostly outside urban areas like Metro Manila and Cebu City, and that means that the project can be expected to have positive spatial influences, by helping the less urbanized EC franchise territories keep pace with the economically vibrant larger cities in the country. The project could thus make a useful contribution to the goal of shared prosperity, through its contribution to balanced regional growth; and indirectly to the goal of reducing extreme poverty, by supporting a higher rate of sustainable growth for the country as a whole.

17. ECs are widely recognized for their concern for the welfare of their member-consumers, and both the EE and RE projects will support expanded access to electricity under the ongoing sitio electrification program by providing local and low cost generation capacity that will minimize the additional tariff burden that will put on all member-consumers. Many of the geographic areas where investment will be mobilized are also home to under-served, relatively poor communities. The potential in Mindanao for RE investments is particularly high, and this is recognized with regard to post-conflict challenges there.

18. PHRED supports the Government and World Bank objective of fostering inclusive growth in the Philippines. ECPCG support is concentrated in parts of the Philippines that have higher concentrations of poverty, and lower electrification rates. While ECPCG is not able to support non-creditworthy ECs (since no bank will lend to them), the program is still potentially relevant for the customers of such EC's in numerous ways. Network effects mean that all ECs sharing a common grid will derive some benefit when one of them reduces losses, or develops new power

generation facilities. The program also facilities knowledge sharing and best practice across the entire EC community.

19. The project adapts an innovative approach to gender. Three assessments of the intersection of gender and utility services have already begun, involving ECs that are part of the ECPCG program. At a minimum, another two such gender assessments will be conducted over the course of the project. These activities will be used to expose the EC community as a whole to gender analysis, and could be a springboard for future work in the area.

20. The project will support achievement of the Philippines' Millennium Development Goals through its emphasis on efficiency gains through reduction of losses, acceleration of access to affordable, modern energy by the poorest, and environmental co-benefits in the elimination of other pollutants such as SOx and NOx through avoided coal generation, as well the health benefits of elimination of the use of kerosene for lighting by the rural poor. The poor will also benefit from access to cheaper reliable energy for productive uses both day and night including study benefits for children. The rural poor also place great emphasis on the access electricity affords to mobile phone communications and entertainment which enhances their communities' social cohesiveness.

V. Implementation Potential

21. Public Policies and Institutions: The Philippines' Government objective is to triple the installed capacity of renewable energy by 2030. The Renewable Energy Act of 2008 was enacted to accelerate commercial development of non-conventional renewable energy sources (RE). The Act provides a diverse set of policy incentives for RE deployment. The project will work closely with the Renewable Energy Management Bureau of the DOE to facilitate smooth processing of the Renewable Energy Service Contracts (RESCs) required for all RE projects. RE project development would be further spurred by implementation of the Renewable Portfolio Standard (RPS), which would mandate targets for the purchase of renewable energy by ECs. An RPS system would have to include an RE Market where RE certificates (RECs) would be traded, and such a market would facilitate efficiency expansion of renewable energy in the Philippines by ensuring that cheaper RE resources were developed first. The implementing rules for the RPS are expected to be approved in the initial period of the new administration.

22. Sustainability of the Transformation: The desire of the ECs for lower tariffs for their member-consumers, their need for continual operational efficiency improvements, their need to minimize the losses impact of sitio electrification, and their need for reliability and energy security will ensure continued demand for both EE and RE investments supported by the PHRED program. Access to tradable RECs will further incentivize ECs to construct these plants. On the supply side, as it is already beginning to do for EE investments, the guarantee will build commercial bank confidence in financing small RE projects.

23. Use of Financial Intermediaries: PHRED, through its use of partial credit guarantees managed by LGUGC which has a proven track record in these instruments, makes very effective use of financial intermediaries to maximize the leverage of private capital into both the EE and RE segments. Through the use of the guarantees, banks will increase their tolerance for the long-tenor lending that is optimal for RE projects. Development of replicable business models will lower transaction costs and encourage commercial bank participation.

24. Leverage: ECPCG is directly using CTF resources and can leverage those from 5 to 8 times, depending on program performance.[30] But ECPCG as a whole induces the investment of uncovered debt, equity, and additional investments from reflows over the availability period of the CTF guarantee. So, for example, while ECPCG can cover up to $220 million in debt at any one time with $44 million in CTF resources (i.e., $44 million leveraged five times), the total investment supported by ECPCG during the five year availability period of the operation is $500 million. As CTF will be, at the outset of PHRED, almost three-quarters of ECPCG capital, $44 million levers, in total, $370 million, or a total leveraging effect of 8.4 times. Should ECPCG go to eight times leverage, $800 million would be supported, in total investment, for which CTF would be responsible for nearly $600 million, or a leveraging effect of 13.6.

25. Donor Coordination: The project will coordinate closely with other donors active in the Philippines EC sector; at present, this assistance is technical assistance and is being provided by the European Union, USAID, GIZ, and JICA. Through its support to the Climate Change Commission, GIZ is also developing a "vulnerability tool" to assess the sensitivity of RE projects to climate change.

VI. Additional Costs and Risk Premium

26. Barriers to EE investments supported by the Philippines' commercial banks have been reduced through the initial success of the ECPCG program. However, while barriers have been reduced, there remains significant unmet demand for borrowing among the EC's, and it is clear that commercial banks will only serve that demand if they are supported by ECPCG.

27. The critical point in making the EE program effective was the signing of a Memorandum of Understanding between LGUGC and NEA in 2009. The project is already working with both agencies to ensure similar cooperation in the RE area. DOE will also be actively involved in the project to mitigate and streamline any administrative barriers to project development. The major risk in the program is expeditious but effective RE project development. The project has already recognized this as a critical risk to mitigate by committing separate trust-funded technical assistance to help NEA rebuild its RE capacity. The first phase of this, focusing on technical-economic analysis of mini-hydro projects has already been completed and additional trust funds have been secured to support extension to other renewable technologies and build capacity in renewable energy project financing. Technology risks in the project are low as the project as ECs focus on proven, commercially available technology.

28. Many companies involved in the development of RE and EE have found it difficult to access local funding support in order to make investments in such projects. CTF guarantees will help address access to credit, focusing on private developers and on ECs that would otherwise have very limited access to commercial financing. CTF guarantees will mobilize commercial bank capital on more appropriate lending terms to support first-movers and provide sufficient returns to pioneer projects. CTF guarantees will also help to expand the number of ECs that can be renewable energy off-takers, thereby reducing investor risk and enlarging the market for power producers.

[30] Under Basel-III, a fund like ECPCG could operate at maximum leverage of 1:9.5. ECPCG is now operating with a leveraging ceiling of 1:5, and this will be maintained at the outset of PHRED. If there is demand for ECPCG support, however, and the default rate remains at an acceptably low level, ECPCG will be able to go to 8x leverage.

Annex 6: Financial and Economic Analysis of ECPCG
PHILIPPINES: Philippines Renewable Energy Development (PHRED)

ECPCG Program Level Financial Analysis Summary

1. A financial model was prepared to determine the financial viability of the proposed ECPCG expansion structure. The analysis shows that the proposed expansion structure is financially viable and can withstand severe downside scenarios. It is assumed that specific amounts of the CTF guarantee support each market segment – but in practice, the facility will be demand driven and there is no earmarking of specific amounts to one window or the other.

2. Table 6-1 presents the financial parameters of the EE guarantee.

Table 6-1: Base Case Assumptions for the EE Window

Capital	$30 million	
Leverage[31]	▪ Years 1 to 20	– 4x
$:PHP rate	1:45	
CTF guarantee terms	▪ Term ▪ Commitment period ▪ Amortization after grace period ▪ Amount ▪ Upfront fees ▪ Ongoing fees	– 20 years – 5 years – 6.67 percent p.a. – 80 percent of debt issued – $200,000 – 10 bps
ECPCG Guarantee terms	▪ Average guarantee size ▪ Term ▪ Grace period ▪ Amortization after grace period ▪ Other terms – see base case below	– PHP 150 million – 10 years – 2 years – 13 percent p.a.
Interest on cash deposits	1 percent p.a.	
Success rate	75 percent (this is the measure of guarantees signed from total accounts processed each year)	

3. Financial parameters of the RE guarantee is presented below.

Table 6-2: Basic Assumptions for the RE Window

Capital	$30 million	
Leverage	▪ Years 1 to 20	– 4x
$:PHP rate	1:45	
CTF guarantee terms	▪ Term ▪ Commitment period ▪ Amortization after grace period	– 20 years – 5 years – 10 percent p.a.

[31] For financial modelling purposes, a conservative leverage ratio of 4 x is assumed in all calculations in this annex.

	▪ Amount ▪ Upfront fees ▪ Ongoing fees	– 80 percent of debt issued – $200,000 – 10 bps
ECPCG Guarantee terms	▪ Average guarantee size ▪ Term ▪ Grace period ▪ Amortization after grace period ▪ Other terms – see base case below	– PHP 328 million – 15 years – 2 years – 8 percent p.a.
Interest on cash deposits	1 percent p.a.	
Success rate	75 percent (this is the measure of guarantees signed from total accounts processed each year)	

4. Table 6-3 shows the base case blended (EE and RE) financial results for the expanded ECPCG:

Table 6-3: Financial Analysis for the ECPCG Program

Business Volume	▪ Total Guarantees issued ▪ Commercial debt issued ▪ Commercial debt leverage of CTF funds	– PHP 14.5 billion – PHP 18.2 billion – 10x
Portfolio losses	PHP 454 million	
Effective guarantee costs for ECs	1.10 percent	
Income	▪ Net Portfolio Income (net of losses) ▪ LGUGC income ▪ LGUGC profit ▪ NEA income	– PHP 561 million – PHP 316 million – PHP 104 million – PHP 332 million

Financial Sensitivity Analysis for the ECPCG Program

5. Having run the Base Case, sensitivities were tested on the key variables likely to affect the ECPCG business model. The most important variables in the model are:

- Portfolio losses
- Fee levels
- Utilization.

Accordingly, the following scenarios were tested in the model.

Alternative Portfolio Loss Scenarios

6. The single most important variable for all stakeholders in ECPCG is the portfolio loss rate. The following scenarios were run to test the impact of differing portfolio loss rate:

- **0.15 percent annual loss ratio:** This is an upside scenario which demonstrates the impact of a 40 percent reduction in the overall portfolio loss against the base case. This would demonstrate a scenario in which, even if there were underperforming loans,

actions of LGUGC as Agent and NEA via the step-in rights, were able to reduce the overall level of losses.

- **0.5 percent annual loss ratio:** This is a downside case which demonstrates the impact of a 100 percent increase in the overall portfolio loss against the base case. This would demonstrate a scenario in which LGUGC's project selection and subsequent portfolio management was of a lower overall quality than anticipated and that NEA may fail in its responsibilities to step in and recover the situation for failing ECs.
- **1.0 percent annual loss ratio:** This is a severe downside case which we believe is unrealistic but it was included to demonstrate a bigger failure on the part of LGUGC and NEA in performing their roles and showing the impact on calls of CTF capital.
- **CTF first loss scenario (1.42 percent annual loss ratio for EE Window and 1.01 percent for RE Window):** This scenario demonstrates the loss ratio at which CTF capital starts to be called for guarantee pay-outs.
- **CTF total loss scenario (5.35 percent annual loss ratio for EE Window and 3.06 percent for RE Window):** This extreme downside case shows the loss ratio at which all CTF capital is depleted.

Utilization Scenarios

7. Two scenarios were run under this category:

- **Higher RE Guarantee Size:** This scenario was tested to show the impact of a higher average guarantee size for the RE window. The assumption was that all RE guarantees would be issued at the Single Guarantee Limit (which increases as capital is added, ultimately reaching about PHP 675 million).
- **Lower Use:** This scenario was run to show the impact of a lower annual volume of guarantee signatures keeping the costs constant. Whilst the risk profile remains the same with that under the base case, this scenario tests the financial sustainability of the program in the case of lower use.

8. The scenario analysis shows that, for ECPCG to start making losses for CTF, average annual portfolio losses need to be as high as 1.42 percent for the EE Window and 1.01 percent for the RE Window. The possibility of this happening is extremely remote.

9. Other key findings from the analysis are:

- The program is profitable for LGUGC and provides adequate fees for NEA even in downside cases since they receive their share of the guarantee fees on an ongoing basis
- Even in case of lower utilization, ECPCG is still able to facilitate investments of PHP7.6 billion which is approximately two-thirds of the total investment requirements of eligible ECs.

Financial and Economic Analysis – EE Investments in Electric Cooperatives

10. Financial analysis of EC network investments recognizes that EC's are regulated as not-for-profit entities, and financed investments with very high debt-equity ratios (90% debt); in their tariff, they are allowed to recover a small amount that can fund their contribution to investment.

ECPCG is financing investment plans that are assessed and approved by NEA and ERC. The weighted average cost-of-capital is low, because of low equity content and the not-for-profit basis for regulation, and they are regulated on the basis that they should recover this and nothing else (again, factoring in the provision for "extra" funds so they can meet, for example, requirements contribute 10% equity in ECPCG-supported investments). Typical project financial internal rate-of-returns are therefore roughly equal to the cost of capital, or around 6% depending on the cost of debt, and factoring in the quasi-equity of the investment allowance.

11. The economic impact of the EE investments is determined by comparing the present value of the avoided generation costs with the total overnight investment cost (minus any taxes and duties) needed to produce these. The EIRR is estimated at 10% based on total avoided generation costs over the CTF commitment period of 20 years of PHP 19.4 billion, valued at PHP 6.0/kWh inclusive of transmission wheeling charges. If the present value of carbon benefits over the CTF commitment period is added, the EIRR increases to 12% based on total avoided GHG emissions of 3.35 million tons CO_2 valued at $25/ton. A discount rate of 10% has been assumed.

12. Note that the avoided generation is calculated based on the consolidated five year capital expenditure plans of the creditworthy ECs which target a 1.49% system loss reduction based on a total investment outlay of PHP 16,284 million, 50% of which is assumed to be targeted specifically on loss reduction. The guarantee model base case EE window supports a total five year investment of PHP 9,111 million. The creditworthy ECs can fully absorb these funds since their additional borrowing capacity is estimated to be PHP 9,794 million but can only expect to achieve a 0.83% system loss reduction at the end of the five years, reducing their average system loss from 10.62% to 9.79%.

13. The avoided GHG emissions over the CTF commitment period are about five times the number of CERs in million tons CO_2 registered in the Philippines under the Kyoto protocol. Benefits will continue to accrue for another 20 years after the commitment period. The same applies to avoided generation costs. The EIRR calculation is therefore considered conservative.

14. The EIRR is sensitive to the actual reduction in system losses achieved as a result of the program, the investment needed to produce them, the cost of electricity used by the ECs, and the cost of carbon emissions. Therefore it is important that ECs' planned system loss reductions are achieved for the program to be economically justified.

Financial Analysis of RE Sub-Projects

15. A financial model was developed using an average run of river small hydro sub-project as the base case with the project parameters presented in Table 6-:

Table 6-4: Base Case Sub-Project Parameters – Run of River Small hydro

Capacity	2.5 MW
PPA/ESA tariff	5.30 PHP/kWh (90% of the approved FIT)
Tariff inflation	1% per annum
Capital cost	$ 3.5 million/MW
Capacity factor	55%

Guaranteed efficiency factor	90%
Station use and line-loss	2%
Operating costs per annum	5% of revenues in first year of operation, inflated at 4% pa
Drawdown schedule for construction	37.5% / 62.5% year 1 / year 2 with 40% of year 1 drawn down immediately

16. Base case financing assumptions shown below in Table are guided by the updated 2013 market survey of ECPCG AFIs described in Annex 2:

Table 6-5: Base Case Financing Assumptions

Debt/equity	90/10 – EC only sponsor 80/20 – EC/Small IPP Developer joint venture (50/50 equity contribution) 80/20 – Small IPP Developer only sponsor (banks' minimum equity requirement)
Tenor	15 years inclusive of 2 years grace
Interest rate	Equivalent of 8% fixed over full tenor (likely a conservative assumption)
Other costs	0.25% front end fee, 0.18% commitment fee
Minimum DSCR	1.20x

17. As small hydro projects are site-specific, there is a large variation in both capital costs and capacity factors and these are therefore the major sensitivity factors for project feasibility. Capital costs can easily vary from $ 3 – 4 million per MW and capacity factors can run from as low as 40% to as high as 80%. In screening projects, it is important to optimize the tradeoffs between plant capacity, capital cost and capacity factor and these issues are being considered in the ongoing trust funded technical assistance to advance the mini-hydro project pipeline.

18. The end use tariff requires ERC approval based on project costs and reasonable sponsor equity returns[32]. The assumption used in the analysis here for the project tariff as reflected in the power purchase or electricity supply agreement is 5.30 PHP/kWh, which is in the range of avoided cost of power for Mindanao ECs.

19. Small IPP developers in the Philippines typically target an 18% ROE. ECs simply want a bankable project as they must return any cash flow to equity to their member-consumers in the form of lower generation tariffs ("bought down tariffs"). In a joint venture, there may be cases (high capital cost, low capacity factor) where ECs would be willing to negotiate away part of their cash flow to equity to the small IPP developer to allow them to reach his target 18% ROE. There may also be cases (low capital costs, high capacity factor) where the small IPP developer earning a supernormal ROE would be willing to negotiate away part of his cash flow to equity and allow the EC to further reduce tariffs to its member-consumers. Joint venture approaches for ECs with small IPPs are being developed as part of the same trust funded technical assistance that is

[32] Note that the ERC set the allowable equity return for the FIT calculations for all technologies except biomass at 16.44%. For a non-FIT eligible project the allowable equity return for an EC is zero consistent with the cash flow tariff methodology applied to ECs as non-profit entities.

advancing the mini-hydro pipeline. Base case results in terms of project equity IRR are shown in Table 6- for the three different project sponsor possibilities:

Table 6-6: Financial Analysis Base Case Results

Project Sponsor (D/E)	Project Equity IRR	DSCR
EC (90/10)	20.1%	1.12x
Joint Venture (80/20)	16.8%	1.28x
Small IPP (80/20)	16.8%	1.28x

20. The EC only sponsor case is not bankable as it fails to meet the minimum 1.2X DSCR. In the Small IPP Developer case, the project is bankable but the equity IRR still falls short of the developer's expectations. If however the EC is willing to form a joint venture with the developer and negotiate away part of its cash flow to equity (accepting a slightly lower bought down tariff), as Table 6- shows the developer can meet his target 18% ROE and the project is still bankable:

Table 6-7: Negotiated Joint Venture

Project Sponsor (D/E)	Project Equity IRR	DSCR	Small IPP Equity IRR	Equity Share EC / Small IPP	Cash Flow to Equity Share EC / Small IPP	EC Bought Down Tariff[33], PHP/kWh
Joint Venture (80/20)	16.8%	1.28x	16.8%	50 / 50	50 / 50	4.09
Joint Venture after negotiation(80/20)	16.8%	1.28x	18.0%	50 / 50	43.5 / 56.5	4.25

21. Note that the power purchase cost of the ECs in 2011 was just over 6 PHP/kWh. Bought down tariffs are significantly lower than this even after reallocation of cash flows between the equity holders. With most ECs still only having peak loads of 10 – 30MW, one or two small hydro projects can have a significant impact on lowering member-consumer tariffs.

Economic Analysis – Renewable Energy projects

22. PHRED is designed to finance RE projects that are additional to those that get financed under the FIT scheme. Such projects will thus not significantly replace other RE projects that would otherwise be developed. These projects will also require PPAs to be approved by ERC, which only grants approval for least-cost projects. The economic analysis starts from these two points – that projects are additional to FIT projects, and that ECPCG projects are least-cost.

23. Economic costs are the construction costs, net of taxes, to build the projects. Benefits are the additional energy added to the system. This energy is valued at the willingness-to-pay, based on observed willingness of ECs to purchase energy from the electricity generators in the Philippines (6 pesos per kWh). This is far below higher estimates of WTP (from the perspective of the ECs) which, if based on the cost of buying oil-fired power, would be in the 7 to 9 peso range.

[33] Levelized tariff over assumed 25 year project life

With over 300 GWh of annual generation produced, the economic investment cost, plus operations and maintenance, is about $276 million, for 71.4 MW of renewables. The NPV (10% discount rate) of net benefits is $81 million, and the EIRR is just over 18%.

Table 6-8: Summary of Economic Returns – Base Case

Type of Project	**Financial IRR (%)**	**Economic IRR (%)**
Renewable Energy (Equity IRR)	16.8	18
Energy Efficiency (Project IRR)	6	12*

*Factoring in carbon at $25/ton CO_2e.