ESSF LIST OF ANNEXES

1. List of Negative Subproject Attributes
2. Safeguards Screening Checklist
3. Safeguards Requirements in the ECPCG Process Flow
4. Eligible Mini-hydropower Projects
5. Cultural Property and Protection Measures, Chance Find Procedures
6. Environmental Impact Assessment and Environmental and Social Management Plan (ESMP) for Small to Medium-Sized Hydropower Plants
7. ESMP Electricity Distribution/Transmission Networks, Substations
8. ESMP
    a. Wind Energy
    b. Biomass Thermal
    c. Biomass Energy Crop Production
    d. Solar (PV) Energy
9. ECOPs Hydropower Plants
10. ECOPs for Access Roads and Ancillary Facilities
11. ECOPs for Other Renewable Energy Projects
    a. Wind Energy
    b. Biomass Thermal
    c. Biomass Energy Crop Production
    d. Solar (PV) Energy
12. Guidance on World Bank and DENR Policy requirements for Safety of Dams (OP 4.37)
13. Recommended Format
    a. Environmental and Social Impact Assessment (ESIA)
    b. Initial Environmental Examination (IEE)
14. Sample Terms of Reference
    a. Feasibility Study with Environmental and Social Assessment
    b. ESIA Preparer
15. PHRED SOCIAL SAFEGUARDS Policy Framework
    a. Land Acquisition, Resettlement and Rehabilitation Policy Framework
    b. Indigenous Peoples Policy Framework

ANNEX 1

List of Negative Subproject Attributes

The following is a negative list of activities that are not eligible under this project:

- Sourcing materials for construction, such as gravel and sand, from illegal quarries and sites which do not comply with the guidelines of the Government of the Philippines;
- Activities involving the use of bulk fuel wood that entail the continuous cutting of trees and bushes;
- Activities involving the use of hazardous substances or compounds which are toxic, explosive, flammable, etc.);
- Rehabilitation of facilities storing hazardous substances (e.g. fuel depots), except simple clearing of debris or construction wastes;
- Bulk purchase of fuel, lubricants, pesticides, herbicides or other hazardous substances; and
- Any activity that will result in the degradation or conversion of critical natural habitat located in sensitive or protected areas as defined by OP 4.04 and the Philippine National Integrated Protected Areas System Act (Republic Act 7586), except the removal of debris and the repair of pre-existing infrastructure.

Annex 2

Safeguards Screening Checklist

This Form is to be used by the Project Management Office (PMO) in screening proposed subprojects.

Note: One copy of this form and accompanying documentation is to be kept in the PMO and one sent to the Task Team Leader of WB.

Name of Subproject:

Location:

I. Subproject Screening:

a. Has the subproject been screened against the list of ineligible activities (negative list)? If yes and proposed activity is eligible, proceed. If no screening has been done, contact PMO to conduct screening.

This form is to be used by the Implementing Agency to screen potential environmental and social safeguards issues of a subproject, determine Bank policies triggered and the instrument to be prepared for the sub project.

Subproject Name	
Subproject Location	
Subproject Proponent	
Subproject Type/Sector	
Estimated Investment	
Start/Completion Date	

Questions	**Answer**		**If Yes** **WB Policy triggered**	**Documents requirement if Yes**
	Yes	No		
Are the subproject impacts likely to have significant adverse environmental impacts that are sensitive[1], diverse or unprecedented?[2] Please provide brief description:			*OP 4.01 Environmental Assessment* Category A	Environmental and Social Impact Assessment (ESIA)

[1] Sensitive (i.e., a potential impact is considered sensitive if it may be irreversible - e.g., lead to loss of a major natural habitat, or raise issues covered by OP 4.04, Natural Habitats; OP 4.36, Forests; OP 4.10, Indigenous Peoples; OP 4.11, Physical Cultural Resources; or OP 4.12, Involuntary Resettlement; or in the case of OP 4.09,

Do the impacts affect an area broader than the sites or facilities subject to physical works and are the significant adverse environmental impacts irreversible? Please provide brief description:			*OP 4.01 Environmental Assessment* Category A	ESIA
Is the proposed subproject likely to have minimal or no adverse environmental impacts?[3] Please provide brief justification:			*OP 4.01 Environmental Assessment* Category C	No action needed beyond screening
Is the subproject neither a Category A nor Category C as defined above?[4] Please provide brief justification:			*OP 4.01 Environmental Assessment* Category B	Limited ESIA or ESMP
Will the subproject adversely impact physical cultural resources?[5] Please provide brief justification:			*OP 4.11 Physical Cultural Resources*	Addressed in ESIA (ESIA with PCR Management Plan and/or Chance Find Procedures)
Will the subproject involve the conversion or degradation of non-critical natural habitats? Please provide brief justification:			*OP 4.04 Natural Habitats*	Addressed in ESIA

when a subproject includes the manufacture, use, or disposal of environmentally significant quantities of pest control products);

[2] Examples of subprojects where the impacts are likely to have significant adverse environmental impacts that are sensitive, diverse or unprecedented are large scale infrastructure such as construction of new roads, railways, power plants, major urban development, water treatment, waste water treatment plants and solid waste collection and disposal etc.

[3] Examples of subprojects likely to have minimal or no adverse environmental impacts are supply of goods and services, technical assistance, simple repair of damaged structures, etc.,

[4] Subprojects that do not fall either within OP 4.01 as a Category A or Category C can be considered as Category B. Examples of Category B subprojects include small scale *in-situ* reconstruction of infrastructure projects such as road rehabilitation and rural water supply and sanitation, small schools, rural health clinics, etc.

[5] Examples of physical cultural resources are archaeological or historical sites, including historic urban areas, religious monuments, structures and/or cemeteries particularly sites recognized by the government.

Will the subproject involve the significant conversion or degradation of critical natural habitats[6]?			*OP 4.04 Natural Habitats*	Not eligible
Does the subproject construct a new dam or rely on the performance of an existing dam or a dam under construction?			*OP 4.37 Dam Safety*	Dam Safety Plan
Does the subproject procure pesticides (either directly through the project, or indirectly through on-lending, co-financing, or government counterpart funding), or may affect pest management in a way that harm could be done, even though the subproject is not envisaged to procure pesticides?			*OP4.09 Pest Management*	Addressed in ESIA (Pest Management Plan)
Does the subproject involve involuntary land acquisition, loss of assets or access to assets, or loss of income sources or means of livelihood? Please provide brief justification:			*OP 4.12 Involuntary Resettlement*	Resettlement Action Plan
Are there any ethnic minority communities present in the subproject area and are likely to be affected by the proposed subproject negatively or positively? Please provide brief justification:			*OP 4.10 Indigenous People*	Ethnic Minority Development Plan/Indigenous Peoples Plan
Will the subproject have the potential to have impacts on the health and quality of forests or the rights and welfare of people and their level of dependence upon or interaction with forests; or aims to bring about changes in the management, protection or utilization of natural forests or plantations? Please provide brief justification:			*OP4.36 Forestry*	Addressed in ESIA
Will the subproject have the potential to have significant impacts or significant conversion or degradation of critical natural forests or other natural habitats?			*OP4.36 Forestry*	Not eligible

[6] Subprojects that significantly convert or degrade critical natural habitats such as legally protected, officially proposed for protection, identified by authoritative sources for their high conservation value, or recognized as protected by traditional local communities, are ineligible for Bank financing.

Is there any territorial dispute between two or more countries in the subproject and its ancillary aspects and related activities?			*OP7.60 Projects in Disputed Areas*	Governments concerned agree
Will the subproject and its ancillary aspects and related activities, including detailed design and engineering studies, involve the use or potential pollution of, or be located in international waterways[7]?			*OP7.50 Projects on International Waterways*	Notification (or exceptions)

Conclusion and Safeguards Instruments Required:

The subproject is classified as a Category _____ project as per World Bank OP4.01, and the following safeguards instruments will be prepared:

1. _____
2. _____
3. _____
4. _____

II. Site Assessment:

a. When considering the location of a subproject, rate the sensitivity of the proposed site in the following table according to the given criteria. Subprojects with medium or high ratings will require an ESIA as these indicate a real risk of causing undesirable adverse environmental and social effects, and a more substantial environmental and/or social planning may be required to adequately avoid, mitigate or manage potential effects.

Issues	Site Sensitivity Criteria			Rating (L/M/H)
	Low	Medium	High	
1. Natural Habitats	No natural habitats present of any kind (terrestrial or aquatic). Site is sparsely vegetated and existing vegetation is commonly found throughout the area.	No critical natural habitats or other natural habitats occur.	Natural habitats present (critical natural habitats is in the negative list, see Annex 1). Within declared protected areas or known to have high conservation value because of the presence of	

[7] International waterways include any river, canal, lake or similar body of water that forms a boundary between, or any river or surface water that flows through, two or more states.

			highly endangered species.	
2. Water quality and water resource availability and use	Available water is sufficient for existing demand; low intensity of water use; potential water use conflicts expected to be low; no potential water quality issues.	Medium intensity of water use; multiple water users; water quality issues are important.	Intensive water use; multiple water users; potential for conflicts is high; water quality issues are important.	
3. Natural hazards vulnerability, floods, soil stability/ero-sion	Flat terrain; no potential stability/erosion problems; no known volcanic/seismic/ flood risks.	Medium slopes; some erosion potential; medium risks from volcanic/seismic flood/typhoons.	Mountainous terrain; steep slopes; unstable soils; high erosion potential; volcanic seismic or flood risks.	
4. Physical Cultural Property (churches, archaeologi cal sites, historical structures, sacred grounds)	No known or suspected physical cultural heritage sites	Suspected cultural heritage sites; known heritage sites in broader area of influence	Known heritage sites in subproject area.	
5. Involuntary Resettle-ment	Low population density; dispersed population; legal tenure is well defined.	Medium population density; mixed ownership and land tenure.	High population density; major towns and villages; low income families and/or illegal ownership of land; communal properties.	
6. Indigenous Peoples	No indigenous population.	Dispersed and mixed indigenous populations; highly acculturated indigenous populations.	Indigenous territories (CADT), reserves and /or lands; vulnerable indigenous populations.	

III. Areas for Potential Environmental and Social Impact:

		Yes	No
	A. Environment - Will the subproject:		
1	Risk the contamination or access to drinking water or food supply		

2	Cause poor water drainage, increase flooding and heighten the risk of vector-borne diseases such as malaria or dengue		
3	Harvest or exploit a significant amount of natural resources such as trees, gravel, sand or wood for fuel or water? (e.g. use of illegal quarries)		
4	Be located within or nearby environmentally sensitive or protected areas (e.g. intact natural forests, mangroves, wetlands or threatened species?) or key biodiversity areas?		
5	Create a risk of increased soil degradation, erosion or landslide?		
6	Create a risk of increasing soil salinity, salt intrusion or loss in soil productivity?		
7	Produce, or increase the production of solid wastes (e.g. water, medical/healthcare, domestic or construction wastes)?		
8	Affect the quantity or quality of surface waters (e.g. rivers, streams, wetlands), groundwater (e.g. wells), or community pools?		
9	Result in the production of solid or liquid waste, or result in an increase in waste production, during construction or operation?		
If the answer to any question from 1-9 is "Yes", please include an Environmental and Social Management Plan (EMP) with the subproject application.			
B. Land Acquisition and Access to Resources - Will the subproject:			
10	Require that land (public or private) be acquired (temporarily or permanently) for its development?		
11	Use land that is currently occupied or regularly used for productive purposes (e.g. gardening, farming, pasture, fishing, forests)		
12	Displace individuals, families, or businesses? Have any individuals, families, businesses been displaced up to 2 years prior to subproject enrolment?		
13	Result in the temporary or permanent loss of crops, fruit trees or household infrastructure such as crop storage facilities, outside toilets and kitchens		
14	Result in the involuntary restriction of access by people to legally designated parks and protected areas?		
If the answer to any of the questions 10 -14 is "Yes", please prepare appropriate documents required under the Resettlement and Compensation Framework.			
C. Indigenous Peoples - Will the subproject:			
15	Require land used by IPs for productive (food gathering, gardening, farming, pasture, fishing, forests) and/or cultural purposes (sacred		

	ground, place of rites, etc.)?		
16	Cover areas covered by a Certificate of Ancestral Domain Title or existing claim to one?		
17	Affect IPs in the project area (positive or negative)?		
18	Have a significant area that overlaps with the boundaries where IPs have a collective attachment to?		
19	Have IPs as among the potential beneficiaries of the subproject?		
If the answer to any of the questions 15-19 is "Yes", please prepare IP Plan required under the Indigenous Peoples Framework.			

IV. Categorization of Subproject:

In general these are the criteria for categorization of the project activities:

Category A The activity is likely to have significant adverse environmental and social impacts that are sensitive, diverse or unprecedented. Subprojects under this category require a full-blown ESIA.

- In Section II on Site Assessment, a score of at least one (1) High rating;
- In Section III on Areas for Potential Environmental and Social Impact, a score of at least one (1) Yes in any of the Sections A. Environment, B. Land Acquisition and Access to Resources, and C. Indigenous Peoples;
- Scope of impacts is large in terms of land area; and
- Impacts are difficult or to mitigate.

Category B The activity has potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats, which are less adverse than those of Category A subprojects. As these impacts are site-specific, an Initial Environmental Examination (IEE) is required to identify and assess the potential environmental and social impacts. Few of the impacts are irreversible and in most cases, mitigation measures can be designed more readily than for Category A subprojects. An Environmental Code of Practice (ECoP) is required to accompany the ESMP to provide the overall environmental management approach to contractors. In cases where significant impacts are anticipated, the proponent may be required to prepare a full-blown ESIA.

- In Section II on Site Assessment, a score of least one (1) Medium rating;
- In Section III on Areas for Potential Environmental and Social Impact, a score of at least one (1) Yes in any of the Sections A. Environment, B. Land Acquisition and Access to Resources, and C. Indigenous Peoples.

Category C The activity is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C subproject.

The proper categorization is left to the judgment of the PMO considering the guidelines above. The final objective of the categorization is to ensure that all social and environmental impacts are avoided, minimized or properly mitigated.

CERTIFICATION

We certify that we have thoroughly examined all the potential adverse effects of this subproject. To the best of our knowledge, the subproject plan as described in the application and associated planning reports (e.g. ESMP, RAP), if any, will be adequate to avoid or minimize all adverse environmental and social impacts.

Person who conducted the screening:

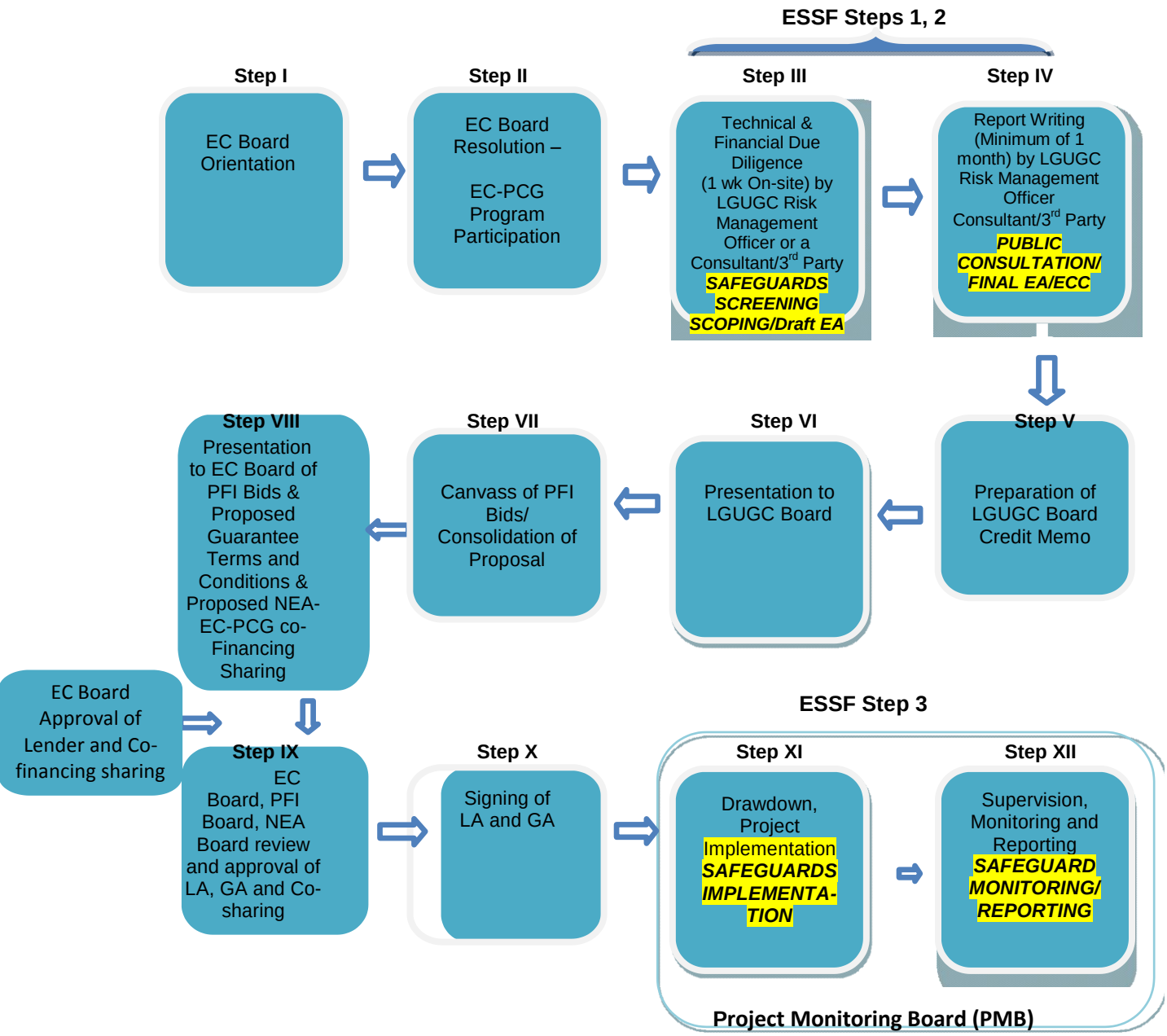
Signature: _____
Date: _____

PMO team representative:

Signature: _____
Date: _____

ANNEX 3

SAFEGUARDS REQUIREMENTS IN THE EC-PCG PROCESS FLOW*



Annex 4 Eligible Mini-Hydro Projects (Not yet in the ECPCG official 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: ECPCG does not expect to finance all of these small hydro projects. The list has been assembled using inputs from the EC community and NEA's renewable energy department, and then screening out projects that are well advanced in financing, and projects that are less credible or technically advanced. The list above is the long list of candidates on which some further pipeline development work will be done, with NEA and some specialist consultants working to provide some facilitation of the process. All the above projects have passed detailed technical and economic screening and have expressed strong interest in availing of the ECPCG guarantee).

ANNEX 5

CULTURAL PROPERTY AND PROTECTION MEASURES AND CHANCE FINDS PROCEDURES

A. WB Policy on Management of Cultural Property (OP 4.11, July 2006)

Cultural resources are important as sources of valuable historical and scientific information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The loss of such resources is irreversible, but fortunately, it is often avoidable. The objective of OP/BP 4.11 on Physical Cultural Resources is to avoid, or mitigate, adverse impacts on cultural resources from development projects that the World Bank finances.

B. Protection of Cultural Property

1. Cultural property include monuments, structures, works of art, or sites of significance points of view, and are defined as sites and structures having archaeological, historical, architectural or religious significance, and natural sites with cultural values. This includes cemeteries, graveyards and graves.

2. The initial phase of the proposed emergency reconstruction operations pose limited risks of damaging cultural property since subprojects will largely consist of small investments in community infrastructure and income generating activities, reconstruction of existing structures, and minor public works.

C. Chance Find Procedures

3. Chance find procedures will be used as follows:

a. Stop the construction activities in the area of the chance find.

b. Delineate the discovered site or area.

c. Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the Philippine National Museum Cultural Properties Division take over. The contact person is Mr. Oscar G. Desembrana, Museum Researcher II, Cultural Properties Division (CPD) at telephone number 527-1216, or via email at culturalprop@nationalmuseum.gov.ph.

d. Notify the supervisory Engineer who in turn will notify the responsible local authorities and the Philippine National Museum Cultural Properties Division immediately (less than 24 hours).

e. Contact the responsible local authorities and the Philippine National Museum Cultural Properties Division who would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the Philippine National Museum Cultural Properties Division (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, including the aesthetic, historic, scientific or research, social and economic values.

f. Ensure that decisions on how to handle the finding be taken by the responsible authorities and the Philippine National Museum Cultural Properties Division. This could include changes in the layout (such as when the finding is an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.

g. Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the Philippine National Museum Cultural Properties Division.

h. Construction work will resume only after authorization is given by the responsible local authorities and the Philippine National Museum Cultural Properties Division concerning the safeguard of the heritage.

4. These procedures must be referred to as standard provisions in construction contracts, Safeguards Procedures for Inclusion in the Technical Specifications for Contracts. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed.

5. Relevant findings will be recorded in World Bank Implementation Supervision Reports (ISRs), and Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project's cultural property mitigation, management and activities, as appropriate.

ANNEX 6

Environmental Impact Assessment and Cumulative Impact Assessment Guidelines for Small to Medium-Sized Hydropower Plants

These guidelines are intended to provide background information on the general concepts and principles used in the preparation of an Environmental Impact Assessment (EIA) for small to medium-sized hydropower plants as well as integrating the conduct of a Cumulative Environmental Impact Assessment (CEIA) in the EIA process.

I. Types of hydropower projects

Two types of hydropower projects are storage projects and run-of-the-river projects. The degree to which a hydropower project affects the ecosystems of rivers and their surrounding areas varies widely. One of the most important variables is whether a dam will be constructed which will be part of a storage or run-of-the-river hydropower project. Other variables include the size and flow rate of the river or tributary where the project is located; the existing habitat and climatic conditions; the type, size and design of a project; and whether a project is located upstream or downstream of other projects.

Storage projects hold water in a reservoir or lake to adjust a river's natural flow pattern to release water when the demand for electricity is highest. In addition, more energy can be produced from water falling 15 meters above a turbine than from 5 meters. This height is called "head." Thus, it is not surprising that the hydropower projects producing the most electricity also have the tallest dams and the largest reservoirs.

Run-of-the-river projects allow water to pass at about the same rate that the river is flowing. Generally, the river level upstream of the project is fairly constant, with daily fluctuations limited to only 1 meter to 2 meters at the largest projects.

II. EIA process

The purpose of conducting an Environmental Impact Assessment for hydropower projects is to protect environmental resources and minimize any potential adverse effects from project construction and operation. The assessment of all environmental impacts should adhere to an integrated process, divided into the following stages:

- Scoping
- Baseline data collection
- Assessment of Environmental Impacts
- Development of Mitigating Measures
- Analysis of Alternatives
- Environmental and Social Management and Monitoring Plans (ESMP)
-

III. Description of Existing Environment Conditions and Assessment of Environmental Impacts

It is important to be cognizant of the potential impacts of hydropower plants and the environmental management measures that need to be considered, right from the beginning of project preparation, up to its operation and decommissioning. Particularly for hydropower projects that are planned to be constructed in series, the conduct of a cumulative impact assessment is necessary, taking into account the multiplicity of impacts, occurring simultaneously, with no time for the same natural ecosystem to recover and regenerate itself.

1. Water Resource Use

Water Stratification

Reservoirs are created when storage projects are built. Reservoirs can significantly slow the rate at which the water is moving downstream thus causing surface temperatures to become warmer as the slower moving or “slack” water absorbs heat from the sun.

In addition to surface water warming, the colder water sinks toward the bottom because of its higher density. This causes a layering effect called stratification. The bottom layer is the coldest and the top layer the warmest.

When stratification occurs, there is also another ecosystem effect. Specifically, the colder water that sinks toward the bottom contains reduced oxygen levels. Further, at some sites when water is released from the colder, oxygen-depleted depths, downstream habitat conditions change because of the reduced oxygen level in the water.

Supersaturation

Supersaturation occurs when air becomes trapped in water spilled over a dam as it hits the pool below, creating turbulence. Because air is comprised of 78% nitrogen, the level of nitrogen dissolved in the water can increase dramatically. The affected water does not lose the excess nitrogen quickly. For fish and other species, supersaturated water can enter tissues. When fish swim from an area supersaturated with nitrogen to a lower pressure area, it causes injury and can even cause death to fish.

Changing Water Levels

Building a storage project can raise the water level behind a dam from a few meters to more than 10 meters. When stream banks and riparian areas (the area where moist soils and plants exist next to a body of water) are submerged by the reservoir’s higher water level, habitat conditions change and a new equilibrium emerges. As this occurs, a different set of dynamics begin impacting species that traditionally grow, nest, feed or spawn in these areas. The raising and lowering of the water levels on a daily, weekly or seasonal basis, as dictated by customer demand for electricity, may result in shoreline vegetation not being effectively reestablished.

Sedimentation

Sediments, which are fine organic and inorganic materials that are typically suspended in the water, can collect behind a dam because the dam itself is a physical barrier. From the time a project is built, man-made and natural erosion of lands adjacent to a reservoir can lead to sediment build-up behind a dam. This build-up can vary based on the ability of a river to “flush” the sediments past the dam. It can also vary based on the natural conditions specific to the river and its upstream tributaries.

When sediments collect, the ecosystem can be affected in two ways. First, downstream habitat conditions can decline because these sediments no longer provide important organic and inorganic nutrients.

Second, where sediment builds up behind a dam, an effect called “nutrient loading” can cause the supply of oxygen to be depleted. This happens because more nutrients are now available, thus more organisms populate the area to consume the nutrients. As these organisms consume the nutrients, more oxygen is used, depleting the supply of oxygen in the reservoir.

Similarly, gravel can be trapped behind a dam in the same way as sediment. In cases where the movement of gravel downstream is part of establishing spawning areas for fish, important habitat conditions can be affected.

2. Land Resource Use

Erosion

Changing water levels and a lack of streamside vegetation can also lead to increased erosion. For example, the lack of vegetation along the shoreline means that a river or reservoir can start cutting deeply into its banks. This can result in further changes to a riparian zone and the species which it can support. Increases in erosion can also increase the amount of sedimentation behind a dam.

Changing Habitat Conditions for Fish and Wildlife

Just as the changes that occur to ecosystems vary greatly from project to project, so do changes in habitat. For a given project, learning what habitat conditions exist and the extent of ongoing impacts are required in the conduct of an environmental assessment. When ecosystem changes occur at a project, a new pattern of biological activity and equilibrium is likely to emerge. As this happens, a new and dynamic equilibrium takes hold. With this new equilibrium comes changes to the plants, fish and wildlife that populate these areas.

3. Biological Resources

Fish and Aquatic plants

Depending on the species, fish, aquatic plants and organisms demonstrate varying reproductive, migration and feeding patterns. Some migrate and spawn up- and downstreams, others migrate hundreds of kilometers from fresh water to the oceans and then back again to spawn. Resident fish, on the other hand, spend their entire lives in fresh water streams, tributaries and rivers. Some spawn and migrate from streams

to lakes (adfluvial) or rivers (fluvial), while some remain in the same reach of water, and spawn in small streams, preferably in shaded pools with overhanging trees and shrubs.

There can also be effects to fish from loss of riparian vegetation, sedimentation, erosion and temperature changes. Unlike the impacts listed above, however, these effects are also caused by non-dam activities such as farming, logging and land development. As a result, when studying the health of habitat along a particular reach of river or tributary, all sources of environmental impacts must be reviewed.

Further, while fish migrating down- and upstream may encounter altered ecosystems and barriers that impact their ability to survive, predation from other species also has an impact. Slower moving waters and temperature changes caused by reservoirs can provide improved environments for warm water fish. This in turn provides a conducive environment for them to multiply faster at the cost of poorer conditions for sensitive species that thrive in colder waters.

Wildlife

Riparian vegetation and its bordering waters provide critical habitat for birds, waterfowl, and small and large mammals. When a hydropower project results in inundation of a free-flowing river, the nesting, forage and cover provided by these areas are temporarily or permanently lost.

When habitat is lost, animals are forced to move to higher ground or other areas where habitat conditions may be less suitable, predators are more abundant, or the territory is already occupied. As an example, ground birds require cover and cannot successfully move to higher, more open, ground.

In cases where water levels stabilize at a new height, vegetation in riparian zones can re-emerge and species can re-populate an area. With storage projects, the riparian zone that re-emerges has conditions that now reflect that of a reservoir or lake rather than a free-flowing river. When such conditions occur, certain species will begin to decline, others will become more abundant, and some will populate these areas for the first time.

As changes in habitat occur, observation and time make it increasingly clear which plants, fish and wildlife are affected. Some species end up doing quite well, others sharply or completely decline, and some are minimally affected.

III. Cumulative Environmental Impact Assessment (CEIA)

The assessment of cumulative impacts should not be thought of as separate from the EIA process. Cumulative impacts are not necessarily different from impacts examined in an EIA. EIAs focus on the local scale which is the area covered by each project. A CEIA expands the scale of the assessment to a larger area where two or more subproject activities co-exist and generate environmental impacts simultaneously or sequentially or produce complex interactions due to co-located investments.

In some cases, two or more hydropower projects may be developed in the same river system or watershed that would result in cumulative impacts. In other cases, a host of other activities may also result in cumulative impacts:

1. Loss of riparian zone, changes in water temperature and quality, loss of large woody debris, erosion, and sedimentation can come from various types of logging practices, agricultural activities and other land uses, e.g., grazing of cattle, mining and the building of roads.
2. Changes in estuary conditions from wetland drainage, diking, and navigational improvements.
3. Introduction of hatchery fish affecting the gene pool, viability, health, and abundance of the endemic species.
4. The overharvesting (catching) of fish by both commercial and sport fishermen.

Whenever cumulative impacts do occur, the following requirement for considering cumulative impacts of projects might be incorporated into the EIA terms of reference for carrying out EIA studies:

- Define subproject activities along with other existing, in progress or planned subprojects in the same area that contribute to cumulative impacts on Valued Ecosystem Components (VEC), CEIA indicator, where VECs are defined as any part of the environment that is considered important by stakeholders involved in the assessment process. Examples are protected areas, human health, socioeconomic importance, conservation of cultural heritage
- Identify area of influence for the subproject
- Identify spatial and temporal boundaries for the subproject/s
- Identify VECs in the area of influence
- Identify subproject-specific standards including regulatory thresholds and standards

Once requirements related to the assessment of cumulative impacts are incorporated into the subproject-specific EIA format, the adequacy of the cumulative assessment in the EIA report should be checked during the review phase. This phase must ensure that the cumulative impacts are addressed in the project EIA.

IV. Development of Mitigating Measures

After identifying the significant impacts on the Valued Ecosystem Components (VEC) that the project activities may affect, determine appropriate mitigating measures to abate, if not prevent these impacts.

A sample impact assessment and corresponding mitigating measures analysis could be as follows:

Subproject Phase/Activity	Valued Ecosystem Component	Environmental Impact	Mitigating Measure
Project Siting	Land Use	Land Loss	Refer to land use plan and preserve protected areas by not converting land use to accommodate project
	Public Water Users	Reduced water supply for domestic and irrigation	Project siting should be done away from sources of water supply for domestic use and irrigation
Construction	Protected Areas	Disturbance of natural conditions	Project siting should not encroach into protected areas or critical natural habitats
Operation	Water	Altered water flows	Ensure that water in the river is not diverted that could result in reducing the river flow by 50% or drying up of river sections

V. Analysis of Alternatives

The significance of the impacts will be evaluated to determine whether the mitigating measures identified will be able to sufficiently reduce negative impacts on the environment. An Analysis of Alternatives will have to be done to ensure that the project design and siting is environmentally sustainable and complies with the national standards on environmental quality and the residual impacts are acceptable.

VI. Development of Environmental and Social Management Plan

After the best project alternative has been selected, the subproject package can now be finalized, with the assurance that the mitigating measures are integrated in its design and operations and presented in the form of an Environmental and Social Management Plan (ESMP). This completes the conduct of the Environmental Impact Assessment. An ESMP template for Hydropower projects is found hereafter. The Templates are not exhaustive and should be updated with actual data of the subprojects and other aspects described in the succeeding ECOPs.

Several ESMP templates can be found in the next chapters for other types of RE projects.

An Environmental Code of Practice (ECOP) for hydropower projects and for different RE projects are also provided in the next chapters as guide for the updating of the ESMPs, to address other impacts that may be generated, depending on the scope and coverage of the projects.

Environment and Social Management Plan TEMPLATE

Hydroelectric Power Project

Project Phase	Valued Eco-system Component	Potential Impact	Mitigation Measures	Institution-al Responsibil ity	Preparation/ Monitoring Schedule	Costs
Project Siting/ Planning	Project development and Site conditions	Change in original conditions	• Prepare a Project Development Master Plan and Site Management and Rehabilitation Plan	Proponent	Feasibility study (FS)	FS cost
	Land	Change in land use affecting farming and other traditional uses of the land	• Consult the zoning plans and regulations of the concerned local government units • Conduct proper valuation of assets and resources that will be damaged or lost and provide proper compensation for these	Proponent	Feasibility study (FS)	FS cost
	Land	Land disturbance	• Control installations and measures- Map the existing topography and changes to the landform for each segment for protection. Map should identify areas which are easily erodible, such as highly erodible soils, steep slopes, haul roads or bare areas and prepare protection measures.	Proponent	Feasibility study (FS)	FS cost
	Soils and hdyrogeology	Sediment run-off	• Design of soil protection measures	Proponent	Feasibility study (FS)	FS cost
	Water	Possible loss of aquatic, wetland and/or terrestrial	• During the site selection process, take into account the value of the area to be flooded.	Proponent	Feasibility study (FS)	FS cost
	Water	Alteration of water flows	During the site selection process, choose site that will require no or minimum diversion of water flows	Proponent	Feasibility study (FS)	FS cost

	Physical Cultural Resources	Loss of historical, archeological and cultural resources, displacement of indigenous groups	• During site selection, avoid sites with historical, archeological and cultural value or occupied by tribal/indigenous people • In site selection, consult the Philippines National Museum- Cultural Properties Division and their maps to determine areas with possible historical, archeological and cultural value, so as to avoid these • Proper relocation of the tribal/indigenous group, if inevitable, to areas where they can retain their lifestyle and customs, with adequate compensation for resources & livelihoods • PCR management plan in ESMP when PCR identified	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Eco system Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Preparation/ Monitoring Schedule	Costs
Project Siting/Planning	People	Displacement of people living within the site where the hydro facility will be constructed	• Relocation of people to a suitable area • Proper compensation will be provided for the resources lost	Proponent	Feasibility study (FS)	FS cost
	Landscape	Visual impact thus affecting tourism and decreasing the aesthetic value of the area	• During site selection process, consider the aesthetic value of the area – avoid environmentally critical areas • Consult the DENR to determine no go zones such as critical natural habitats. For environmentally critical areas ensure that site is within buffer zone.	Proponent	Feasibility study (FS)	FS cost
	Ecology	Loss of important fish and other aquatic species	• During site selection process, avoid sites are natural habitats for important endemic fish and other aquatic species	Proponent	Feasibility study (FS)	FS cost

Project Design	Environmental quality	Pollutant emissions	• Select the proper equipment and the best available technology for controlling pollution emissions that will be able to comply with the Philippine Clean Air Act and the Clean Water Act and national air and water quality standards/guidelines set by DENR	Proponent	Feasibility study (FS)	FS cost
	Environmental quality	Noise generation	• Design the power plant to reduce noise to acceptable limits (for residential areas 50 decibels at peak hours and 40 decibels during the wee hours in the morning) outside the perimeter of the power plant • Sound proofing of the generator housing	Proponent	Feasibility study (FS)	FS cost
	Landscape	Environmental aesthetics	• The design of the facility should consider the preservation of environmental aesthetics	Proponent	Feasibility study (FS)	FS cost
	Ecology	Disturbance of vegetation and wildlife due to habitat loss	• In designing the route of transmission lines and access roads, take into consideration the location of	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Design			sensitive or valuable ecosystems • Use of existing roads, alignment selection and planning and reforestation	Proponent	Detailed EngineeringDesign (DED)	DED cost
	Ecology	Fish injuries caused by passing through the turbine or any sharp part of the structure; obstruction to movement of aquatic life resulting to loss of aquatic species	The design of the mini-hydro facility must be such that fish must not be ingested into the turbine (so the mesh of the trashrack must be fine enough) and there must be a water passage by-passing the hydro facility (fish by-pass) at all times so that fish can migrate up- or downstream • To enable fish to pass upstream, the construction of a fish ladder might be needed, e.g., a series of pools one above the other, with water overflowing from the higher ones to the lower ones to enable fish to jump up from one pool to the next	Proponent	DED	DED cost
	Land	Buffer zone	• Mark out an adequate buffer zone as per DENR and local government regulations to prevent nuisances/damages to nearby communities and properties	Proponent	DED	DED cost
	Water	Siltation that can cause blockage of the flow and diversion of the river/stream and damage to the penstocks, valves, sluice gates and turbine runners of the mini-hydro facility	• Design the intake in such as way as to avoid silt being deposited around it, which would impede the flow to the turbine • Incorporate settling basins into the headrace channel in order to prevent and remove silt being deposited around the intake	Proponent	DED	DED cost

	Water	Water quality: thermal stratification, turbidity and temperature changes, oxygen depletion and anoxic waters	• N/A for mini-hydro plants without reservoirs • Selective or multi-level water intakes or structures for re-oxygenation downstream of the reservoir	Proponent	DED	DED cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Design	Water	Loss/creation of aquatic habitat due to altered thermal regime	• Design consideration of the hydro facility	Proponent	DED	DED cost
	Water	Competition for water use	• If the river is also used for irrigation, the design of the mini-hydro facility must allow for water to be removed from the river for crop irrigation • The design of the weir and intake structures must allow the diversion of the correct water river flow volume whether the river is in low or high flow condition. • Payment of compensation for adversely affected water users of the same river used for the mini-hydro facility.	Proponent	DED	DED cost

Project Construction	Land	• Solid wastes and toxic and hazardous wastes from construction, e.g., grease, oil, etc • Possible generation of domestic waste due to temporary quarters or barracks and field office built for construction workers	• Compliance with RA 9003 for solid wastes • Set-up temporary disposal mechanism within the construction area and properly dispose the generated solid wastes • Contactor and its workers to observe proper housekeeping, sanitation and waste minimization. • Compliance with RA 6969 for toxic and hazardous wastes • All hazardous (ignitable, reactive, flammable, radioactive, corrosive and toxic) materials must be stored in clearly labeled containers or vessels	Proponent w/ contractor	DED	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction			• Fire prevention systems and secondary containment should be provided for storage facilities to prevent fires or the release of hazardous materials to the environment • Proper disposal of domestic waste will be observed by the proponent and contractors	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Environmental quality	Accumulation of solid wastes (vegetation) from clearing and land preparation	• Proper disposal of the generated solid wastes will be observed • Recover merchantable timbers	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Air	Dust generation during land preparation activities (i.e. excavation works and slope modification)	• Sprinkling of water on roads and site to minimize dust	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Ecology	Disturbance of vegetation	• All clearing activities will be carried out in a manner such that damage or disruption to vegetation is minimized. • All trees that will be cut will be properly compensated • Relevant permits will be secured from concerned agencies prior to cutting • Recover merchantable timbers • Reforestation within the periphery of the hydro facility	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Ecology	Disturbance of wildlife and rare and endangered species	• A "No Hunting" policy from the contractor to minimize the potential increase for wildlife hunting and poaching due to temporary increase of workers in the area • Avoid areas that are considered as environmentally critical areas	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction	Noise control	Noise associated with blasting, land clearing and preparation	• Noisy activities will be limited during the daytime to avoid annoyance to community. • Proper scheduling of noisy construction activities during day time. • Use mufflers for noisy equipment • Use blasting mats, noise silencers • Use warning devices for blasting activities	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Environmental quality	Soil and/or groundwater pollution due to routine and accidental release of chemicals/pollutants	• Compliance with national laws, e.g., RA 6969 and related laws and international regulations concerning hazardous materials such as the IFC Hazardous Materials Management, for materials like used batteries (storage, processing, disposal, transportation)	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Environmental quality	Spoils from excavation works and construction materials	• Proper disposal of solid wastes and proper housekeeping will be initiated by the proponent and contractors	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Land	Erosion caused by building roads or structures on steep slope and increased sedimentation from digging activities.	• Employ slope stabilization methods on areas of steep slope • Employ safety measures to minimize erosion • Establishment of sediment traps	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Landscape	The natural landscape of the project site will be altered.	• Reforestation of areas to replace those taken up by the construction of the access roads, the mini-hydro facility and ancilliary facilities	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

	Ecology	Loss of aquatic habitat due to excavation work in watercourses	• Avoid or reduce construction activities during breeding or spawning seasons of sensitive species	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Operation	Environmental quality	Threat to public health if domestic solid waste generated from the operation is not properly disposed of.	• A Solid Waste Management Plan which includes recycling, proper housekeeping and waste disposal will be formulated and implemented.	Proponent	Quarterly self-monitoring report	Operation & maintenance (O&M) cost
	Water	Upon transformation into an impoundment, there is possible reduction of capacity for self-cleaning of the water (oxygen depletion, increase in nutrient content)	• Addition of re-oxygenation devices downstream of water impoundment	Proponent	Quarterly self-monitoring report	O&M cost
	Water	Drying out of riverbed between the intake and the outlet	• Ensure water level is maintained to keep riverbed submerged at all times	Proponent	Quarterly self-monitoring	O&M cost
	Water	• Water pollution by domestic effluent from the administration building. • Water pollution due to emission of pollutants during operation and maintenance practices	• Effluent will be treated in a conventional septic system • Treat domestic effluents in an adequate septic tank system (at least 3-chambers) • Provide adequate wastewater treatment facilities	Proponent	Quarterly self-monitoring report	O&M cost
	Water	Potential change of sedimentation; flowing water in the river may carry small sediments that can cause accumulation of organic matter and acidification of waters	• Regular cleaning of the settling pond will be conducted to prevent siltation and to remove large organic debris before any incipient decomposition occurs. • Remove sediments before the water enters the penstock	Proponent	Quarterly self-monitoring report	O&M cost

	Environmental quality	Accumulation of floating debris at the intake	• Employ measures to avoid accumulation of floating debris at the intake. • Regular removal of floating debris at the intake.	Proponent	Quarterly self-monitoring report	O&M cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Operation	Water	There will be competition on water resource as a result of the plant operation.	• Planning and management of hydro facility in context of regional development plans • Compensation to be given for negative impacts	Proponent	Quarterly self-monitoring report	O&M cost
	Water	Sudden change in volume of water flow due to intermittent operation of the hydro scheme resulting to loss in aquatic	• Employ best known operation practices to minimize surges. • Manage flow regime or spillway during downstream movement of migratory fish.	Proponent	Quarterly self-monitoring report	O&M cost
	Water	Loss of aquatic habitat due to flushing of the impoundment and de-watering of basins and channels during maintenance work	• N/A if there is no impoundment • Provision and implementation of flushing guidelines	Proponent	Quarterly self-monitoring report	O&M cost
	Water	Possible loss of aquatic, wetland and/or terrestrial habitat due to flooding	• Generally, low dams that allow no or limited storage capabilities will produce none or minimal flooding. • N/A for run-of-river facilities with low dams that allow no or limited storage capabilities and will produce none or minimal flooding • Proper management of reservoir water levels • Establish and maintain minimum levels of water flow.	Proponent	Quarterly self-monitoring report	O&M cost
	Water	Obstruction to movement of aquatic life resulting to loss of aquatic species	• Include fishway or by-pass or other structures that will aid in fish migration/ movement	Proponent	Quarterly self-monitoring report	O&M cost

	Water	Fish injuries caused by passing through the turbine or any sharp part of the structure	• Incorporate in the design of the hydro facility features that will minimize injury or loss of aquatic species	Proponent	Quarterly self-monitoring report	O&M cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Decommissioning/ Abandonment	Water	• Contamination of soil and water due to abandoned structures and equipment. • Solid waste from demolition of buildings or used equipment. • Flooding due to blocking of abandoned dam.	• Decommissioning plan must be in place. Structures and used equipment must be dismantled and disposed of properly to allow free flow of water	Proponent	Quarterly self-monitoring report	O&M cost

ANNEX 7
Annex 7

ESMP TEMPLATE

ELECTRICITY DISTRIBUTION NETWORKS, TRANSMISSION LINES AND SUBSTATIONS

Note: General environmental impacts and how they are to be addressed are in Annexes 9 to 11 - General ECOPs. They include impacts and mitigating measures regarding construction site waste generation, soil erosion and sediment control from materials sourcing areas and site preparation activities, fugitive dust and other emissions (e.g. from vehicle traffic, land clearing activities, and materials stockpiles), noise from heavy equipment and truck traffic and potential for hazardous materials and oil spills associated with heavy equipment operation and fueling activities.

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Siting & Project Design	Land	Intrusion into natural habitats, cultural and historical properties	• Locate transmission lines in open, developed areas, away from critical natural habitats, at/near areas with ecology and historical/social/cultural values	Proponent	Feasibility study (FS)	FS cost

	Land	Terrestrial Habitat Alteration	• Site transmission and distribution rights-of-way, access roads, lines, towers, and substations to avoid residential areas and critical habitats through use of existing utility and transport corridors for transmission and distribution, and existing roads and tracks for access roads, whenever possible	Proponent	Feasibility study (FS)	FS cost
Project Phase	**Valued Ecosystem Component**	**Potential Impact**	**Mitigation Measures**	**Institutional Responsibility**	**Monitoring Schedule**	**Costs**
Project Siting and Project Design	Water	Aquatic Habitat Alteration	• Site power transmission towers and substations to avoid critical aquatic habitat (e.g. watercourses, wetlands and riparian areas), as well as fish spawning habitat, and critical fish over-wintering habitat;	Proponent	Feasibility study (FS)	FS cost
	Water	Marine Habitat Alteration	• Locate and site cable routes, and shore access, to avoid critical marine habitats (e.g. breeding grounds and eelgrass) and coral reefs;	Proponent	Feasibility study (FS)	FS cost

	Landscape	Visual Amenity	• Extensive public consultation during the planning of power line and power line right-of-way locations; • Accurate assessment of changes in property values due to power line proximity; • Site power lines, and designing substations, with due consideration to landscape views and important environmental and community features; • Location of high-voltage transmission and distribution lines in less populated areas, where possible; • Burying transmission or distribution lines when power must be transported through dense residential or commercial areas.	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operations/ Maintenance	Land	Terrestrial Habitat Alteration; Permanent Loss of Vegetation	• Installation of transmission lines above existing vegetation to avoid land clearing; • Limit land clearing as much as possible and avoid sensitive ecosystems • Provide temporary fencing to vegetation that will be retained • Use markers to direct trucks transporting construction materials to the construction site to avoid damage to plants • Avoid conducting construction activities during the breeding season and other sensitive seasons or times of day; • Re-vegetation of disturbed areas with native plant species; • Removal of invasive plant species during routine vegetation maintenance • Use existing road networks as access to construction sites to avoid tree cutting and permanent loss of vegetation	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

	Land	Right-of-Way -Terrestrial Habitat Alteration - Aquatic Habitat Alteration - Hazardous Materials	• To avoid conflicts on right-of- way, conduct consultations and settle agreements before finalizing the detailed design of the project • Implementation of an integrated vegetation management approach (IVM) such as	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operations/ Maintenance			selective removal of tall-growing tree species and the encouragement of low-growing grasses and shrubs. • Alternative vegetation management techniques should be selected based on environmental and site considerations including potential impacts to non-target, endangered and threatened species. • Removal of invasive plant species, whenever possible, cultivating native plant species; • Schedule activities to avoid breeding and nesting seasons for any critically endangered or endangered wildlife species; • Observe manufacturer machinery and equipment guidelines, procedures with regard to noise, and oil spill prevention and emergency response; • Avoid clearing in riparian areas • Avoid use of machinery in the vicinity of watercourses.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Land	Forest Fires	• Monitor right-of-way vegetation according to fire risk; • Remove blow-down and other high-hazard fuel accumulations; • Time thinning, slashing and other maintenance activities to	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operations/ Maintenance			avoid forest fire seasons; • Disposal of maintenance slash by truck or controlled burning. Controlled burning should adhere to applicable burning regulations, fire suppression equipment requirements, and typically must be monitored by a fire watcher; • Plant and manage fire resistant species (e.g. hardwoods) within, and adjacent to, rights-of-way; • Establish a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow fire fighting access.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

	Ecology	Avian and Bat Collisions and Electrocutions	• Align transmission corridors to avoid critical habitats (e.g. nesting grounds, heronries, rookeries, bat foraging corridors, and migration corridors); • Maintain 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware; • Retrofit existing transmission or distribution systems by installing elevated perches, insulating jumper loops, placing obstructive perch deterrents (e.g. insulated ”V’s”), changing the location of	Proponent w/ contractor	Contractor’s Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operations/ Maintenance			conductors, and / or using raptor hoods; • Consider the installation of underground transmission and distribution lines in sensitive areas (e.g. critical natural habitats); • Install visibility enhancement objects such as marker balls, bird deterrents, or diverters.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Water	Aquatic Habitat Alteration	• Maintain fish access when road crossings of watercourses are unavoidable by utilizing clear span bridges, open-bottom culverts, or other approved methods; • Minimize clearing and disruption to riparian vegetation;	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Water	Marine Habitat Alteration	• Bury submarine cables when traversing sensitive intertidal habitat; • Monitor cable laying path for presence of marine mammals; • Avoid laying submarine cable during fish and marine mammals breeding periods, calving periods, and spawning seasons.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

	People	Electric and Magnetic Fields (EMF)	• Existing NPC and NEA standards should be strictly followed during siting of lines to ensure safe limits for EMF are not exceeded. • Evaluate potential exposure to the public against the reference	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operations/ Maintenance			levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) or the IEEE[2]. • Site new facilities to avoid or minimize exposure to the public. Avoid installation of transmission lines or other high voltage equipment above or adjacent to residential properties or other locations intended for highly frequent human occupancy, (e.g. schools or offices) • If EMF levels are confirmed or expected to be above the recommended exposure limits, application of engineering techniques should be considered to reduce the EMF produced by power lines, substations, or transformers. Examples of these techniques include: o Shielding with specific metal alloys o Burying transmission lines o Increasing height of transmission towers	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

[2] ICNIRP is a non-governmental organization formally recognized by the World Health Organization (WHO), which published the "Guidelines for Limiting Exposure to Time-varying Electric, Magnetic and Electromagnetic Fields" following reviews of all the peer-reviewed scientific literature, including thermal and non-thermal effects. The standards are based on evaluations of biological effects that have been established to have health consequences. The main conclusion from the WHO reviews is that exposures below the limits recommended by the ICNIRP international guidelines do not appear to have any known consequence on health. An additional source of information is the Institute of Electrical and Electronics Engineers.

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
			o Modifications to size, spacing, and configuration of conductors			
Project Construction and Operations/ Maintenance	Environmental Quality	Hazardous Materials: Insulating Oils and Fuels	• Comply with requirements of RA 6969 re: Polychlorinated Biphenyls (PCBs) used as dielectric fluid to provide electrical insulation; also with its Implementing Rules and Regulations (DAO 92-29), and DAO 2004-01- Chemical Control Order (CC0) for Polychlorinated Biphenyls (PCBs) (www.emb.gov.ph) • Replace existing transformers and other electrical equipment containing PCB, and ensuring appropriate storage, decontamination and disposal of contaminated units; • Prior to final disposal, retired transformers and equipment containing PCB should be stored in accordance with the aforementioned environmental regulations; disposal should involve facilities capable of safely transporting and disposing of hazardous waste containing PCBs;	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Environmental health	Hazardous Materials: Wood Preservatives	• Evaluate alternative pole materials (e.g. steel, concrete and fiberglass); • Consider use of alternative preservatives for poles (e.g.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
			copper azote); • Undertake appropriate disposal of used poles in accordance with RA 6969 and its IRR.			
Project Construction and Operations/ Maintenance	Environmental health	Hazardous Materials: Pesticides (see WB OP 4.09 on Pest Management for further details)	• Comply with RA 6969 and its IRR and related laws of the DENR and the Fertilizer and Pesticide Authority (FPA) • Prepare a management plan that includes measures for the containment, storage and ultimate destruction of all obsolete stocks in accordance to guidelines by FAO and consistent with RA 6969 and its IRR and FPA regulations and country commitments under the Stockholm, Rotterdam and Basel Conventions.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

ANNEX 8

ESMP TEMPLATES

a. Wind Energy Development Project

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Siting	Landscape	Visual Impact	• Consult the community on the location of the wind farm to incorporate community values into design; • Consider the landscape character during turbine siting; • Consider the visual impacts of the turbines from all relevant viewing angles when considering locations; • Minimize presence of ancillary structures on the site by avoiding fencing, minimizing roads, burying intra project power lines, and removing inoperative turbines; • Avoid steep slopes, implement erosion measures, and promptly re-vegetate cleared land with native species only; • Maintain uniform size and design of turbines (e.g. direction of rotation, type of turbine and tower, and height); • Paint the turbines a uniform color, typically matching the sky (light gray or pale blue), while observing marine	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem	Potential Impact	Mitigation Measures	Institutional Responsibilit	Monitoring Schedule	Costs
Project Siting			and air navigational marking regulations; • Avoid including lettering, company insignia, advertising or graphics on the turbines.	Proponent	Feasibility study (FS)	FS cost
		Noise	• Proper siting of wind farms to avoid locations in close proximity to sensitive noise receptors (e.g. residences, hospitals and schools • Adherence to national or international acoustic design standards for wind turbines (e.g. International Energy Agency, International Electro-technical Commission [IEC], and the American National Standards Institute).	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Siting		Species Mortality or Injury and Disturbance – Onshore	• Conduct site selection to account for known migration pathways or areas where birds and bats are highly concentrated. Examples include wetlands, designated wildlife refuges, staging areas, rookeries, bat hibernation areas, roosts, ridges, river valleys and riparian areas; • Configure turbine arrays to avoid potential avian mortality (e.g. group turbines rather than spread them widely or orient rows of turbines parallel to known bird movements); • Implement appropriate storm water management measures to avoid creating attractions such as small ponds which can attract birds and bats for feeding or nesting near the wind farm.	Proponent	Feasibility study (FS)	FS cost
		Species Mortality or Injury and Disturbance – Offshore	• Proper siting to avoid high-density bird use areas, including migratory pathways;	Proponent	Feasibility study (FS)	FS cost
		Disturbance of wildlife i.e. blockade of wildlife passageways and hazards to wildlife due to the rotating wind turbine	• During the site selection process, take into account the proximity of bird-protected areas, nesting or brooding areas, migration areas or other areas of ornithological importance	Proponent	Feasibility study (FS)	FS cost
		Water Quality	• Consider the potential for interference of structural components of the project with commercial or recreational fisheries and marine species habitats	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional	Monitoring Schedule	Costs
Project Siting		Shadow flicker and Blade Glint Shadow flicker occurs when the sun passes behind the wind turbine and casts a shadow. As the rotor blades rotate, shadows pass over the same point causing an effect termed shadow flicker. Shadow flicker may become a problem when residences are located near, or have a specific orientation to, the wind farm. Blade or tower glint occurs when the sun strikes a rotor blade or the tower at a particular orientation. This can impact a community, as the reflection of sunlight off the rotor blade may be angled toward nearby residences. Blade glint is a temporary phenomenon for new turbines only, and typically disappears when blades have been soiled after a few months of operation.	• Site and orient wind turbines so as to avoid residences located within the narrow bands, generally southwest and southeast of the turbines, where shadow flicker has a high frequency. Commercially available modeling software can be used to identify a 'zone' of flicker and the wind farm can then be sited appropriately;	Proponent	Feasibility study (FS)	FS cost
Project Design		Noise	• Adherence to national or international acoustic design standards for wind turbines	Proponent	Feasibility study (FS)	FS cost

		Water Quality	• Plan the installation of structural components taking into account	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued cosystem omponent	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Design			sensitive life-cycle periods; • Use silt curtains, where feasible, to contain turbidity from underwater construction.	Proponent	Feasibility study (FS)	FS cost
		Damage or loss of valuable ecological resources	• Avoid installing structures on areas considered as sensitive ecosystems	Proponent	Feasibility study (FS)	FS cost
		Species Mortality or Injury and Disturbance – Onshore	• Configure turbine arrays to avoid potential avian mortality (e.g. group turbines rather than spread them widely or orient rows of turbines parallel to known bird movements)	Proponent	Feasibility study (FS)	FS cost
		Electromagnetic interference(EMI)	• Carefully select material employed for wind turbine blades; turbines with metallic blade, fiberglass blades are partially transparent to electromagnetic waves, and therefore do not generally cause EMI problems • Compliance with guidelines and other requirements to avoid electromagnetic interference with aviation equipment.	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction	Environmental quality	Solid wastes and toxic and hazardous wastes from construction, e.g., grease, oil, etc	• Compliance with RA 9003 for solid wastes • Set-up temporary disposal mechanism within the construction area and properly dispose the generated solid wastes • Contactor and its workers to observe proper housekeeping, sanitation and waste minimization. • Compliance with RA 6969 for toxic and hazardous wastes • All hazardous (ignitable, reactive, flammable, radioactive, corrosive and toxic) materials must be stored in clearly labeled containers or vessels • Fire prevention systems and secondary containment should be provided for storage facilities to prevent fires or the release of hazardous materials to the environment	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

	Water	Water Quality-offshore Water quality and marine species and commercial or recreational fisheries may be adversely affected by the installation of the turbine foundations and subsurface cables which may disturb the marine seabed and temporarily increase suspended sediments in the water column.	• Use silt curtains, where feasible, to contain turbidity from underwater construction	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction		Erosion caused by installing structures such as wind turbine generators on steep slopes	• Employ slope stabilization on areas of steep slope	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Disturbance of vegetation	• All clearing activities will be carried out in a manner such that damage or disruption to vegetation is minimized. • All trees that will be cut will be properly compensated • Relevant permits will be secured from concerned agencies prior to cutting	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Dust generation during land preparation activities (i.e. excavation works and slope modification)	• Sprinkling of water to minimize dust	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Species Mortality or Injury and Disturbance – Offshore	• Employ a 'soft start' procedure for pile-driving activities to help prevent exposure of fish, marine mammals and sea turtles to damaging sound levels and provide them with an opportunity to leave the area; • Use of hydraulic jet plowing technology for the installation of cables, which is considered the least environmentally damaging alternative when compared to traditional technologies; • Use of a monopole turbine foundation, which results in the least amount of seabed disturbance compared to other foundation types.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Operation		Generation of Noise	• Proper scheduling of noisy construction activities during day time • Use mufflers for noisy equipment	Proponent	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Operation		Soil and/or groundwater pollution due to routine and accidental release of chemicals and pollutants	• Compliance with national laws, e.g., RA 6969 and related laws and international regulations concerning hazardous materials such as the IFC Hazardous Materials Management, for materials like used batteries (storage, processing, disposal, transportation)	Proponent	Quarterly self-monitoring report	O&M cost
		Mechanical noise of the rotation of blades and of the turbines	• Use turbines with low sound emissions • Situate the turbines on areas that will mask the noise and consider locations which are far from populated areas.	Proponent	Quarterly self-monitoring report	O&M cost
		Species Mortality or Injury and Disturbance – Offshore	Prevention and control measures to minimize seabird collision: • Maintain turbine tower heights below typical elevations of migratory bird pathways; • Maintain rotor blades a suitable distance from the ocean surface to avoid strikes with seabird activity close to the ocean surface; • Employ slower-turning rotor blades to make them more visible.	Proponent	Quarterly self-monitoring report	O&M cost
		Species Mortality or Injury and Disturbance – Onshore	• Implement appropriate storm water management measures to avoid creating attractions such as small ponds which can attract birds and bats for feeding or nesting near the wind farm.	Proponent	Quarterly self-monitoring report	O&M cost
		Shadow flicker and Blade Glint	• Paint the wind turbine tower with non-reflective coating to avoid reflections from towers.	Proponent	Quarterly self-monitoring report	O&M cost

ANNEX 8

ESMP TEMPLATE

b. Biomass Thermal Development Project[5]

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Siting		Noise	• Site new facilities with consideration of distances from the noise sources to the receptors (e.g., residential receptors, schools, hospitals, religious places). If the local land use is not controlled through zoning or is not effectively enforced, examine whether residential receptors could come outside the acquired plant boundary. In some cases, it could be more cost effective to acquire additional land as buffer zone around the perimeter of the power plant.	Proponent	Feasibility study (FS)	FS cost
		Visual Impact	• During the site selection process, take into account the aesthetic value of the proposed site for installation	Proponent	Feasibility study (FS)	FS cost
		Change in land	• Observe proper siting, avoiding environmentally critical areas	Proponent	Feasibility study (FS)	FS cost
Project Design		Air Emissions	• Install adequate air pollution control facilities such as dust collection system or electrostatic precipitator. • Design stack heights according to	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Design			Good International Industry Practice (GIIP) to avoid excessive ground level concentrations and minimize impacts, including acid deposition; • Selection of the best power generation technology for the fuel chosen to balance the environmental and economic benefits. The choice of technology and pollution control systems will be based on the site-specific environmental assessment. • Compliance with RA 8747, the Philippine Clean Air Act of 1999;	Proponent	Feasibility study (FS)	FS cost
		Noise	• Use of noise control techniques such as: using acoustic machine enclosures; selecting structures according to their noise isolation effect to envelop the building; using mufflers or silencers in intake and exhaust channels; using sound-absorptive materials in walls and ceilings; using vibration isolators and flexible connections (e.g.,helical steel springs and rubber elements); applying a carefully detailed design to prevent possible noise leakage through openings or to minimize pressure variations in piping.	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction		Solid wastes and toxic and hazardous wastes from construction, e.g., grease, oil, etc	• Compliance with RA 9003 for solid wastes • Set-up temporary disposal mechanism within the construction area and properly dispose the generated solid wastes • Contactor and its workers to observe proper housekeeping, sanitation and waste minimization. • Compliance with RA 6969 for toxic and hazardous wastes • All hazardous (ignitable, reactive, flammable, radioactive, corrosive and toxic) materials must be stored in clearly labeled containers or vessels • Fire prevention systems and secondary containment should be provided for storage facilities to prevent fires or the release of hazardous materials to the environment	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Noise	• Proper scheduling of noisy construction activities during day time • Use mufflers for noisy equipment	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Soil and/or groundwater pollution due to routine and accidental release of chemicals/pollut ants	• Compliance with national laws, e.g., RA 6969 and related laws and international regulations concerning hazardous materials such as the IFC Hazardous Materials Management, for materials like used batteries (storage, processing, disposal, transportation)	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Operation		Solid waste, ash generation from operation	• Compliance with RA 8749, Philippine Clean Air Act of 1999 • Compliance with RA 9003 on ecological solid waste management. • Proper disposal of solid waste will be observed based on volume and chemical composition • Management of ash disposal and reclamation so as to minimize environmental impacts – especially the migration of toxic metals, if present, to nearby surface and groundwater bodies, in addition to the transport of suspended solids in surface runoff due to seasonal precipitation and flooding. • Construction, operation and maintenance of surface impoundments should be conducted in accordance with RA 9003 and internationally recognized standards.	Proponent	Quarterly self-monitoring report	O&M cost
		Air pollution due to; a. Emissions of NOx, SO2, CO, particulates, VOC, CO2 and other greenhouse gases b. Methane emissions	• Compliance with RA 8749, Philippine Clean Air Act of 1999 • Installation of Continuous Emissions Monitoring System (CEMS) for Total Suspended Particulate (TSP) required under RA 8749. • Use of conversion technology with lower emission – comply with RA 8749 and/or international quality standards limits. • Employ best known methods for methane collection to avoid venting	Proponent	Quarterly self-monitoring report	O&M cost

		Possible decrease or loss of nutrient source for the forest and possible soil	• Employ best known methods in harvesting agricultural and forestry residues.	Proponent	Quarterly self-monitoring	O&M cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Operation		erosion and/or compaction		Proponent	Quarterly self-monitoring	O&M cost
		Noise	• Modification of the plant configuration or use of noise barriers such as berms and vegetation to limit ambient noise at plant property lines, especially where sensitive noise receptors may be present.	Proponent	Quarterly self-monitoring report	O&M cost
		Effluents Thermal Discharges	• Use of multi-port diffusers; • Adjustment of the discharge temperature, flow, outfall location and outfall design to minimize impacts to acceptable level (i.e., extend length of discharge channel before reaching the surface water body for pre-cooling or change location of discharge point to minimize the elevated temperature areas); • Use of a closed-cycle, recirculating cooling water system (e.g., natural or forced draft cooling tower), or closed circuit dry cooling system (e.g., air cooled condensers) if necessary to prevent unacceptable adverse impacts or use cooling ponds	Proponent	Quarterly self-monitoring report	O&M cost
		Liquid Waste, Wastewater discharges	• Recycling of wastewater • Collection of fly ash in dry form and bottom ash in drag chain conveyor systems in new coal-fired power plants; • Consider use of soot blowers or other dry methods to remove fireside wastes from heat transfer surfaces so as to minimize the	Proponent	Quarterly self-monitoring report	O&M cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Operation			frequency and amount of water used in fireside washes; • Use of SO_X removal systems that generate less wastewater, if feasible; however, the environmental and cost characteristics of both inputs and wastes should be assessed on a case-by-case basis; • Treatment of low-volume wastewater streams that are typically collected in the boiler and turbine room sumps in conventional oil-water separators before discharge; • Treatment of acidic low-volume wastewater streams, such as those associated with the regeneration of makeup demineralizer and deep-bed condensate polishing systems, by chemical neutralization in-situ before discharge; • Pretreatment of cooling tower makeup water, installation of automated bleed/feed controllers, and use of inert construction materials to reduce chemical treatment requirements for cooling towers;	Proponent	Quarterly self-monitoring report	O&M cost

ANNEX 8

ESMP TEMPLATE

c. Biomass Energy Crop Production Project[7]

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Siting		Visual Impact	• During the site selection process, take into account the aesthetic value of the proposed site.	Proponent	Feasibility study (FS)	FS cost
		Change in land use and biodiversity impacts - Loss of Genetic resources and Variability	• Observe proper siting, avoiding environmentally critical areas • Before converting land to plantation crop production, survey the project area to identify, categorize, and delineate natural and modified habitat types and ascertain their biodiversity value at the regional or national level; • Ensure that any natural or modified habitat to be converted to plantation crop production does not contain critical habitat, including known habitat of critically endangered or endangered species, or important wildlife breeding, feeding, and staging areas;			
		Brownfield location	• Previous land use: If land was used for intensive arable cultivation, or other potentially contaminating activity, look for soil and groundwater studies to check for potential on-site contamination.			

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Siting		Stress on water resources	• Determine the quantity and quality of water needed for crop production; • Evaluate the capacity of groundwater or surface water resources and collaborate with national or regional institutions to ensure that the project considers existing or emerging plans for water management and monitoring; • Select crops compatible with water availability;	Proponent	Feasibility study (FS)	FS cost
Project Design		Soil Erosion and Loss of Productive Capacity	• Use crops suited or adapted to the local climate and soil conditions; • In areas with steep slopes, carefully consider planting zones and the direction of planting in relation to land contours to avoid erosion caused by precipitation or irrigation;	Proponent	Feasibility study (FS)	FS cost
		Biodiversity Impacts - Loss of Genetic Resources and Variability	• Use certified crop seeds that do not contain seeds from invasive alien species and that comply with the information on the packaging regarding seed diameter and species; • Be aware of the presence of critically endangered or endangered species in the areas already used for plantation crop production and consider them during management processes;	Proponent	Feasibility study (FS)	FS cost
		Biodiversity Impacts - Genetically Modified Organisms (GMOs)	• The introduction of GMO crops should be assessed for compliance with the existing host country regulatory framework.	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operation		Solid wastes and toxic and hazardous wastes from construction, e.g., grease, oil, etc	• Compliance with RA 9003 for solid wastes • Set-up temporary disposal mechanism within the construction area and properly dispose the generated solid wastes. • Contactor and its workers to observe proper housekeeping, sanitation and waste minimization. • Compliance with RA 6969 for toxic and hazardous wastes • All hazardous (ignitable, reactive, flammable, radioactive, corrosive and toxic) materials must be stored in clearly labeled containers or vessels • Fire prevention systems and secondary containment should be provided for storage facilities to prevent fires or the release of hazardous materials to the environment.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Stress on water resources	• Maximize the use of available precipitation ("rain harvesting"), where feasible, by: • Reducing runoff by methods such as conservation tillage, terraces and raised ridges that follow the land contour; • Diverting water within the catchment area toward the crops themselves by diverting spate flow from wadis, directing runoff with low walls, and diverting flow toward crops from roads and paths to store water in the soil and reduce the effect of short dry spells;			

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibi	Monitoring Schedule	Costs
Project Construction and Operation			• Storing runoff from rainy periods for use during dry spells by using tanks, ponds, cisterns and earth dams; • Implementing irrigation water conservation measures: • Reduce evaporation by avoiding midday irrigation and using trickle or drip irrigation techniques (if practical), or using 'under canopy' rather than overhead sprinkling; • Reduce seepage losses in channels by lining them or using closed conduits; • Control weeds on inter-row strips and keep them dry; • Avoid over and under-irrigation to decrease potential for soil salinization; • Maintain border vegetation in canals and drainage systems; • Maintain a water management logbook that records precipitation, rainfall and evaporation, as well as time and amounts of irrigation applied, in order to develop an understanding of long-term trends in water use.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Solid waste generation	• Compliance with RA 9003 • Proper disposal of solid waste will be observed based on volume and chemical composition	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Possible decrease or loss of nutrient source for the forest and possible soil erosion and/or compaction	• Employ best known methods in harvesting agricultural and forestry residues.			

Project Phase	Valued Ecosystem	Potential Impact	Mitigation Measures	Institutional	Monitoring Schedule	Costs
Project Construction and Operation		Soil Erosion and Loss of Productive Capacity	• Practice Integrated Nutrient Management (INM) to avoid nutrient depletion or accumulation; • Use stone barriers, vegetative cross- slope barriers, terraces, or drainage and diversion canals to prevent wind and water erosion; • Use appropriate machinery to avoid soil compaction caused by excessively heavy equipment; • Avoid the use of overly saline water for irrigation to prevent salinization; • Use plant cover or intercrops and shelterbelts to reduce erosion from wind and heavy rain; • Increase the organic matter content in the soil by applying organic matter such as crop residues, compost, and manure to protect the soil physically from sun, rain, and wind and to feed soil biota. The potential for spreading of pests should be considered before implementing this practice; • Consider adding lime to soil to compensate for acidification, caused by acid deposition and fertilizers, and to maintain stable pH levels; Assess sludge quality for contaminants (for example, heavy metals) prior to use for soil enhancement.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Pesticide Use a. Alternatives to pesticide Application	• Provide those responsible for deciding on pesticides application with training in pest identification, weed identification and field scouting; • Use mechanical weed control and / or thermal weeding;	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operation			• Support and use beneficial organisms, such as insects, birds, mites and microbial agents, to perform biological control of pests; • Protect natural enemies of pests by providing a favorable habitat, such as bushes for nesting sites and other original vegetation that can house pest predators; • Use animals to graze areas and manage plant coverage; • Use mechanical controls such as traps, barriers, light and sound to kill, relocate or repel pests	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

		Pesticide Application	• Comply with the regulations of the Fertilizer and Pesticide Authority and RA 6969 • Train personnel to apply pesticides and ensure that personnel have received applicable certifications or equivalent training where such certifications are not required; • Review the manufacturer's directions on maximum recommended dosage or treatment as well as published reports on using the reduced rate of pesticide application without loss of effect (such as DAAS 2000), and apply the minimum effective dose; • Apply pesticides based on criteria such as field observations, weather data, time of treatment, and dosage, and maintain a pesticide logbook to record such information; • Avoid the use of pesticides that fall under the World Health Organization Recommended Classification of			

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs

Project Construction and Operation			Pesticides by Hazard Classes 1a and 1b. • Avoid the use of pesticides that fall under the World Health Organization Recommended Classification of Pesticides by Hazard Class II if the project host country lacks restrictions on distribution and use of these chemicals, or if they are likely to be accessible to personnel without proper training, equipment, and facilities to handle, store, apply and dispose of these products properly; • Avoid the use of pesticides listed in Annexes A and B of the Stockholm Convention, except under the conditions noted in the convention; • Use only pesticides that are manufactured under license and registered and approved by the appropriate authority and in accordance with the Food and Agriculture Organization's (FAO's) International Code of Conduct on the Distribution and Use of Pesticides • Use only pesticides that are labeled in accordance with international standards and norms, such as the FAO's Revised Guidelines for Good Labeling Practice for Pesticides • Select application technologies and practices designed to reduce unintentional drift or runoff only as indicated in an IPM program, and under controlled conditions; • Maintain and calibrate pesticide application equipment in accordance	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operation			with manufacturer's recommendations; • Establish untreated buffer zones or strips along water sources, rivers, streams, ponds, lakes, and ditches to help protect water resources; • Avoid use of pesticides that have been linked to localized environmental problems and threats.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

		Pesticide Handling and Storage	• Store pesticides in their original packaging, in a dedicated, dry, cool, frost-free, and well aerated location that can be locked and properly identified with signs, with access limited to authorized people. No human or animal food may be stored in this location. The store room should also be designed with spill containment measures and sited in consideration of potential for contamination of soil and water resources; • Mixing and transfer of pesticides should be undertaken by trained personnel in ventilated and well lit areas, using containers designed and dedicated for this purpose. • Containers should not be used for any other purpose (e.g. drinking water). Contaminated containers should be handled as hazardous waste, and should be treated accordingly. Disposal of containers contaminated with pesticides should be done in a manner consistent with FAO guidelines and with manufacturer's directions; • Purchase and store no more pesticide	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operation			than needed and rotate stock using a "first-in, first-out" principle so that pesticides do not become obsolete. Additionally, the use of obsolete pesticides should be avoided under all circumstances; A management plan that includes measures for the containment, storage and ultimate destruction of all obsolete stocks should prepared in accordance to guidelines by FAO and consistent with country commitments under the Stockholm, Rotterdam and Basel Conventions. • Collect rinse water from equipment cleaning for reuse (such as for the dilution of identical pesticides to concentrations used for application); • Ensure that protective clothing worn during pesticide application is either cleaned or disposed of in an environmentally responsible manner • Implement groundwater supply wellhead setbacks for pesticide application and storage • Maintain records of pesticide use and effectiveness	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

		Eutrophication of Aquatic Environments	a. Evaluate the need for, and reduce the use of, crop nutrients: • Balance nutrient application according to INM recommendations, including the use of reduced or no soil techniques, nutrient recycling,	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operation			one-pass soil separation and sowing, taking into account the potential creased pesticide consumption • Use plants to cover the soil, especially during a fallow period and in wet regions, to reduce loss of nutrients; Incorporate organic waste materials into soils rather than burning • Avoid excess fertilization by analyzing soil before the growing season to estimate how much additional plant nutrient will be needed for the crop to be produced. Evaluate the need for crop nutrient application through test observations • Assess soil acidity, which important for achieving maximum uptake of phosphates; Provide farm operators with training in INM following published principles and agricultural practice manuals.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

			a. Crop Nutrient Application • Apply organic matter, such as manure, to replace chemical fertilizers to the extent practical; • Incorporate manure into the soil or apply between growing crops to improve plant utilization of nutrients and thereby reduce nutrient loss and contamination. Do not apply solid or liquid manure directly onto grazing areas or edible crops. • In areas with intensive livestock breeding, be aware that agricultural	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operation			crop lands are often used to dispose of manure with the risk of over- fertilization • Apply “fertigation” in horticulture, in which small amounts of fertilizer added to irrigation water may be applied. This requires detailed management and should be limited to plantations that have water management devices that can control the timing and volume of irrigation return flow • Time the application of crop nutrients using meteorological information to avoid, where feasible, application during or close to precipitation events • Use appropriate technical equipment for spraying manure; • Establish buffer zones, strips or other “no-treatment” areas along water sources, rivers, streams, ponds, lakes and ditches to act as a filter to catch potential runoff from the land • Implement INM planning and documentation, which may include the use of a fertilizer logbook to record the following information: • Dates of purchase, dates of use, amount of fertilizer used per field / hectare, purpose of use, and weather conditions during application • Rates of nutrient application for the crop growth stage. Maintenance schedule of application equipment to ensure efficient dosage.	Proponent w/ contractor	Contractor’s Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operation			b. Handling and Storage of Crop Nutrients To prevent, reduce, or control the potential contamination of soils, groundwater or surface water resources caused by accidental spills during transfer, mixing and storage, crop nutrients should be stored and handled in accordance with the recommendations for hazardous materials management presented in the General ECOPs and RA 6969. In addition, fertilizers should be stored in their original packaging and in a dedicated location that can be locked and properly identified with signs, and with access limited to authorized people.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Biodiversity impacts : Loss of Genetic Resources and Variability	• Reduce soil preparation to maintain the structure of soil ecosystems (e.g., promote low-till and no-till strategies); • Utilize field borders to provide wildlife corridors around fields used for plantation crop production; • Provide buffer zones on farmland bordering wild land of specific environmental and research interest; • Regularly monitor soil health, for example, by determining the population of soil macrofauna bioindicator species such as the earthworm population;	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction and Operation		Biodiversity impacts: Loss of Genetic Resources and Variability	• Ensure protection of the natural enemies of pests by providing favorable habitats, such as hedges, nesting sites, and original vegetation, to house pest predators; • Promote the use of organic agricultural practices to the extent feasible. • Provide for minimum disturbance to surrounding areas when harvesting or gathering crops.	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
		Crop Residues and Other Solid Waste	• Recycle crop residues and other organic materials by leaving the materials in the fields, plowing or composting. The potential for spreading of pests should be considered before implementing this practice; • Clean (e.g., triple rinse technique) and dispose of (e.g., through crushing, shredding or return to suppliers) pesticide packaging and containers to ensure that they are not subsequently used as containers for food or drinking water; Rinsing solutions should be recovered for reuse as diluting agents, or stored for eventually disposal. • Manage expired and unwanted pesticides as hazardous wastes in accordance with RA 6969 and the Fertilizer and Pesticide Authority (FPA) regulations	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost

ANNEX 8

ESMP TEMPLATE

d. Solar (Photovoltaic) Energy Development

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Siting	Land	Visual Impact and land use	• Type and scale of scheme: land use would be significant for large grid-connected power stations. • Land use is not a significant aspect for roof-top mounted and building integrated schemes, and for small stand-alone systems for remote applications • Consider agricultural, recreational land use replaced by PV system: • During the site selection process, take into account the aesthetic value of the proposed site for installation. • Observe proper siting, avoiding environmentally critical areas • Adopt roof-top mounted schemes that occupy less space and have lesser visual impacts rather than large grid-connected power stations that cover more land area. • Avoid placing building integrated solar systems in facades of historic buildings or buildings with cultural value	Proponent	Feasibility study (FS)	FS cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Design	Environmental quality	Use of toxic and hazardous materials for production of photovoltaic (PV) cells	• Adopt the PVRS 11A - Portable Solar Photovoltaic Lanterns Design Qualification and Type Approval of PV GAP, or an equivalent standard, for DOE accreditation of solar lanterns • Consider type(s) of PV cells manufactured: Type and quantity of chemicals used as feedstocks, doping agents, solvents and transport agents, technology involved in their production, steps in the production process, etc. • Compliance with internationally accepted hazardous materials (hazmats) management guidelines (e.g. IFC's Hazardous Material Management guidelines) • Manufacturer of PV cells must have good track record (industry reputation, accident history, worker compensation claims, technological rating, etc)	Proponent	Feasibility study (FS)	FS cost
		Damage due to wind velocities and storms	• Installation must be designed to withstand well-defined maximum wind velocities and storms	Proponent	Feasibility study (FS)	FS cost
Project Construction	Environmental quality	Solid wastes and toxic and hazardous wastes from construction, e.g., grease, oil, etc	• Compliance with RA 9003 for solid wastes • Set-up temporary disposal mechanism within the construction area and properly dispose the generated solid wastes • Contactor and its workers to observe proper housekeeping, sanitation and waste minimization.	Proponent w/ contractor	Contractor's Monthly report	Construct -ion cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Construction			• Compliance with RA 6969 for toxic and hazardous wastes • All hazardous (ignitable, reactive, flammable, radioactive, corrosive and toxic) materials must be stored in clearly labeled containers or vessels • Fire prevention systems and secondary containment should be provided for storage facilities to prevent fires or the release of hazardous materials to the environment	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
	Noise	Generation of Noise	• Proper scheduling of noisy construction activities during day time • Use mufflers for noisy equipment	Proponent w/ contractor	Contractor's Monthly report	Construct-ion cost
Project Operation	Environmental quality	Soil and/or groundwater pollution due to routine and accidental release of chemicals/pollutants	• Compliance with national laws, e.g., RA 6969 and related laws and international regulations concerning hazardous materials such as the IFC Hazardous Materials Management, for materials like used batteries (storage, processing, disposal, transportation) • Observe proper disposal of used chemicals • Emergency plans must be in place	Proponent	Quarterly self-monitoring report	O&M cost

Project Phase	Valued Ecosystem Component	Potential Impact	Mitigation Measures	Institutional Responsibility	Monitoring Schedule	Costs
Project Operation	Environmental quality	Soil and/or groundwater contamination in case of improper disposal of batteries	• Consider type of solar PV system in review: this issue is not relevant for systems that do not have energy storage capacity (e.g. grid connected systems or stand alone systems with no energy storage) • Compliance with RA 6969 and related national regulations for recycling or special disposal of batteries including battery collection, storage and recycling schemes	Proponent	Quarterly self-monitoring report	O&M cost
Project Decommissioning/ Abandonment	Environmental quality	Soil and/or groundwater pollution due to decommissioning of PV systems	• Preparation and conduct of decommissioning plans, including proposed disposal methods, recycling opportunities and collection of used PV cells • Note: Consider content of PV cells used in the project: Silicon modules have fewer decommissioning problems than cadmium modules	Proponent w/ contractor	Contractor's report	Construct -ion cost

ANNEX 9

ENVIRONMENTAL CODE OF PRACTICE (ECOP)

Hydropower plants

The Environmental Code of Practice (ECOP) is to establish in-house best environmental management practices and specifications relating to project development and management that should be integrated in the Environmental and Social Management Plan (ESMP) which should be updated as part of the deliverables in the bid documents. The ESMP will cover key areas of the project and associated activities that must be managed and monitored to ensure minimal impact on the environment during the execution of the project.

The following are ECOP guidelines for renewable energy projects, with emphasis on mini-hydropower projects. The Technical Specifications for Contracts should also include the implementation of these guidelines.

I. Environmental Planning Guidelines and specifications are integrated in the project cycle phases of the Project Development Master Plan:

- **Planning and Design,**
- **Construction,**
- **Operation, and**
- **Decommissioning.**

A Strategic Development Plan which describes the project components, project specifications and spatial design should follow a set of environmental principles, and includes the following:

- Zoning Plan (delineation of development zones to show compatibility of land uses)
- Spatial design (buildings, structures, services, roads, landscaped areas)
- Sketch / elevation plans (determined by the environmental planner)
- Environmental Site Mgt. & Rehabilitation Plan

1. Planning and Design - Ecosystem components and Infrastructure design and specifications that should be addressed in the Master Plan for all project phases, which are elaborated in the ESMP:

- Biophysical environment:
  - Climate
  - Geology
  - Topography
  - Surface hydrology
  - Groundwater
  - Soil
  - Flora
  - Fauna
- Aesthetic environment;
- Socio-economic environment;

- Sensitive environments: watercourses, wetlands, dunes, drift sands, estuaries and ridges.

Infrastructure design and specifications

- Pipelines
- Tunnels
- Canals
- Gauging weirs
- Dams and impoundments
- River diversions
- Animal passageways – Fishways, animal bridgeways over rivers, dams or weirs
- Roads – Planning access roads to avoid natural features and to follow contours
- Bridges
- Boreholes
- Erosion control
- Reservoirs
- Sewage treatment systems
- Borrow areas
- Buildings and structures – Operations and ancillary facilities, construction camps

Guidelines on environmentally sound design aspects:

Emissions generation –

- Select the proper equipment and the best available technology for controlling pollution emissions that will be able to comply with the Philippine Clean Air Act and the Clean Water Act and national air and water quality standards/guidelines set by DENR

Noise generation

- Design the power plant to reduce noise to acceptable limits (for residential areas 50 decibels at peak hours and 40 decibels during the wee hours in the morning) outside the perimeter of the power plant
- Sound proofing of the generator housing

Environmental aesthetics-

The design of the facility should consider the preservation of natural landscape and maintain balance of the ecosystem.

2. Construction and Operation - Environmental Protection, Mitigation and Monitoring

These aspects should be covered in the ESMP beginning with the Infrastructure / building construction, utility construction, groundcover removal and pavement installation, heavy equipment installation, facilities installation and renovations:

Environmental aspect	Mitigating measure	Frequency of monitoring
Watercourse and Water quality protection	• Interceptor dikes and swales • Temporary storm drain diversion	• At least once every two days to weekly
Erosion and Sediment control	• Subsurface drains • Silt fences • Straw bale barriers • Brush barriers • Gravel or stone filter berms • Storm drain inlet protection • Use of structural sediment and erosion control devices including earth dikes & drainage swales	• Daily in dry weather and three times a day during prolonged rainfall
Fish and Fish habitat	• Maintain natural waterways and continuous, minimum water flows to ensure the viability of aquatic communities and ensure there are no barriers to the passage of fish up and downstream. In case of obstructions due to a dam, reservoir and turbines, install fishways that will enable the fish to maintain its reproductive cycle	• Daily
Reservoir Drawdown and Flow Continuity	• Plant trees, grasses, shrubs and any ground cover plants in the watershed and drainage pathways to continuously recharge the aquifer, maintain the water levels in the river and prevent erosion of the river banks • Do not divert flow of water from its original path nor drastically reduce the flow of water downstream to less than thirty percent of its original flow	• Weekly
Oil and Fuel / Use of heavy equipment on-site	• Require truck drivers to clean and maintain their equipment in a responsible manner both before coming onto port grounds and at the site where the materials are used. Drivers should use only the designated wash sites to clean out their trucks.	• Three times a day
Drilling and Drilling spoils/ fluids	• Prevent runoff from drilling areas from flowing across disturbed areas	• Every two hours
Concrete and Grouting	• Do not pour excess concrete or wash sweepings into the street, storm drain or side of the road	• The entire time of the activity is ongoing
Vegetation and Wildlife	• Do not locate construction routes, stockpiles, etc, where significant adverse impact on existing vegetation may occur	• At least weekly
Waste Management	• Properly manage construction wastes and contaminated materials and keep in away from communities. Treat them and dispose in an environmentally responsible manner, according to the govt. regulations.	• Everyday
Materials management	• Store construction materials under cover and away from drainage areas	• Everyday
Air Quality Protection	• Use water (as appropriate) to control dust in dirt and debris pile	• Everyday

	areas	
Recreational Use and Sites	• Create buffer zones between construction area and storm drain/ receiving water. Buffer zones should have established natural vegetation to remove sediments.	• Before construction
Access Development	• Stabilize construction entrances, construction roads, parking areas and other on-site vehicle transportation routes to ensure reduction of off-site tracking of mud, dirt and rocks, and maintain these areas throughout the project	• Before construction
Heritage or Archaeological Sites	• Determine before the project commences if the project site is a heritage or archaeological site. In case of chance finds, proper procedures shall be followed and findings should be reported to the National Museum.	• Before construction
Site Restoration and Deactivation	• Maintain original landscape and vegetation as much as possible. Mark, flag or fence areas where land cover or vegetation should be preserved or restored.	• Before construction
Noise control, vibration and light Abatement	• Exert effort to limit hours of operation to prescribed noise levels to reduce noise and light nuisance to the communities • Install noise and light abatement measures	• Every day
Health and Safety, Emergency Response	• Procedures should be put in place and train staff to deal with any emergency which could cause major injury to the health and safety of workers and the people in the community	• Before construction

Guidelines on environmentally sound construction aspects

1. Project Construction

a. Pollution of nearby areas and water bodies due to routine and accidental release of solid wastes, chemicals/pollutants and hazardous waste materials, e.g., grease, oil, fuel.

- Compliance with RA 9003 for solid wastes
- Compliance with RA 6969 for toxic and hazardous wastes
- Compliance with Philippine building and sanitation code
- Provide temporary waste disposal mechanism within the construction area fpr proper disposal of generated solid wastes
- Contactor and workers are required to observe proper housekeeping, sanitation and waste minimization.
- All hazardous (ignitable, reactive, flammable, radioactive, corrosive and toxic) materials must be stored in clearly labeled containers or vessels
- Fire prevention systems and secondary containment should be provided for storage facilities to prevent fires or the release of hazardous materials to the environment
- Provide proper and adequate toilet facilities for workers

b. Dust generation during land preparation activities (i.e. excavation works and slope modification)

- Regular watering of unpaved roads or exposed soils/ground
- Remove soil/mud from tires and equipment before leaving the area
- Hauling trucks should be covered with canvass or any equivalent materials
- Set-up temporary fence around the construction area.

c. Disturbance or Loss of vegetation

- Conduct land clearing activities to minimize disruption to vegetation
- Secure tree cutting permit(s) from the DENR and comply with DENR policy re: planting of a specified number of trees to replace the trees that will be cut
- Re-vegetate the area with indigenous species and ornamental plants as soon as possible
- Provide temporary fencing to vegetation that will be retained
- Use markers and fences to direct heavy equipment traffic in the construction site and avoid damage to plants.

d. Occupational health and safety hazards; accidents during construction

- Compliance with international and national health and safety regulations, e.g., personnel first-aid trainings, preventive measures on life and fire safety, have first-aid kits/facilities in the site
- Compliance with building code and fire code
- Proper operation and maintenance SOPs
- Provision of protective clothing, goggles and footwear to workers
- Preparation of emergency preparedness and response plans in case of accidents
- Prepare worker compensation schemes for health hazards and accidents

e. Erosion and increased sedimentation/siltation caused by excavation activities on steep slopes.

- Employ slope stabilization methods on areas of steep slope
- Employ safety measures to minimize erosion
- Establishment of silt/sediment traps to prevent siltation
- Proper stockpiling of spoils (on flat areas and away from drainage routes)
- Dispose of spoils generated from civil works as filing materials
- Conduct construction activities during the dry season
- Avoid long exposure of opened cuts

f. Top soil removal and loss due to earthmoving activities

- Stockpile the top soil in a safe place and use as it as final grading material or final layer

g. Disturbance of wildlife due to habitat loss

- In designing the route of transmission lines and access roads, take into consideration the location of sensitive or valuable ecosystems
- Use of existing roads, alignment selection and planning for avoidance and rail or water access
- Re-establish or simulate the habitat of affected wildlife in another suitable area

h. Loss of or disturbance to aquatic habitat due to excavation work in watercourses

- Not applicable (N/A) if there is no excavation in watercourses
- Avoid or reduce construction activities during breeding or spawning seasons of sensitive species

i. Disturbance to existing traffic flow; possible congestion

- Proponent/contractor should provide traffic aide during peak hours
- Strict enforcement of traffic rules and regulations

j. Noise generation that disturbs the nearby communities

- Undertake proper maintenance of equipment and use mufflers
- Schedule noisy construction activities during the day time

k. Extraction of Aggregates

- Transportation and handling - Use of excavated materials and site planning including use of previously disturbed sites

2. Occupational Health And Safety Hazards

- Compliance with international and national health and safety regulations, e.g., personnel trainings, preventive measures on life and fire safety
- Put first aid kits on site
- Proper operation and maintenance SOPs
- Compliance with national building and fire code
- Provision of protective clothing, goggles and footwear to workers
- Preparation of emergency preparedness and response plans in case of accidents,
- Prepare worker compensation schemes for health hazards and accidents
- Proper operation and maintenance SOPs

3. Access Roads

a. Displacement of wildlife due to habitat loss- Use of existing roads, alignment selection and planning for avoidance and rail or water access
b. Loss of vegetation due to clearing- Use of existing roads, alignment selection and planning and reforestation
c. Increased fishing pressure with new or improved access- Temporary access and/or fishing restrictions
d. Disturbance of streams and lakes through construction, traffic, siltation and alteration in flow patterns- Site planning to avoid stream crossings and roads adjacent to water bodies, use of appropriate culvert sizes, and use of buffer zones and sediment traps.
e. Displacement of fishing and tourist outpost camps- Temporary access, access restrictions (e.g., gating) or compensation
f. Uncontrolled migration of people into the area made possible by access roads and transmission lines- Limitation of access, provision of rural development, and health services to try to minimize impact.

4. Ancilliary Facilities: Construction , Site Clearing And Excavation For Powerhouse and Dam Site Construction Camp: Impacts And Mitigating Measures

a. Loss of vegetation - Reforestation in the same area after construction, or in contiguous areas
b. Loss of wildlife habitat - Habitat creation/improvement
c. Disturbance of wildlife through noise and traffic - Noise controls and traffic restrictions
d. Disturbance of rare and endangered species- Site planning for avoidance, protection (e.g. fencing) and relocation
e. Effects on farming and traditional uses - Site planning for avoidance, assistance with relocation of homes, farms, etc. and compensation
f. Effects on tourism and recreation- Site planning and timing of activities for avoidance and compensation
g. Dust effects- Use of dust suppressants
h. Blasting and noise effects- Timing of activities, fish deterrents and safety provisions (e.g., warning devices), blasting mats, noise silencers)
i. Forestry effects- Recovery of merchantable timber and reforestation

II. Environmental Monitoring and Auditing

The ESMP includes an Environmental Monitoring Plan that spells out the mitigating measures to be monitored, frequency of field sampling and monitoring, responsible institutions/individuals and cost of monitoring. The frequency of inspections depends on the risks posed to the environment by each construction activity or the nature of the site.

An annual audit of the environmental performance of the proponent is undertaken throughout the life of the project.

The monitoring activities may cover the following measures:

- All disturbed areas of the construction site and all material storage areas should be inspected and maintained.
- All erosion and sediment controls implemented at the construction site should be inspected regularly to ensure effectiveness
- Watering to control dust may require frequent, often daily, attention.
- Maintaining original vegetation requires planning and may not be possible based on the required uses of the site
- Shrubs, grass and trees planted to control erosion must be watered and cared for
- Stabilized roads and entranceways must be maintained on a regular basis to control their erosion, and must be inspected weekly and after each rain.

III. Capacity building – awareness and training

Awareness trainings and capacity building will have to be conducted for the management and staff of the proponent. This will have to be initiated as soon as the contract for the construction is signed. Contractors and sub-contractors will have to undergo the trainings as well to ensure that the implementation of the ESMP are consistently done, monitored and reported.

ANNEX 10

ENVIRONMENT CODE OF PRACTICE (ECOP)

Access Roads and Ancillary Facilities (in addition to the ECOP described in Annex 9)

Environmental Issue	Mitigation Measures
A. Design Phase	
1. Alignment	The alignment is selected from alternatives so as to minimize the land occupation, air pollution and noise impact on residences, to avoid unfavorable geological conditions and cultural relics.
3. Soil Erosion	• In slopes and suitable places along the road- side, bush grass shall be planted and retaining walls, water intercepting ditches and masonry rubbles shall be built to prevent soil erosion. • Establish drainage system to minimize soil erosion and the impact on irrigation canals.
4. Dust/air Pollution	Identify earth borrowing sites, waste disposal sites and asphalt mixing sites away from residential areas so as to minimize dust.
5. Water Pollution	A. Prevention • avoid alignments which are susceptible to erosion, such as those crossing steep slopes; • minimize the number of water crossings wherever possible; • use only "clean" fill materials around watercourses, such as quarried rock containing no fine soil; and • leave buffer zones of undisturbed vegetation (width increased in proportion to slope) between road sites and bodies of water. B. Mitigation • Flow speed control - Implement water speed reduction measures such as grasses, riprap and other devices in water channels, as well as dispersal structures in main drains. • Settling basins - Install settling basins to remove silt, pollutants and debris from road runoff water before it is discharged to adjacent streams or rivers. Conduct maintenance where large amounts of silt are deposited. • Paving - Sections of dirt and gravel roads prone to erosion and likely to be a source of sediment are to be paved to

[7] The ECOPs were synthesized and consolidated from the IFC, World Bank Group- Environmental, Health and Safety Guidelines, April 30, 2007, Philippine PD 1586, RA 6969, RA 7586, RA 8749, RA 9003 and RA 9275 and various references.

Environmental Issue	Mitigation Measures
	reduce the amount of sediment produced. • Infiltration ditches - Infiltration ditches can be used to reduce overland flow by encouraging the movement of runoff down through the soil profile. C. Compensation – consider compensatory measures when necessary • Move a bore hole away from an adversely affected site, provided the local ground water distribution permits this; • Drill wells for local residents who previously relied on surface water for drinking; • Create a replacement habitat for wildlife; and • Incorporate environmental enhancements in the project.
6. Noise	A. Prevention • Move the road alignment or divert traffic away from noise-sensitive areas using bypass roads. Choosing alignments which minimize steep slopes and sharp corners, especially at sensitive locations, can also prevent noise problems. B. Mitigation • Vehicular measures – Install mufflers on vehicles. • Surface design and maintenance - Reduce frictional noise through the application of a bituminous surface layer over worn concrete roadways open-graded asphalt and the avoidance of surface dressings. • Road geometry - Road design should avoid steep grades and sharp corners to reduce noise resulting from acceleration, braking, gear changes and the use of engine brakes by heavy trucks at critical locations.
7. Cultural Properties	A. Prevention • Road construction should avoid any alignment that cuts through known cultural sites. If an important site is uncovered during road works, possible realignment of the road should be considered. B. Mitigation • Excavation, erosion control, restoration of structural elements, rerouting of traffic, and site mapping. • A site management plan shall be prepared to identify conservation actions required and, where necessary, provide guidance on other measures such as salvage or relocation, monitoring and evaluation procedures and a schedule of operations and budget.

Environmental Issue	Mitigation Measures
B. Construction Phase	
1. Dust/air Pollution	• Water should be sprayed during the construction phase, in the line and earth mixing sites, asphalt mixing site and temporary roads. In filling sub-grade, water spraying is needed to solidify the material. After the impacting, water spraying should be done regularly to prevent dust. • Vehicles delivering materials should be covered to reduce spills. • Residences should be at least 500m from the downward wind direction of asphalt mixing sites. • Mixing equipment should be well sealed, and vibrating equipment should be equipped with dust-removing devices. Operators should wear dust masks.
2. Soil Erosion/ Water Pollution	• In slopes and other suitable places along the roadside, trees and grass should be planted. On sections with high filling and deep cutting, their slopes should be covered by stone walls and planted with grass, etc. If existing irrigation and drainage system ponds are damaged, they should be rebuilt or recovered by suitable methods. • Limestone and coal ash should be stacked together, fenced by bricks or an earth wall, and kept away from water. • In sections along the river, earth and stone shall be properly disposed of so as not to block rivers or cause adverse impacts on water quality. • All necessary measures will be taken to prevent earthworks and stone works from impeding the rivers and water canals or existing irrigation and drainage systems. • All justifiable measures will be taken to prevent the waste water produced in construction from entering into rivers and irrigation systems.
3. Construction or Workers' Camp	• Sufficient measures will be taken in the construction camps, e.g., provision of garbage tanks and sanitation facilities. Waste in septic tanks will be cleared periodically. • Drinking water should meet DENR Standards. • Garbage will be collected in a tank/drum and disposed of periodically.
4. Noise	• The noise standard of industrial enterprises will be strictly enforced to protect construction workers from ear damage. Workers in the vicinity of strong noise are to wear earplugs and helmets; their working time should be limited. • In construction sites within 150m from residences, noisy construction should be stopped from 6 pm to 7am. • Maintenance of machinery and vehicles should be enhanced to keep their noise at a minimum.

Environmental Issue	Mitigation Measures
5. Conservation of Eco-resources	• Earth borrowing, piling and building temporary camps are prohibited in forest lands. • Arable lands should not be used as earth borrowing whenever possible. If needed, the top- soil (30 cm) should be kept and refilled after construction is over to minimize the impact on the ecosystem and on agriculture. • Construction workers should be told to protect natural resources and wild animals. Hunting shall be prohibited. • Construction vehicles should run at temporary accesses to avoid damaging arable lands and cattle-raising lands.
6. Accidental Risks	• To ensure safe construction in the temporary accesses during construction, lighting devices and safety signal devices will be installed. Meanwhile, traffic rules and regulations will be actively enforced in the temporary accesses. • During construction, effective safety and warning measures will be taken to reduce accidents. Blasting time, signal and guarding will be regulated. The people and vehicles within the blasting area should be removed in time. • Prior to blasting, a thorough inspection should be conducted. • A safety lookout will be built to prevent people and vehicles from passing after blasting. Blasting will not be carried out during rush hours so as not to cause traffic jams and injuries. • The management and use of blasting materials will be in strict conformity with the safety requirements for public security.
7. Cultural Properties	• If valuable or invaluable articles such as fabrics, coins, artifacts, structures, or other geographic or archeological relics are discovered, the Philippine National Museum (PNM) should be notified immediately. The excavation should be stopped until the PNM has identified the articles found. • The PNM staff/archaeologists will supervise the excavation to avoid any damage to the relics.
8. Communications and Transportation	• Local materials should be used as much as possible so as to avoid long distance transportation. • If there is a traffic jam during construction, measures should be taken to move the jam with the coordination of the local government's transportation and public security department.
	• Materials may be delivered in advance in relatively leisurely season of traffic. • A transportation plan of materials will be formulated to avoid their delivery at peak hours on existing roads.

Environmental Issue	Mitigation Measures
C. Operation Phase	
1. Vehicle management	• The public will be educated about the regulations on air pollution and noise of vehicles. • Bulk cargo such as coal, cement, sand, etc. easily spilled or polluted over the road will be inspected; vehicles carrying these cargo without protection measures will be prohibited from running on the road.
2. Noise	According to monitoring results, at places with excessive noise, sound barriers or other measures will be adopted.
3. Maintenance of the drainage system	The drainage system will be periodically cleared so as to ensure water flow.

ANNEX 11

ENVIRONMENTAL CODES OF PRACTICE (ECOPs)

a. WIND ENERGY PROJECTS

1. Occupational Health and Safety

a. Working at Heights

- Prior to undertaking work, test structure for integrity;
- Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; inspection, maintenance and replacement of fall protection equipment; and rescue of fall-arrested workers;
- Establishment of criteria for use of 100 percent fall protection (typically when working over 2 m above the working surface but sometimes extended to 7 m, depending on the activity). The fall-protection system should be appropriate for the tower structure and movements to be undertaken including ascent, descent and moving from point to point;
- Install fixtures on tower components to facilitate the use of fall protection systems;
- Provide workers with an adequate work-positioning device system. Connectors on positioning systems must be compatible with the tower components to which they are attached;
- Ensure that hoisting equipment is properly rated and maintained and that hoist operators are properly trained;
- Safety belts should be of not less than 15.8 mm (5/8 inch) two in one nylon or material of equivalent strength. Rope safety belts should be replaced before signs of aging or fraying of fibers become evident;
- When operating power tools at height, workers should use a second (backup) safety strap;
- Signs and other obstructions should be removed from poles or structures prior to undertaking work;
- An approved tool bag should be used for raising or lowering tools or materials to workers on elevated structures.
- Avoid conducting tower installation or maintenance work during poor weather conditions and especially where there is a risk lightning strikes;

[2] The ECOPs were synthesized and consolidated from the IFC, World Bank Group- Environmental, Health and Safety Guidelines, April 30, 2007, Philippine PD 1586, RA 6969, RA 7586, RA 8749, RA 9003 and RA 9275 and various references.

b. Working over Water

- Completion of a risk assessment and management plan for water, wind and weather conditions before conducting work;
- Use of approved buoyancy equipment (e.g. life jackets, vests, floating lines, ring buoys) when workers are over, or adjacent to, water where there is a drowning hazard;
- Orientation of worker to avoid salt spray and contact with waves;
- Provision of appropriate marine vessels and qualified boat operators and emergency personnel.

2. Community Health and Safety

Community health and safety hazards specific to wind energy facilities primarily include the following: aircraft and marine navigation safety, blade and ice throw, electromagnetic interference and radiation and public access.

a. Aircraft and Marine Navigation Safety

- Consult with air and marine regulatory traffic authorities before installation, in accordance with air and marine traffic safety regulations;
- When feasible, avoid siting wind farms close to airports or ports and within known flight path envelopes or shipping lanes;
- Use anti-collision lighting and marking systems on towers and blades.

b. Electromagnetic Interference

Wind turbines could potentially cause electromagnetic interference with aviation radar and telecommunication systems (e.g. microwave, television and radio). This interference could be caused by three main mechanisms, namely near-field effects, diffraction, and reflection or scattering. The nature of the potential impacts depends primarily on the location of the wind turbine relative to the transmitter and receiver, characteristics of the rotor blades, signal frequency, receiver characteristics, and radio wave propagation characteristics in the local atmosphere.

b.1. Aviation Radar

- Consider wind energy equipment component designs that minimize radar interference, including the shape of the turbine tower, the shape and materials of the nacelle, and use of radar-absorbent surface treatments (e.g. rotor blades made of glass-reinforced epoxy or polyester) which should not create electrical disturbance;
- Consider wind farm design options, including geometric layout and location of turbines and changes to air traffic routes;
- Consider radar design alterations including relocation of the affected radar, radar blanking of the affected area, or use of alternative radar systems to cover the affected area.

b.2. Telecommunications Systems

- Modify placement of wind turbines to avoid direct physical interference of point-to-point communication systems;
- Install a directional antenna;
- Modify the existing aerial;
- Install an amplifier to boost the signal.

b.3. Television

- Site the turbine away from the line-of-sight of the broadcaster transmitter;
- Use non-metallic turbine blades;
- If interference is detected during operation:

  - Install higher quality or directional antenna;
  - Direct the antenna toward an alternative broadcast transmitter;
  - Install an amplifier;
  - Relocate the antenna;
  - If a wide area is affected, consider the construction of a new repeater station.

c. Public Access

- Use gates on access roads;
- Fence the wind farm site, or individual turbines, to prohibit public access close to the turbine;
- Prevent access to turbine tower ladders;
- Post information boards about public safety hazards and emergency contact information.

ANNEX 11

ENVIRONMENTAL CODES OF PRACTICE (ECOPs)
(in addition to the ECOP described in Annex 9)

b. BIOMASS THERMAL POWER PLANTS

1. Occupational Health and Safety

The following health and safety impacts are of particular concern during operation of thermal power plants: non-ionizing radiation, heat, noise, confined spaces, electrical hazards, fire and explosion hazards, chemical hazards and dust.

a. Non-ionizing radiation

Combustion facility workers may have a higher exposure to electric and magnetic fields (EMF) than the general public due to working in proximity to electric power generators, equipment, and connecting high-voltage transmission lines. Occupational EMF exposure should be prevented or minimized through the preparation and implementation of an EMF safety program including the following components:

- Identification of potential exposure levels in the workplace, including surveys of exposure levels in new projects and the use of personal monitors during working activities;
- Training of workers in the identification of occupational EMF levels and hazards;
- Establishment and identification of safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers;
- Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP), the Institute of Electrical and Electronics Engineers (IEEE). Personal exposure monitoring equipment should be set to warn of exposure levels that are below occupational exposure reference levels (e.g., 50 percent). Action plans to address occupational exposure may include limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, or the use of shielding materials.

[3] The ECOPs were synthesized and consolidated from the IFC, World Bank Group- Environmental, Health and Safety Guidelines, April 30, 2007, Philippine PD 1586, RA 6969, RA 7586, RA 8749, RA 9003 and RA 9275 and various references.

b. Heat

Recommended prevention and control measures to address heat exposure at biomass thermal power plants include:

- Regular inspection and maintenance of pressure vessels and piping;
- Provision of adequate ventilation in work areas to reduce heat and humidity;
- Reducing the time required for work in elevated temperature environments and ensuring access to drinking water;
- Shielding surfaces where workers come in close contact with hot equipment, including generating equipment, pipes, etc;
- Use of warning signs near high temperature surfaces and personal protective equipment (PPE) as appropriate, including insulated gloves and shoes.

c. Noise

Recommendations for reducing noise and vibration are discussed in the General ECOPs. In addition, recommendations to prevent, minimize and control occupational noise exposures in biomass thermal power plants include:

- Provision of sound-insulated control rooms with noise levels below 60 dBA29;
- Design of generators to meet applicable occupational noise levels;
- Identify and mark high noise areas and require that personal noise protecting gear is used all the time when working in such high noise areas (typically areas with noise levels >85 dBA).

d. Confined Spaces

Specific areas for confined space entry may include ash containers, turbines, condensers and cooling water towers (during maintenance activities). Recommended confined space entry procedures are discussed in the General ECOPs.

e. Electrical Hazards

Recommended measures to prevent, minimize and control electrical hazards at thermal power plants include:

- Installation of hazard warning lights inside electrical equipment enclosures to warn of inadvertent energization;
- Use of voltage sensors prior to and during workers' entrance into enclosures containing electrical components;
- Deactivation and proper grounding of live power equipment and distribution lines according to applicable legislation and guidelines whenever possible before work is performed on or proximal to them;
- Provision of specialized electrical safety training to those workers working with or around exposed components of electric circuits. This training should include, but not be limited to, training in basic electrical theory, proper safe work procedures, hazard awareness and identification, proper use of PPE, proper lockout/tag-out procedures, first aid including CPR, and proper rescue procedures. Provisions should be made for

periodic retraining as necessary.

f. Fire and Explosion Hazards

Recommended measures to prevent, minimize and control physical hazards at thermal power plants include:

- Use of automated combustion and safety controls;
- Proper maintenance of boiler safety controls;
- Implementation of startup and shutdown procedures to minimize the risk of suspending hot coal particles (e.g., in the pulverizer, mill and cyclone) during startup;
- Regular cleaning of the facility to prevent accumulation of biomass dust (e.g., on floors, ledges, beams and equipment);
- Use of automated systems such as temperature gauges or carbon monoxide sensors to survey solid fuel storage areas to detect fires caused by self-ignition and to identify risk points.

g. Chemical Hazards

Thermal power plants utilize hazardous materials, including ammonia for NO_X control systems, and chlorine gas for treatment of cooling tower and boiler water. Guidance on chemical hazards management is provided in the General ECOPs. In addition, recommended measures to prevent, minimize and control physical hazards at thermal power plants include:

- Consider generation of ammonia on site from urea or use of aqueous ammonia in place of pure liquefied ammonia;
- Consider use of sodium hypochlorite in place of gaseous chlorine.

h. Dust

Dust management guidance is provided in the General ECOPs. Recommended measures to prevent, minimize and control occupational exposure to dust in biomass thermal power plants include:

- Use of dust controls (e.g., exhaust ventilation) to keep dust below applicable guidelines (see Section 2) or wherever free silica levels in airborne dust exceed 1 percent;
- Regular inspection and maintenance of asbestos containing materials (e.g., insulation in older plants may contain asbestos) to prevent airborne asbestos particles.

2. Community Health and Safety

Many community health and safety impacts during the construction, operation and decommissioning of biomass thermal power plant projects are common to those of most infrastructure and industrial facilities and are discussed in General ECOPs.

a. Water Consumption

Boiler units require large amounts of cooling water for steam condensation and efficient thermal operation. The cooling water flow rate through the condenser is by far the largest process water flow, normally equating to about 98 percent of the total process water flow for the entire unit. In a once-through cooling water system, water is usually taken into the plant from

surface waters, but sometimes ground waters or municipal supplies are used. The potential effects of water use should be assessed, as discussed in the General ECOPs, to ensure that the project does not compromise the availability of water for personal hygiene, agriculture, recreation and other community needs.

b. Traffic Safety

Operation of a biomass thermal power plant will increase traffic volume, in particular for facilities with fuels transported via land and sea, including heavy trucks carrying fuel, additives, etc. The increased traffic can be especially significant in sparsely populated areas. Prevention and control of traffic-related injuries are discussed in the General ECOPs.

ANNEX 11

ENVIRONMENTAL CODES OF PRACTICE (ECOPs)
(in addition to the ECOP described in Annex 9)

c. BIOMASS ENERGY CROP PLANTATION PROJECT[5]

1. Occupational Health Safety

Occupational health and safety issues associated with plantation crop production include the following; physical hazards, confined space entry and chemical hazards.

a. Physical Hazards

Occupational safety and health and controls relating to equipment and vehicle operation and confined spaces are discussed in the General ECOPs.

b. Chemical Hazards- Exposure to Pesticides

Occupational Health Safety Impacts associated with pesticides are similar for hazardous substances and are discussed in the general ECOPs. Recommendations specific to biomass energy crop plantation include the following:

- Train personnel to apply pesticides and ensure that personnel have received the necessary certifications, or equivalent training where such certifications are not required;
- Respect post-treatment intervals to avoid operator exposure during reentry to crops with residues of pesticides;
- Respect pre-harvest intervals to avoid operator exposure to pesticide residues on products during harvesting;
- Ensure hygiene practices are followed (in accordance with FPA and FAO regulations to avoid exposure of family members to pesticides residues.

2. Community Health and Safety

Community health and safety issues during the production of plantation crops may include the following:

- Potential exposure to pesticides caused by spray drift, improper disposal and use of packaging and containers, and the presence of pesticides in potentially harmful concentrations

in postharvest products;

- Potential exposure to pathogens and obnoxious odors associated with the use of manure;
- Potential exposure to air emissions from open burning of crop waste.

Specific recommendations include the following:

- Avoid the aerial application of pesticides whenever feasible;
- Use biological or safe products, whenever feasible;
- Respect pre-harvest intervals for pesticides to avoid unacceptable levels of pesticide residues in products further complying with any applicable pesticide tolerance requirements;
- Do not store or transport pesticides and fertilizers with food beverages (including drinking water);
- Ensure that animals and unauthorized people are not present in the areas where pesticides are handled or applied;
- Store manure as far away from dwellings as possible, and use measures, such as covering the manure, to reduce odors and atmospheric emissions;
- Do not apply manure to the fields if the wind direction is toward nearby dwellings;
- Clean (e.g., a triple rinse or pressure technique) and dispose of (e.g., through crushing, shredding or return to suppliers) pesticide packaging and containers to ensure that they are not subsequently used as containers for food or drinking water;
- Open burning of residual, organic crop waste should be avoided. Crop waste should be returned to the fields to enhance the nutrient content of the soil.

ANNEX 11

ENVIRONMENTAL CODES OF PRACTICE (ECOP)
(in addition to the ECOP described in Annex 9)

d. Solar (Photovoltaic) Energy Development

1. Occupational Health Safety

a. <u>During manufacturing of PV cells</u>

- Consider site of production facilities: proximity to populated areas, upwind or downwind location from populated centers

- Regarding the use of toxic and hazardous materials for production of photovoltaic (PV) cells:

- Consider type(s) of PV cells manufactured: Type and quantity of chemicals used as feedstocks, doping agents, solvents and transport agents, technology involved in their production, steps in the production process, etc.

- Take note of toxicity and health hazards posed by chemical substances used in PV manufacturing process (e.g. phosphine used in amorphous silicon cells is very toxic and poses a severe fire hazard through spontaneous chemical reaction).

- In sourcing out the PV cells, consider the manufacturer experience and its compliance with local, national and/or internationals laws and regulations concerning toxic and hazardous materials.

- Compliance with internationally accepted hazmats management guidelines (e.g. IFC's Hazardous Material Management guidelines) particularly regarding worker health and safety, personnel training, and preventive measures regarding life and fire safety, including but not limited to compliance with insurance requirements, emergency procedures in place, compliance with local building and fire codes, provision of protective clothing, goggles and footwear, and periodic medical examinations.

b. <u>Construction/Installation of Facilities</u>

- Compliance with general international and national health and safety regulations.
- Compliance with building code and fire code.

<u>During Operation of PV System</u>

- Compliance with international and national health and safety regulations, e.g., personnel trainings, preventive measures on life and fire safety;
- Proper operation and maintenance SOPs;
- Compliance with national fire code;
- Provision of protective clothing, goggles and footwear to workers;
- Preparation of emergency preparedness and response plans in case of accidents;
- Prepare worker compensation schemes for health hazards and accidents.

ANNEX 12

GUIDANCE ON WORLD BANK AND DENR POLICY REQUIREMENTS ON SAFETY OF DAMS (WB OP 4.37)

In the PhRED Project, the Bank OP 4.37 shall be triggered for mini-hydroelectric projects (if there is water impoundment) under Component 2. Most of the guidelines for mini-hydro projects are in the template Environmental Management Plan and the Environmental Codes of Practice in previous Annexes. Occupational health and safety measures are also incorporated in the ECOPs above. This Annex provides additional guidance in addressing the Bank OP 4.09 and OP 4.37 and its Annex A. On the other hand, the Department of Environment and Natural Resources has environmental requirements for dams based on reservoir flooded area and water storage capacity, and hydropower facilities based on total power production capacity. The borrower and the sub-borrowers shall comply with these guidelines. .

A. OP 4.37 – Safety of Dams (Revised April 2012)

1. For the life of any dam, the owner[1] is responsible for ensuring that appropriate measures are taken and sufficient resources provided for the safety of the dam, irrespective of its funding sources or construction status. Because there are serious consequences if a dam does not function properly or fails, the Bank[2] is concerned about the safety of new dams it finances and existing dams on which a Bank-financed project is directly dependent.

New Dams

2. When the Bank finances a project that includes the construction of a new dam,[3] it requires that the dam be designed and its construction supervised by experienced and competent professionals. It also requires that the borrower[4] adopt and implement certain dam safety measures for the design, bid tendering, construction, operation and maintenance of the dam and associated works.

3. The Bank distinguishes between small and large dams.

(a) Small dams are normally less than 15 meters in height. This category includes, for example, farm ponds, local silt retention dams, and low embankment tanks.

(b) Large dams are 15 meters or more in height. Dams that are between 10 and 15 meters in height are treated as large dams if they present special design complexities--for example, an unusually large flood-handling requirement, location in a zone of high seismicity, foundations that are complex and difficult to prepare, or retention of toxic materials.[5] Dams under 10 meters in height are treated as large dams if they are expected to become large dams during the operation of the facility.

4. For small dams, generic dam safety measures designed by qualified engineers are usually adequate.[6] For large dams, the Bank requires:

a) reviews by an independent panel of experts (the Panel) of the investigation, design and construction of the dam and the start of operations;
b) preparation and implementation of detailed plans: a plan for construction supervision and quality assurance, an instrumentation plan, an operation and maintenance plan, and

an emergency preparedness plan;[7] c) prequalification of bidders during procurement and bid tendering,[8] and d) periodic safety inspections of the dam after completion.

5. The Panel consists of three or more experts, appointed by the borrower and acceptable to the Bank, with expertise in the various technical fields relevant to the safety aspects of the particular dam.[9] The primary purpose of the Panel is to review and advise the borrower on matters relative to dam safety and other critical aspects of the dam, its appurtenant structures, the catchment area, the area surrounding the reservoir, and downstream areas. However, the borrower normally extends the Panel's composition and terms of reference beyond dam safety to cover such areas as project formulation; technical design; construction procedures; and, for water storage dams, associated works such as power facilities, river diversion during construction, ship lifts, and fish ladders.

6. The borrower contracts the services of the Panel and provides administrative support for the Panel's activities. Beginning as early in project preparation as possible, the borrower arranges for periodic Panel meetings and reviews, which continue through the investigation, design, construction and initial filling and start-up phases of the dam.[10] The borrower informs the Bank in advance of the Panel meetings, and the Bank normally sends an observer to these meetings. After each meeting, the Panel provides the borrower a written report of its conclusions and recommendations, signed by each participating member; the borrower provides a copy of that report to the Bank. Following the filling of the reservoir and start-up of the dam, the Bank reviews the Panel's findings and recommendations. If no significant difficulties are encountered in the filling and start-up of the dam, the borrower may disband the Panel.

Existing Dams and Dams under Construction

7. The Bank may finance the following types of projects that do not include a new dam but will rely on the performance of an existing dam or a dam under construction (DUC): power stations or water supply systems that draw directly from a reservoir controlled by an existing dam or a DUC; diversion dams or hydraulic structures downstream from an existing dam or a DUC, where failure of the upstream dam could cause extensive damage to or failure of the new Bank- funded structure; and irrigation or water supply projects that will depend on the storage and operation of an existing dam or a DUC for their supply of water and could not function if the dam failed. Projects in this category also include operations that require increases in the capacity of an existing dam, or changes in the characteristics of the impounded materials, where failure of the existing dam could cause extensive damage to or failure of the Bank-funded facilities.

8. If such a project, as described in para. 7, involves an existing dam or DUC in the borrower's territory, the Bank requires that the borrower arrange for one or more independent dam specialists to (a) inspect and evaluate the safety status of the existing dam or DUC, its appurtenances, and its performance history; (b) review and evaluate the owner's operation and maintenance procedures; and (c) provide a written report of findings and recommendations for any remedial work or safety-related measures necessary to upgrade the existing dam or DUC to an acceptable standard of safety.

9. The Bank may accept previous assessments of dam safety or recommendations of improvements needed in the existing dam or DUC if the borrower provides evidence that (a) an effective dam safety program is already in operation, and (b) full-level inspections and dam safety assessments of the existing dam or DUC, which are satisfactory to the Bank, have already been conducted and documented.

10. Necessary additional dam safety measures or remedial work may be financed under the proposed project. When substantial remedial work is needed, the Bank requires that (a) the work be designed and supervised by competent professionals, and (b) the same reports and plans as for a new Bank-financed dam (see para. 4(b)) be prepared and implemented. For high-hazard cases involving significant and complex remedial work, the Bank also requires that a panel of independent experts be employed on the same basis as for a new Bank-financed dam (see paras. 4(a) and 5).

11. When the owner of the existing dam or DUC is an entity other than the borrower, the borrower enters into agreements or arrangements providing for the measures set out in paras. 8-10 to be undertaken by the owner.

Policy Dialogue

12. Where appropriate, as part of policy dialogue with the country, Bank staff shall discuss any measures necessary to strengthen the institutional, legislative and regulatory frame-works for dam safety programs in the country.

1. The owner may be a national or local government, a parastatal, a private company or a consortium of entities. If an entity other than the one with legal title to the dam site, dam and/or reservoir holds a license to operate the dam, and has responsibility for its safety, the term "owner" includes such other entity.
2. "Bank" includes IBRD and IDA, and "loans" include IDA credits and IDA grants.
3. For example, a water storage dam for a hydropower, water supply, irrigation, flood control or multipurpose project; a tailings or a slimes dam for a mine project; or an ash impoundment dam for a thermal power plant.
4. When the owner is not the borrower, the borrower ensures that the obligations of the borrower under this OP are properly assumed by the owner under arrangements acceptable to the Bank.
5. The definition of "large dams" is based on the criteria used to compile the list of large dams in the World Register of Dams, published by the International Commission on Large Dams.
6. See paragraph 9 of BP 4.37, *Safety of Dams*.
7. BP 4.37, Annex A, sets out the content of these plans and the timetable for preparing and finalizing them. In the dam safety practice of several countries, the operation and maintenance plan includes both the instrumentation plan and the emergency preparedness plan as specific sections. This practice is acceptable to the Bank, provided the relevant sections are prepared and finalized according to the timetable set out in BP 4.37, Annex A.
8. See Guidelines: Procurement under IBRD Loans and IDA (Washington, D.C., World Bank).
9. The number, professional breadth, technical expertise and experience of Panel members are appropriate to the size, complexity and hazard potential of the dam under consideration. For high-hazard dams, in particular, the Panel members should be internationally known experts in their field.
10. If the Bank's involvement begins at a later stage than project preparation, the Panel is constituted as soon as possible and reviews any aspects of the project that have already been carried out.

B. Bank BP 4.37, Annex A- Dam Safety Reports: Content and Timing for Hydropower Projects with Dam Heights 15 m and above

1. *Plan for construction supervision and quality assurance*. This plan is provided to the Bank by appraisal. It covers the organization, staffing levels, procedures, equipment and qualifications for supervision of the construction of a new dam or of remedial work on an existing dam. For a dam other than a water storage dam,[1] this plan takes into account the usual long construction period, covering the supervision requirements as the dam grows in height--with any accompanying changes in construction materials or the characteristics of the impounded material--over a period of years. The task team uses the plan to assess the need to fund components under the loan to ensure that dam-safety-related elements of the design are implemented during construction.

2. *Instrumentation plan*. This is a detailed plan for the installation of instruments to monitor and record dam behavior and the related hydro-meteorological, structural and seismic

factors. It is provided to an independent panel of experts (the Panel) and the Bank during the design stage, before bid tendering.

3. *Operation and maintenance (O&M) plan*. This detailed plan covers organizational structure, staffing, technical expertise and training required; equipment and facilities needed to operate and maintain the dam; O&M procedures; and arrangements for funding O&M, including long-term maintenance and safety inspections. The O&M plan for a dam other than a water storage dam, in particular, reflects changes in the dam's structure or in the nature of the impounded material that may be expected over a period of years. A preliminary plan is provided to the Bank for use at appraisal. The plan is refined and completed during project implementation; the final plan is due not less than six months prior to the initial filling of the reservoir. Elements required to finalize the plan and initiate operations are normally financed under the project.[2]

4. *Emergency preparedness plan*. This plan specifies the roles of responsible parties when dam failure is considered imminent, or when expected operational flow release threatens downstream life, property, or economic operations that depend on river flow levels. It includes the following items: clear statements on the responsibility for dam operations decision making and for the related emergency communications; maps outlining inundation levels for various emergency conditions; flood warning system characteristics; and procedures for evacuating threatened areas and mobilizing emergency forces and equipment. The broad framework plan and an estimate of funds needed to prepare the plan in detail are provided to the Bank prior to appraisal. The plan itself is prepared during implementation and is provided to the Panel and Bank for review not later than one year before the projected date of initial filling of the reservoir.

1. For example, a mine tailings, ash impoundment, or slag storage dam.
2. In the dam safety practice of several countries, the operation and maintenance plan includes both the instrumentation plan and the emergency preparedness plan as specific sections. This practice is acceptable to the Bank, provided the relevant sections are prepared and finalized according to the timetable set out in this annex.

C. DENR REQUIREMENTS FOR HYDROPOWER FACILITIES AND DAMS

The Revised Procedural Manual for DENR Administrative Order No. 03-30 or the Implementing Rules and Regulations of PD 1586 or the Philippine Environmental Impact System have the following requirements:

1. Group I – Environmentally Critical Projects (ECPs) under Presidential Proclamation 2146. A full blown Environmental Impact Statement Report (Environmental Impact Assessment) is required for hydropower facilities with a total power production capacity equal to or greater than 30 MW.

2. Group II – Non-Environmentally Critical Projects (non-ECPs) in Environmentally Critical Areas (ECAs). An Initial Environmental Examination Report (IEER) is required for the following:

a. Hydropower Facilities with total production capacity of 5 MW up to less than 30 MW (Those under Presidential Proclamation 2146). However, for mini-hydro facilities with total production capacity of less than 5 MW run-of-river system, only a project description report is required.

b. Minor Dams with a reservoir flooded area less than 25 ha of reservoir flooded area and less than 20 million cu. M of water storage capacity

ANNEX 13

Recommended Format for an Environmental and Social Impact Assessment

I. TABLE OF CONTENTS

II. EXECUTIVE SUMMARY

- A. Brief Introduction
- B. Brief Description of Methodology and Profile of EIA Team
- C. Scope and Limitation of the EIA Study
- D. Brief Project Description
- E. Brief Description of Baseline Environmental Conditions
- F. Matrix of Issues and Impacts Raised During the Scoping and Consultations
- G. Matrix of Major Impacts, and Mitigation/Enhancement Measures with Summary Discussion
- H. Matrix of Environmental Management Plan with Summary Discussion
- I. Matrix of Environmental Monitoring Plan with Summary Discussion
- J. Proposal of Environmental Guarantee and Monitoring Fund Scheme (when applicable)
- K. Summary of Process Documentation Report, and
- L. Summary of Commitments, Agreements (or both) and Proofs of Social Acceptability

III. INTRODUCTION

- A. Project Background
- B. EIA Approach and Methodology
- C. EIA Process Documentation
- D. EIA Team
- E. EIA Study Schedule

IV. PROJECT DESCRIPTION

- A. Project Rationale
- B. Project Alternatives
- C. Project Location
- D. Project Information
- E. Description of Project Phases
  1. Pre-Construction / Operational Phase
  2. Construction Phase
  3. Operational Phase
  4. Abandonment Phase

V. BASELINE ENVIRONMENTAL CONDITIONS

- A. Physical Environment
  1. Geology and Geomorphology
  2. Hydrology and Hydrogeology
  3. Pedology and Land Use
  4. Water Quality and Limnology
  5. Meteorology
  6. Air and Noise Quality
  7. Oceanography
- B. Biological Environment
  1. Terrestrial Flora and Fauna
  2. Marine Biology
- C. Socio-Cultural, Economic and Political Environment

VI. FUTURE ENVIRONMENTAL CONDITIONS WITHOUT THE PROJECT

VII. IMPACT ASSESSMENT AND MITIGATION

A. Physical / Chemical Effects
   1. Land
   2. Water
   3. Air

B. Biological/Ecological Effects
   1. Terrestrial Flora and Fauna
   2. Aquatic Flora and Fauna

C. Aesthetic and Visual Effects

D. Socio-Cultural and Economic Effects
   1. Population
   2. Labor and Employment
   3. Housing and Social Services
   4. Infrastructure and Public Utilities
   5. Health and Education
   6. Culture and Lifestyle
   7. Livelihood and Income
   8. Archeological / Anthropological / Historical Sites

E. Mitigation and Enhancement Measures

F. Residual and Unavoidable Impacts

VIII. ENVIRONMENTAL RISK ASSESSMENT (WHEN APPLICABLE)

IX. ENVIRONMENTAL MANAGEMENT PLAN

A. Construction / Contractors Environmental Program

B. Social Development Program

C. Contingency / Emergency Response Plan

D. Risk Management Program

E. Abandonment Plan (when applicable)

F. Environmental Monitoring Plan

X. ENVIRONMENTAL GUARANTEE AND MONITORING FUND PROPOSAL

XI. COMMITMENTS AND AGREEMENTS

XII. BIBLIOGRAPHY / REFERENCES

A. Attachments

B. List of EIS Preparers (with specified field of expertise)

C. Original Sworn Accountability Statement of Key EIS Consultants

D. Original Sworn Accountability Statement of Proponent

E. Photos (or plates of proposed project site, impact areas and affected areas and communities)

F. Process Documentation Report

G. Scoping Report

H. Summary of Proof of Social Preparation Process Conducted

All projects or undertakings covered by the EIS System and classified by the Department of Health (DOH) as Health Sensitive Projects or located in Health Sensitive Areas shall include a chapter on Environmental Health Impact Assessment (EHIA). The EHIA Chapter shall contain, among others, the following information:

- Health and Sanitation Information of the Affected Community
- Environmental Health Impact Analysis/Assessment
- Proposed Control and Mitigating Measures for the Environmental Health Impacts Identified

Recommended Format for an Initial Environmental Examination Report

I. TABLE OF CONTENTS
II. EXECUTIVE SUMMARY
III. INTRODUCTION
- A. Project Background
- B. EIA Process Documentation
- C. EIA Methodology
- D. EIA Team
- E. EIA Study Schedule

IV. PROJECT DESCRIPTION
- A. Project Rationale
- B. Project Location
- C. Project Information
- D. Description of Project Phases
  1. Pre-Construction / Operational Phase
  2. Construction Phase
  3. Operational Phase
  4. Abandonment Phase

V. DESCRIPTION OF ENVIRONMENTAL SETTING AND RECEIVING ENVIRONMENT
- A. Physical Environment
- B. Biological Environment
- C. Socio-Cultural, Economic and Political Environment
- D. Future Environmental Conditions without the Project

VI. IMPACT ASSESSMENT AND MITIGATION
- A. Summary Matrix of Predicted Environmental Issues/Impacts and their Level of Significance at Various Stages of Development
- B. Brief Discussion of Specific Significant Impacts on the Physical and Biological Resources
- C. Brief Discussion of Significant Socio-Economic Effects / Impacts of the Project

VII. ENVIRONMENTAL MANAGEMENT PLAN
- A. Summary Matrix of Proposed Mitigation and Enhancement Measures, Estimated Cost and Responsibilities
- B. Brief Discussion of Mitigation and Enhancement Measures
- C. Monitoring Plan
- D. Contingency Plan (if applicable)
- E. Institutional Responsibilities and Agreements

VIII. BIBLIOGRAPHY / REFERENCES

ANNEX 14

SAMPLE TERMS of REFERENCE for PREPARATION OF FEASIBILITY STUDY
(By Firm, EA/SA included in the TOR)

I. BACKGROUND

This Consultancy is for the preparation of the Feasibility Study of the storm drainage component in Name of Sub-borrower. The SSLDIP subproject implementation is a joint effort of the LGUGC and the Sub-borrower. The LGUGC is the executing agency responsible for the overall implementation of the Project. The Sub-borrower will be responsible for the preparation and implementation of the subproject.

II. OBJECTIVES OF THE STUDY

The objectives of the Consultancy Services will include:

(a) Determine the feasibility of the storm drainage proposal to improve flood control in the urban areas of Name of the Sub-borrower in conformity with Sub-borrower priorities and budgetary constraints;

(b) Evaluate land acquisition needs and applicable legal requirements for the subproject, perform environmental impact assessment to determine subproject alternatives, and collect socio-economic data on persons likely to be displaced by the proposed subproject; and

(c) Act on the recommendations in the feasibility study, to complete preliminary design of the proposed subproject as well as necessary surveys and investigations.

III. SCOPE OF WORK

Feasibility Study which shall contain:

(a) **Engineering Examination,** including review of existing documents and data investigation of existing drainage system and its physical state of repair and rapid assessment of long-term development prospects.

(b) **Rapid Assessment**, of long-term development prospects of the systems; statement of sector development policy and design criteria in the Philippines; alternatives, recommended solution and phasing of cleaning of the open canal, rehabilitation and expansion of storm drainage and eventual disposal of canal sediments, and treatment of sludge in the most economic ways; identification of first phase, implementation schedule and base cost estimates for major cost components with respective contingencies; assessment of proposed subproject feasibility; and recommendation concerning investigations to be carried out prior to preliminary design, including their costs; schedule and implementation methods.

(c) **Environmental Impact Assessment**, **including Environmental Management Plan**, of the planned or proposed subproject activities to facilitate the best selection of alternatives that will bear the minimum environmental impact. The EIA shall follow the minimum format recommended by the DENR and shall cover

the requirements outlined in the S2LDIP Environmental Safeguards Framework. If the subproject exhibits potential health impact, supplemental and a separate Environmental Health Impact Assessment report shall be prepared.

(d) **Institutional Examinations**, including review of existing agencies involved in storm drainage operations; organization of key agencies, manpower strength, flow of management information, accounting and budget procedures; and audit procedures; legislation concerning drainage; identification of bottlenecks, including proposals for improvement, streamlining and strengthening of agencies, their management information systems, sustainability of operations, O&M guidelines, budgets, affordability assessment, training programs, legislation and enforcement; projected income statements, source and application of funds and balance sheets for 200_.

(e) **Finance / Economic Examinations**, including assessments of subproject viability, justification and rates of return based on with and without project analysis; identification of least cost alternatives: assessment of direct and indirect subproject benefits including (a) health improvements; (b) environmental improvements; (c) enhanced amenity; (d) avoided flood damage; and (e) enhanced property values.

(f) **Resettlement Examinations**, including Resettlement Plan (RP) identifying land to be acquired and affected persons, their economic status and impact of loss of land; compensation and assistance policies; institutional arrangements for processing resettlement, compensation and settling grievances; costs, budgets and implementation schedule of resettlement; monitoring and evaluation of resettlement process. RP shall comply with the Government of the Philippines (GOP) and WB requirements specified in the S2LDIP Resettlement and Compensation Framework.

(g) **Implementation Action Plan (IAP)**, describing the subproject with costs, schedule and financing plan; implementation arrangements with responsible agency and administrative arrangements for implementation; time-bound implementation plan, procurement schedule, financial and economic analysis with assessment of risks; monitoring and evaluation indicators to supervise physical progress and financial status. IAP shall comply with the WB requirements specified in separate guidelines.

Preliminary Designs, which shall contain:

(a) **Engineering Designs**, showing alignment of key storm drainage lines, and other main structures in adequate detail and on maps with scale of minimum 1:200, engineering report describing the designs and assumptions taken, updated implementation schedule and base cost estimates for major cost components, separately for civil works and equipment, project support and land acquisition showing foreign and local base costs, respective physical and price contingencies and estimate of total amount of taxes and duties; implementation methods, number of proposed contracts and procurement methods. Procurement shall comply with the GOP and World Bank requirements specified in separate guidelines.

(b) **Institutional Report**, designing in detail the recommended institutional improvements, management procedures, including budgeting, and typical tertiary

storm drainage; key job descriptions, training system and procedures outline training curricular and other strengthening measures;

(c) **Resettlement Action Plan**, with updated costs, budgets and implementation schedule for implementing resettlement; responsibility; monitoring and evaluation of resettlement process;

(d) **Indigenous Peoples Plan** - it documents the measures through which the subproject proponent will ensure that IPs affected by the project receive culturally appropriate social and economic benefits and incorporation in the project design of efforts to avoid, mitigate and compensate adverse effects of the subproject to way of life.

(e) **Environmental Management Plan**, in tabular form showing the set of mitigation, monitoring, and institutional measures/responsibilities to be taken during the implementation and operation phase of project development for the predicted environmental impacts.

(f) **Implementation Action Plan**, with updated schedule, costs, proposed financing and arrangements for implementation with dates for key actions and responsibility.

(g) **Engineering, Institutional and Environmental Aspects**, are mutually dependent and the Consultants will be responsible for ensuring that the institutional and environmental impact are appropriately reflected in recommended alternatives.

IV. TASKS

The objective of this consultancy is to complete the identified tasks from feasibility study, including preliminary engineering design. Tasks will include, but not necessarily be limited to the following:

(a) Assess the most appropriate investments for storm drainage in consultation with the Chief Executive of the Sub-borrower;

(b) Review the basis of rationale for the flood frequency to be used for design which is ten (10) years for canals and twenty five (25) years for closed conduits;

(c) Verify availability and suitability of sites recommended for treatment areas and flood control gates in the city and suitable for such purposes, having regard to occupancy, procurement costs and possible environmental and resettlement implications. Based on the land available, propose the treatment station and flood control gates for the storm drainage system, if applicable;

(d) Check whether it is technically and institutionally feasible to decentralize the urban wide storm drainage networks into two or more separate storm drainage zones, each with its own corresponding flood control gates;

(e) Identifying land to be acquired and affected persons, their economic status and impact of loss of land; compensation and assistance policies; institutional arrangements for processing resettlement, compensation and settling of

grievances; costs, budgets and implementation schedule of resettlement; monitoring and evaluation of resettlement process;

(f) Prepare the hydraulic and functional designs of the proposed facilities including flood control gates, drainage main, pumping stations, and primary, secondary, and tertiary (as appropriate) drainage collector lines;

(g) Estimate preliminary capital and O & M cost for the storm drainage facilities, and carry out, in consultation with the Financial Consultant, approximate FIRR and tariff calculations in order to establish financial viability and Sub-borrower's budget needed for twenty five (25) years of operation;

(h) Based on the feasibility study and preliminary design, prepare the draft Subproject Implementation Action Plans at the satisfaction of the WB;

(i) Prepare Resettlement Plan with updated costs, budgets, and implementation schedule for implementing resettlement, responsibility, monitoring and evaluation of resettlement process.

V. METHODOLOGY

The methodology to be employed in this consultancy will consist of visits to the subproject, discussions with LGU officials, situational reviews to confirm the efficacy of technical proposals, and desk reviews of the existing relevant feasibility and first stage priority reports.

The Consultant shall provide the topographic survey and will be responsible in deriving the elevations and locating the various utilities and infrastructures.

The Consultant shall also perform the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP). The FS Engineering Consultant will be responsible for maintaining overall consistency between the FS and the EIA as well between the Preliminary Design and the EMP. The Consultant shall field an Environmental Specialist as part of the team to work together with the rest of the specialist in the team, under the overall coordination of the PIU.

The Consultant shall also be responsible for the preparation of detailed engineering designs, including the preparation of design reports, bid documents and assistance in the bidding process.

VI. SERVICES AND FACILITIES TO BE PROVIDED TO THE CONSULTANT

The following services will be provided by the LGU without any costs to the Consultants.

Data — The Sub-borrower will provide the Consultants with access to all available data, information, maps, drawings and internal documents relevant to the consulting services. All reference material will be lent to the Consultants and shall be returned at the completion of the assignment or earlier as may be requested.

Access — The Sub-borrower will arrange for access by the Consultants to all water supply, drainage, sewerage and solid waste disposal facilities that the Consultants deem necessary to visit concerning performing their duties and

to the key officials in the LGU and LGU departments concerned with subjects related to the assignment.

Services The Sub-borrower will provide the Consultants during their stay in the subproject area with unlimited telephone and fax service within the City/Municipality/Province and the Philippines and Internet and E-mail service as required for the services.

VII. REPORTING AND SCHEDULE

In performing their duties, Consultants shall prepare reports in English and submit them to the Sub-borrower, LGUGC and WB in numbers and within the time periods indicated in Table 1. All major reports should contain an executive summary.

The **Inception Report** shall contain an inventory of available data and information, review of (a) existing drainage system and its physical state of repair, and (b) institutions and their relevant findings, adequate detailed work plan, and any major inconsistencies between the TOR and Consultants findings.

The **Intermediate Report** shall contain technological, institutional and financial options of the project with explanation and quantification of benefits, weakness and risks of each option, recommendation of optimal option and rational for selection.

The **Final Report** shall contain the Consultants' final findings and recommendations; it shall be issued at completion of:

(a) Feasibility study, and shall include institutional analysis, resettlement plan, and implementation action plan;

(b) Preliminary design, updated resettlement and implementation action plans; and

(c) Environmental impact assessment report.

The above reports will be produced first as draft final reports and finalized upon review by the PIU. The draft final reports will be reviewed at SB's/SP meetings which will have a form of workshops with the Consultants' presentation. The workshops will be organized by the Consultants according to the Sub-borrower's instruction. A period of one month shall be allocated in the schedule for such reviews.

Table 1 Reporting Requirements

Report	Number of Copies	Timing in Months from Start
Inception Report	6	2 and ½
Intermediate Report	6	3
Draft Report – Feasibility and Environmental Assessment Study	6	4 and 1/2
Final Report – Feasibility and Environmental Assessment Study	6	5 and 1/2

The Consultant will submit to Sub-borrower, LGUGC and the WB copies of all of the above-mentioned reports in Microsoft Word and Excel files by e-mail. Later, two hard copies of the reports should be sent to the three institutions.

SAMPLE TERMS of REFERENCE for an ESIA PREPARER

1. INTRODUCTION / BACKGROUND INFORMATION

A brief introduction about the proposed subproject is given below:

"The goal of the subproject (Drainage System Improvement Work) is to minimize if not totally eliminate the occurrence of flooding in the city proper by replacing the existing and mostly silted drainage structures with an entirely new system. The existing drainage system receives wastewater from the septic tanks overflow of several residential households and commercial/ industrial establishments, but no records on the number of households/ establishments currently discharging into the systems are available. With this recent environmental situation, a combined sewer system (drainage-sewerage) was envisioned for the barangays that constitutes the city urban center. The Sub-borrower through its Project Implementation Unit (PIU) will be responsible for the implementation of the subproject".

2. OBJECTIVES

This Terms of Reference outlines the requirements for consultancy service for the preparation of an Environmental Assessment Report (**Initial Environmental Examination - IEE**), which will address the environmental and social impacts of the proposed "**Drainage System Improvement Works**" for the Name of the Sub-borrower.

In general terms, the environmental assessment (IEE) report provides a linkage between the proposed project's overall social and environmental impacts and its physical development. The IEE report identifies spatial areas of a community where physical development is planned with its corresponding environmental impacts.

In more specific terms, the IEE preparer / consultants should come up with an Environmental and Social Assessment report and perform consultancy tasks by means of:

(a) Proper identification, quantification, and qualification of the environmental and social impacts of the proposed **drainage system improvement project** within the Name of the Sub-borrower;

(b) Formulation of an Environmental Management Plan (EMP) that will explain the cost-effective measures for the abatement of negative environmental impacts of the proposed development;

(c) Formulation of a Resettlement Action Plan (RAP) for displaced persons in the event the need arises; and IP Plan (in case needed) to ensure that project design is culturally sensitive and that benefits are enhanced for the IPs.

(d) Presentation of the environmental assessment (EA) report (IEE) for the concurrence of the Sanguniang Bayan/Panlungsod/Panlalawigan of the LGU, the Board of public utilities / private sector or Project Implementation Unit (PIU);

(e) Representation in behalf of the Name of the Sub-borrower during the technical review of the IEE by the Department of Environment & Natural Resources-Environmental Management Bureau (DENR-EMB) regional office for the issuance of an Environmental Compliance Certificate (ECC); and

(f) Collaboration with the consulting firm making the Feasibility Studies (FS) by providing sound advice during the selection of project alternatives.

3. ENVIRONMENTAL AND SOCIAL ASSESSMENT REQUIREMENTS

(a) All environmental and social assessments shall conform to the S2LDIP Integrated Environmental and Social Safeguards Framework furnished to the consultant and the guidelines of the Procedural Manual of DENR Administrative Order 2003-30 and NCIP Administrative Order No. 3 Series of 2012.

(b) Other national laws and/or regulations on environmental and social reviews and impact assessments; regional, provincial, or city environmental assessment regulations.

(c) The Consultants shall undertake field surveys, surface and storm water quality investigations and tests required to ensure the environmental acceptability of storm water discharge.

(d) The Consultants shall apply his own professional stamp or seal and signature to each pertinent document to identify his professional responsibility.

4. STUDY AREA

A brief description of the study area is provided below:

5. SCOPE OF WORK

The preparation of the IEE report requires close coordination with the proponent (PIU), FS consultancy firm, and LGUGC-PMO of S2LDIP, and a consultation process with the stakeholders. The tasks in carrying out the IEE shall include the following:

Task 1 Description of the Proposed Subproject. Provide a brief description of the relevant parts of the subproject, using maps (at appropriate scale/readable) where necessary, and including the following information: location; general layout; size, capacity, circulation system, etc.; pre-construction activities; construction activities; schedule / construction timetable; staffing and support; facilities and services; operation and maintenance activities; required off-site investments; life span / design life.

Task 2 Description of the Environment. Assemble, evaluate and present baseline data on the relevant environmental characteristics of the study area. Include information on any changes anticipated before the subproject commences.

(a) Physical environment: geology (secondary data); soils; climate and meteorology; ambient air quality; surface and ground water hydrology; existing water pollution discharges; receiving water quality.

(b) Biological environment: flora (secondary data); fauna (secondary data); rare or endangered species; sensitive habitats, including parks or preserves, species with potential to become nuisances, vectors or dangerous (secondary data).

(c) Socio-cultural environment (include both present and projected where appropriate): population; land use; planned development activities; community structure; employment; distribution of income, goods and services; public health; cultural properties (if there applicable). If IPs are

present, include their leadership system and mechanisms for consultation and decision making.

Task 3 Legislative and Regulatory Considerations Relative to the Subproject. Describe the pertinent regulations and standards governing environmental quality, health and safety, protection of sensitive areas, protection of endangered species, silting, land use control, etc., at national, regional and local levels

Task 4 Determination of the Potential Impacts of the Proposed Subproject. In this analysis, distinguish between significant positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts. Identify impacts, which are unavoidable or irreversible. Wherever possible, describe impacts quantitatively, in terms of environmental costs and benefits.

Assign economic values when feasible. Characterize the extent and quality of available data, explaining significant information deficiencies and any uncertainties associated with predictions of impact.

(a) Subproject Location: resettlement of people; presence of IPs and or ancestral domains; and impact on flora and fauna.

(b) Subproject Design: disruption of hydrology; drainage problems; design of drainage component structures; crossings for people and animals.

(c) Construction Works: soil erosion; construction spoils (disposal of); sanitary conditions and health risks associated with construction camp and workers coming into area; social and cultural conflicts between imported workers and local people.

(d) Subproject Operation: changes in ground water levels inside and outside command (project) area; changes in surface water quality and risks of eutrophication; incidence of water-borne and water-related diseases.

Task 5 Development of Management Plan to Mitigate Negative Impacts. Recommend feasible and cost-effective measures to prevent or reduce significant negative impacts to acceptable levels. Estimate the impacts and costs of those measures, and of the institutional and trainings requirements to implement them. Consider compensation to affected parties for impacts, which cannot be mitigated. Consider the need to engage in free, prior and informed consultation with the indigenous peoples if present in project site. Prepare a management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures.

Task 6 Identification of Institutional Needs to Implement Environmental and Social Assessment Recommendations. Review the authority and capability of institutions at local, provincial/regional, and national levels and recommend steps to strengthen or expand them so that the management and monitoring plans in the environmental assessment can be implemented. The recommendations may extend to new laws and regulations, new agencies or agency functions, inter-sectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

Task 7 Development of a Monitoring Plan. Prepare a detailed plan to monitor the implementation of mitigating measures and the impacts of the proposed subproject during construction and operation.

Include in the plan an estimate of capital and operating costs and a description of other inputs (such as training and institutional strengthening) needed to carry it out.

Task 8 Assist in Inter-Agency Coordination and Public Participation. Scoping report and process documentation summarizing the presentation of participants; issues, concerns, and interest addressed; process by which agreements or resolutions were arrived, stakeholders who most actively participated; those who were present but were quiet, those who were not represented; and the outcome of the consultation activity.

Represent the Sub-borrower in the technical and environmental and social review of the proposed development by the DENR-EMB and NCIP for the issuance of an Environmental Compliance Certificate (ECC) and Certificate of Precondition or Certificate on Non-Overlap respectively. Where required, additional data shall be analyzed and incorporated in the IEE / EA report. Prepare all additional information that may be requested by the environmental impact assessment review team for the expeditious release of the ECC.

Task 9 Development of a Resettlement Action Plan (RAP). When necessary, in the case of displaced communities a resettlement action plan should be incorporated in the IEE / EA report.

Task 10 Development of the Indigenous Peoples Plan. When necessary, should also be part of the EA Report.

6. REPORT SUBMISSIONS

The EA report should be concise and limited to significant environmental and social issues. The main text should focus on findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references used in interpreting those data.

The Consultant shall be responsible in maintaining overall consistency between the Rapid Assessment design outputs of the FS consulting firm. The Consultant and the FS Consulting Firm are expected to work closely together as a team, under the overall coordination of the PIU and guided by LGUGC-PMO.

The following services and facilities will be provided by the Sub-borrower (through its PIU) without any costs to the Consultant.

Data The Sub-borrower will provide the Environmental and Social Consultants with access to all available data, information, maps, drawings and internal documents relevant to the consulting services. All reference material will be lent to the Consultants and shall be returned at the completion of the assignment or earlier as may be requested.

Access The Sub-borrower shall arrange the accessibility for the EA and Social Consultant to the subproject area's socio-economic profile, water supply systems, drainage systems, sewerage and solid waste disposal facilities that the Consultant deems necessary to visit concerning the function of their duties. The Sub-borrower shall likewise arrange meetings with key officials in the City/Municipality/Province, public utilities and private sector group and relevant offices concerned with the implementation of the proposed subproject.

Services The Sub-borrower will provide the Consultant during his/her stay in the City with unlimited telecommunication facilities (telephone and fax service) within the City/Municipality/Province, subproject area and the Philippines and Internet and E-mail service as required for the services.

ANNEX 15

Philippine Renewable Energy Development Social Safeguards Policy Framework

PHRED Land Acquisition, Resettlement and Rehabilitation Policy Framework

Introduction:

These Policy Framework and Implementation Guidelines are adopted to govern the conduct of land acquisition, resettlement or rehabilitation of displaced persons (DPs) or project affected persons (PAPs) of the Philippine Renewable Energy Development Project (PHRED). The magnitude of adverse impacts are projected to be minimal due to the nature of the sub-projects which are expected to be small since the implementing electric cooperatives, renewable energy developers and independent power providers will be relying on credits they will raise from commercial banks. These are small hydroelectric plants and rehabilitation/expansion of distribution and transmission lines meant to improve supply side efficiency.

This document is essentially based on the following issuances:

Executive Order 1035, Procedures and Guidelines for the Expeditious Acquisition by the Government of Private Real Properties or Rights thereon for Infrastructure and Other Government Development Projects. June 1985

Executive Order 132, Procedures to be followed in the Acquisition of Private Property for Public Use and Creating Appraisal Committee

Supreme Court Ruling (1987), Defines just compensation as fair and full equivalent for the loss sustained, taking into account improvements, location, capabilities, etc.

RA 6389, Provides for disturbance compensation to agricultural leases equivalent to 4 times the average gross harvest in the last 5 years.

RA 7279, Urban Development and Housing Act of 1992, Provides guidelines for resettlement of persons living in danger areas, e.g. riverbanks, shorelines & waterways or areas where government infrastructure projects are about to be implemented. Guidelines cover the provision of basic services & facilities in resettlement sites, livelihood support, meaningful participation & adequate social preparation for the affected households, close coordination between sending & host LGUs, grievance redress and related aspects.

RA 8974 (2000), Aims at ensuring that owners of real property acquired for NG infrastructure projects are promptly paid just compensation. It also provides for the compensation of affected improvements & structures at replacement cost without depreciation & inclusive of labor costs for reconstruction) & the arrangement of independent appraisers for a more accurate determination of the market values of lands and improvements. Section 5 provides for standards in the determination of the fair market value of land:

Section 5. Standards for the Assessment for the Value of the Land Subject of Expropriation Proceedings or Negotiated Sale – In order to facilitate the determination of just compensation, the court may consider, among other well-established factors, the following relevant standards: (i) the classification and use for which the property is

suited; (ii) the development cost for improving the land; (iii) the value declared by the owners; (iv) the current selling price of similar lands in the vicinity; (v) the reasonable disturbance compensation for the removal and/or demolition of certain improvements on the land and for the value of improvements thereon; (vi) the size, shape or location, tax declaration and zonal valuation of the land; (vii) the price of the land as manifested in the ocular findings, oral as well as documentary evidence presented; and (viii) such facts and events as to enable the affected property owners to have sufficient funds to acquire similarly-situated land of approximate area.

Commonwealth Act 141- Public Lands Act (1936) Institutes classification & means of administration, expropriation and disposition of alienable lands of the public domain; and under Section 112, lands awarded for Free Patent are "subject to a right-of-way not exceeding sixty (60) meters in width for public highways, railroads, irrigation ditches, aqueducts, telegraph and telephone lines and similar works as the Government or any public or quasi-public service or enterprise, including mining or forest concessionaires, may reasonably require for carrying on their business, with damages for the improvements only."

World Bank Operational Policy 4.12, Involuntary Resettlement. October 2001

Definition of Terms:

In order to ensure that implementation of the policies and guidelines is unified throughout the project, certain terms commonly used in relation to these guidelines are defined as follows:

Displaced Persons (DPs) or **Project Affected Persons (PAPs)** refer to any person or persons who would be identified, through a baseline census information collected for each of the subprojects to be affected by any of the following circumstances: i) Acquisition or possession by the Project, in full or impart, permanent or temporary, of any title, right or interest over house/s, land/s (including but not limited to residential, agricultural and grazing lands) and/or any other fixed/movable assets; ii) Acquisition or possession by the Project of crops (annual and perennial) and trees whether partially or in whole; iii) Whose business/livelihood is in part or as a whole affected by the Project.

Land Acquisition refers to the process whereby a person or entity is compelled by a public agency to alienate all or part of the land a person/entity owns or possesses, to the ownership and possession of that agency for public purpose in return for a consideration.

Replacement Cost refers to the value determined to be fair compensation for real property based on its productive potential, replacement cost of houses and structures (as reckoned on current fair market price of building materials and labor without depreciation or deductions for salvaged building materials), and the market value of residential land, crops, trees and other commodities.

Resettlement refers to all measures taken to mitigate any and all adverse impacts of the project on PAP's property and/or livelihood including compensation, relocation and rehabilitation (where applicable).

Relocation refers to the physical relocation of a DP from his/her pre-project place of residence.

Rehabilitation refers to compensatory measures provided under these guidelines other than payment of the replacement costs of acquired or affected assets.

Compensation refers to payment in cash or in kind of the replacement costs of the acquired or affected assets.

Objective and Features of the Policy:

The principal objective of this document is to ensure that all persons directly displaced by land acquisition due to the subproject are assisted in their socio economic recovery so that their way of life is the same if not better than pre displacement level. The document lays down the principles and objectives, eligibility criteria of entitlements, legal and institutional framework, modes of compensation, people participation features and grievance procedures that will guide the implementation of compensation for DPs.

Principles and Objectives: The principles outlined in the World Bank's Operational Policy 4.12 have been adopted in preparing this document. In this regard, the following principles will govern Project implementation:

1. Acquisition of land and other assets should be avoided, where feasible, and minimized as much as possible.
2. All DPs residing or cultivating land, working, doing business, or having rights of ownership or established possession along segments of lands to be utilized/traversed/improved/rehabilitated by the Project, as of the time of conduct of the baseline surveys, are entitled to be provided with compensation sufficient to assist them to improve or at least maintain their pre-Project living standards, income earning capacity and production levels.
3. Lack of legal rights to land will not bar the DP from entitlement to such compensation or rehabilitation measures for assets (structures, crops etc) lost.
4. Replacement agricultural land will be as close as possible to the land that was lost and is acceptable to the DPs.
5. All replacement land for agriculture, residential and business use will be provided with secured tenure status and without any additional cost, taxes and surcharges to the DPs at the time of transfer.
6. Planning and implementation for acquisition of land and provision of compensation will be carried out in consultation with the PAPs, to ensure minimal disturbance and transparency in transactions between the Project implementers and DPs.
7. Entitlements will be provided to DPs no later than one month prior to expected start-up of works at the respective subproject site. Construction work will not be initiated until DPs are compensated or adequately relocated.
8. Financial and physical resources for compensation will be made available as and when required.
9. Community infrastructure, which are affected must be restored or replaced.
10. Institutional arrangements should be in place to ensure the effective and timely design, planning, consultation and implementation of the Inventories.
11. Effective and timely implementation supervision, monitoring and evaluation of compensation action plans must be carried out.

Social Assessment

A census of affected persons and socio economic situation of each household needs to be done to determine the pre project situation of the affected persons. This will inform on the preparation of the Resettlement Action Plan and provide indicators for assessing the effectiveness of the RAP in improving or at the least, restoring the condition of the displaced person to his pre-project condition. It should cover the following items

1. current occupants of the affected area to establish a basis for the design of the resettlement program and to exclude subsequent inflows of people from eligibility for compensation and resettlement assistance;
2. standard characteristics of displaced households, including a description of production systems, labor, and household organization; and baseline information on livelihoods (including, as relevant, production levels and income derived from both formal and informal economic activities) and standards of living (including health status) of the displaced population;
3. the magnitude of the expected loss—total or partial—of assets, and the extent of displacement, physical or economic;
4. information on vulnerable groups or persons for whom special provisions may have to be made. This may include people with disabilities, the elderly and women headed households;
5. provisions to update information on the displaced people's livelihoods and standards of living at regular intervals so that the latest information is available at the time of their displacement;
6. public infrastructure and social services that will be affected; and
7. social and cultural characteristics of displaced communities, including a description of formal and informal institutions (e.g., community organizations, ritual groups, nongovernmental organizations (NGOs)) that may be relevant to the consultation strategy and to designing and implementing the resettlement activities.

Entitlement Framework

In determining the amount of compensation and assistance to be received by displaced or affected persons, the compensation matrix found in the attachment shall be followed.

To respond to occasions when DPs lack the required minimum documentation of Tax Declaration Certificates to establish facts of possession for lands to be purchased for Project infrastructure, 30 day public notices posted at barangay and municipal halls shall be allowed prior to the acceptance of the person as DPs. If no competing claims/protests are received by the LGUs, notarized certifications attesting claims to such properties must be

acknowledged by at least 5 adjoining lot owners, three officials of the Barangay Council, and noted by the Municipal Assessor, to entitle the DP to compensation. This is different from the case when a person occupies a property that he does not own; in this case, the DPs is not compensated for land but may be compensated for affected structure, crops or trees that will be adversely affected by the project.

Modes of Land Acquisition

Private assets (e.g., land, structures and other improvements) will be acquired for the Sub-project through:

- Donation and/or grant of ROW
- Negotiated purchase, which is also equivalent to voluntary sale or willing buyer/willing seller scheme
- Expropriation
- Usufruct
- Lease Agreement

For land donation it is important to examine the processes and documents to ensure that donation was not coerced. The following protocol is prescribed to help ensure that donation is voluntarily done:

1. Ensure transparency of information and process in getting informed consent of the potential donor. The affected parties must understand:
    a. what the land is going to be used for, by whom and for how long;
    b. that they will be deprived of the ownership or right to use the land, and what this really means;
    c. that they have an right to refuse to donate the land;
    d. whether there are alternatives to using this land;
    e. what they will need to do to donate the land and the costs involved (e.g. execute documents, get spouse consents, pay taxes);
    f. The effect of the donation on their family, and what they can do if they (or their family or heirs) want the land back.
    g. His right to refuse must be a legitimate right, unconditional, and the potential transferee must be capable of exercising it in the local community and political context. The decision to donate must be made without coercion, manipulation, or any form of pressure on the part of public or traditional authorities.
    h. For collective or communal land, donation must be based upon the informed consent of all individuals using or occupying the land.
2. The proportion of land donated by any individual does not exceed 10 percent of the potential donor's land holding.

3. Voluntary land donation will not cause any household relocation to include those who may be informal settlers.

4. Voluntary land donation should be used only to support small scale community infrastructure, where the impacts are minor. For PHRED potential projects this may be applicable to small right of way.

5. There should be a clear agreement as to which party will pay the costs associated with the donated land. This could include measurement costs, documentation and notarial fees, transfer taxes, registration fees. It should also include the costs of re measuring/re titling the transferee's remaining land and any new documentation relating to it.

6. Ensure that the documentation establishes a deadline to initiate project use of donated land.

Thereafter, specific due diligence must be conducted on each parcel of land proposed for donation to identify:

- The owner or owners of the land
- The users of the land, or any parties that occupy the land (either physically or through ownership of an asset or conduct of livelihood or business activities on the land)
- Any competing claims of ownership or use
- Structures and assets on the land
- Any encumbrances on the land

It is important to (i) identify the right that is being transferred (an ownership right, a use right, a right of way etc.) and (ii) check whether the transferee actually has the right s/he claims to have. In some circumstances – but not all – the transferee will have documentary evidence of such right. Where no such evidence exists, the due diligence can establish rights by speaking with local community officials and neighbors. If careful due diligence has not been carried out, significant conflict has arisen at the later stage if another party claims that they have the same or a competing right.

The Sub-project Proponent may seek the imposition of an Easement of Right-of-Way (ROW) provided for under the Philippine Civil Code. In such cases, a ROW easement agreement will be executed by the property owner and the Sub-project Proponent, whereby the former will grant the latter the right to use the affected portion of the lot, as ROW, but the owner retains ownership of the said portion of the lot. In these cases, the Sub-project Proponent may pay the owner the value of the affected portion of the lot based on an independent appraiser carried out according to internationally accepted norms. In addition, the Sub-project Proponent shall compensate the property owner at replacement cost for any improvements and/or structures on the land affected by the ROW. The Sub-project Proponent will enter the easement area after the provision of the full payment for the easement to the property owner. The ROW easement agreement will be immediately registered with the Registry of Deeds.

The Sub-project Proponent may also acquire a property through usufruct. The property owner retains the naked ownership of the land, while the Sub-project Proponent enjoys the benefit of the use of land. The Sub-project Proponent and the property owner will execute a usufruct agreement. The agreement will cover the rights and responsibilities of the two parties, including the duration of the usufruct which should not be lower than the project life.

The Sub-project Proponent may also acquire lands through lease agreements with the rightful property owner. The Sub-project Proponent and the property owner will execute a Lease Contract. The contract will cover the rights and responsibilities of the two parties, including the duration of the lease which should not be lower than the project life.

In the case of negotiated purchase, the Sub-project Proponents will offer as the purchase price an amount equal to the replacement cost of the assets, as determined by an independent appraiser using internationally accepted procedures. This arrangement is a private land purchase - willing seller willing buyer arrangement, and it does not trigger WB OP 4.12. Most of land acquisition for recent sub projects of ECs used this transaction.

There are however instances when this can trigger OP 4.12 when the purchase of land is done by a government entity which has the authority to expropriate private land for public good. This happens when the project is site specific and alternate land that suits subproject design is not just difficult but may be impossible to find without significantly increasing the cost of construction. For such purposes, it is important that:

1. All displaced persons which includes owners and occupants are informed and consulted on the same items found above in item 1 for land considered for donation.
2. Minimize land acquisition. Towards this encourage the participation of DPs during planning and implementation of RAP.
3. The land owner of partially acquired land equal to or beyond 20% may seek payment for the entire property since such loss may lead to loss of the economic value of the land.
4. Additional grants and allowances to top up the compensation that may be prescribed by national laws to make up for issues in compensation related to replacement value, lost income specially for commercial properties be used.
5. Land for land compensation (of equal value and land use) should be considered when this is feasible.
6. Special assistance shall be provided to vulnerable groups (women headed households, elderly and disabled) to prevent being worse after relocation.
7. Community facilities damaged or displaced by proposed civil works should be replaced/ repaired at cost of sub proponent.
8. Document all issues related to RAP. A project cannot be considered complete when there are outstanding issues and these should be subject of supervision activities.

For detailed guidance particularly on compensation, see Attachment 5 of this framework.

All land transaction should be registered with the Registry of Deeds for annotation in the title of subject property.

Implementation Arrangement

The responsibility for implementing the policy and guidelines set forth in this document are as follows:

Subproject stages	TASKS	Responsible Unit	When
1. Screening	Identifying which of the subprojects will have involuntary resettlement impacts. Use both the Screening Checklist found in Annex 2 and the Subproject Checklist (Attachment 1 of LARRPF; Annex 15)	Subproject proponent in coordination with NEA – ORED for the PHRED project. ORED copies WB and LGUGC of received Completed checklists for potential subprojects as part of the periodic monitoring report.	During the project development which is way upstream of the PHRED process which starts when the sub project enrolls for guarantee.
2. Preparation of RAP	Using Attachment 2 of this framework, sub project proponent decides which required document is needed. (full or abbrev. RAP) Includes in the TOR of ESIA consultants, the preparation of the RAP. For completeness of contents, the outline for full RAP is in Attachment 3 and that of abbreviated RAP is in Attachment 4	Subproject proponent with technical advice/ guidance from NEA ORED The ESIA Consultant in the preparation of the RAP shall ensure the participation of the DPs through consultation with them in identifying interventions that are fair and just. Also coordinates with LGUs and other entities for role clarification and availability of required resources.	Feasibility time, still upstream of the PHRED process.
3. Implementation	Conduct of activities to comply with the RAP.	Subproject proponent with cooperation from LGUs and other agencies and organizations for provision of planned mitigation.	Prior to implementation of sub project.

4. Monitoring and Evaluation	Submission of progress reports by subproject proponent to NEA ORED with copy to LGUGC. For projects that will be enrolled as pipeline projects of PHRED. LGUGC submits this report together with RAP to WB Task Team together with request for Guarantee coverage. Bank clears for guarantee coverage if compliance to RAP has been completed, if not an Updated RAP is prepared, implemented and monitored.	Sub project proponent/ ORED LGUGC WB Task Team for full RAP and first 3 abbreviated RAPs.	Prior to issuance of proof of PHRED guarantee coverage

Public Consultation

This Framework is a product of the consultation done in May 16, 2013 in a public place in Makati City organized by LGUGC. The key stakeholders that attended the Public Consultation are: representatives of ECs, Renewable Energy Developer, DOE, NEA and several commercial private banks likely to invest in the energy sector and other civil society groups concerned with renewable energy developers.

Sub project consultation will start when the sub project proponent has identified the exact location of the infrastructure and the technical requirements for site selection have been fulfilled. The stakeholders of the area including the DPs will be fully informed about the sub-project and about the provisions of this Land Acquisition, Resettlement and Rehabilitation Policy Discussions will take place in this meeting(s) to solicit suggestions to minimize impacts to households are minimal, and ensure that conditions for acquisition of assets are fully understood by all parties involved. A series of meetings and consultations will follow to cover the following:

- An orientation on the Decentralized Rural Electrification Project and its Components X Subproject proposal, its benefits and possible negative impacts
- Location of proposed infrastructure and transmission lines (if applicable) -Schedules of implementation,
- LARR policy and its implementation arrangements
- Discussions on Compensation for Acquisition of Properties; this may be exclusively for DPS and in some instances done on a one on one.

- Conditions and documentation requirements for Sale or Donation of specific properties/assets to be affected
- Grievance mechanisms and processes;.
- Meetings to share updates on the developments of the project in general and RAP in particular including resolutions/ updates on issues and complaints received

Copies of the key information on the Project background, LARR policies and entitlements will be written in the dialect understood by DPs and distributed among them, preferably before the public meeting.
When issues have been lodged a walk-thru to determine its specific location of on the ground will be arranged by the sub-project Proponents. Field verification activities will be conducted with the technical design engineers present.
All consultation meetings and other activities shall be properly documented.
In the event that a subproject involves acquisition of land and other assets results to adverse impacts, the LGUGC shall withhold approval of the subproject for guarantee coverage unless a compensation package or Certifications of Waivers in accordance with this document, satisfactory to all concerned, is agreed upon between the subproject proponent and the owners/tenants of land/asset affected including those who stand to lose their crops, jobs or sources of income.
The determination of the compensation for each of the affected households can be obtained from an independent land appraiser who should be consulted to provide the basis for land valuation at the expense of the proponent when such is the issue.

Supervision, Monitoring and Evaluation

Implementation of the Resettlement/ Land acquisition action plans will be regularly supervised and monitored by the respective proponents' Land Acquisition and Resettlement Committees. The findings will be recorded in the progress reports to be submitted by sub-project proponents to the PMB and LGUGC. Prior to enrollment for guarantee coverage which will most probably beyond the time RAP ia prepared and implemented, the LGUGC ensures the completion of accurate information on the following:

- The baseline information of all DPs , the valuation of assets lost or damaged, the provision of compensation and other entitlements, and relocation have been carried out in accordance with the provisions of this LARR Policy Framework, the respective inventory and land acquisition action plans.
- Determine whether the procedures for DPs orientation, consultation meetings, participation, relocation and delivery of compensation and other entitlements have been done in accordance with this LARR Policy;
- If legacy issues are found, verify and take follow-up action to ensure that funds for implementing the remaining actions for Resettlement/ land acquisition action plans are provided by the proponent in a timely manner and in amounts sufficient for their purposes, and those funds are used in accordance with the provisions of the respective land acquisition and resettlement plan.

- Assess if the objectives on the restoration of living standards and income levels of displaced persons have been met;
- Gather qualitative and quantitative indications of the social and economic impact of subproject implementation on the DPs;
- Suggest modifications on the implementation procedures of the inventories and the land acquisition and action plans, as the case may be, to achieve the principles and objectives of this document.
- Record all grievances and their resolution and ensure that complaints are dealt with in a timely manner.

Costs and Budget

Each Resettlement and Land Acquisition Action Plan will include detailed costs of acquisition, compensation and other entitlements, with a breakdown of replacement or rehabilitation costs for agricultural land, residential land, business land, houses, business and other assets, public facilities and services, and utilities. The budget will also include adequate provisions for continuous consultation and information dissemination (production and distribution of materials containing Project information and the LARR policy) and project supervision to be included for each sub-project package.

Grievance and Redress Mechanism

A grievance redress mechanism for the project is necessary for addressing legitimate concerns of affected individuals and groups who may consider themselves deprived of appropriate treatment under the project. Other proponents, such as Electric Cooperatives (ECs), have Membership/Consumer/Public Complaints Sections to address all complaints and grievances received from members of the cooperative and the general public. The Public Complaints Sections will be responsible to address and resolve any grievances from the public regarding the sub-projects. Complaints and grievances related to any aspect of the sub-projects, including environmental and social safeguards issues, will be addressed as follows:

•Step 1: Complainants will present their complaints and grievances to the Barangay officials for onward transmission of their complaints to the concerned proponent. The Proponent, together with the LGU officials, will make every attempt to resolve the grievances at the local level.

•Step 2: If the complaint is not addressed to the satisfaction of the complainant, or remains unresolved, for 15 days from the date of first submission, the complainant may then submit his/her complaint directly to the Institutional Development Department of the National Electrification Administration (NEA). NEA shall furnish LGUGC with a copy of the complaint for monitoring and sharing with WB.

•Step 3: If the complaint is not addressed to the satisfaction of the complainant within 15 days from the date of submission to the proponent or remains unresolved, the complainant can approach the court of law within the jurisdiction of the EC and the complainant.

The following principles will apply to address complaints and grievances in the project:

- All complaints should be written. If received verbally, these shall be properly documented by the concerned proponent. It shall put all relevant details of complaints and the actions taken on their respective websites;

- The LGUGC will appoint designated staff with the responsibility to address complaints related to the project;

The ECs will maintain proper documentation of all complaints received and actions taken. They will submit a report on these to the LGUGC, who shall be responsible for sub-project monitoring. The LGUGC PMB will monitor said complaints as part of their due diligence. They will closely coordinate with the sub-project proponents on possible remedial actions to resolve complaints expeditiously and adequately. They will submit to the Bank, a report on the complaints and the steps taken by the sub-borrowers to resolve the complaint, as part of the semi- annual SECR.

Attachment: 1

SUBPROJECT CHECKLIST FOR LAND, PERSONS AND ASSETS AFFECTED

Social Impact	Yes	No	Specify Details
INVOLUNTARY RESETTLEMENT			
Land acquisition necessary			Indicate land size and land use prior to project
Households/persons to be displaced			Total number of households and total number of persons
Presence of informal settlers			Total number of informal settlers
Legal structures acquired/ damaged			Number, size, built of structures, Classification based on use (dwelling, shop, animal shelter, etc.)
Informal structures to be removed			Number, size, built of structures, Classification based on use (dwelling, shop, animal shelter, etc.)
People losing means of/access to livelihood			Total number of households and total number of persons
Basic services/facilities that will be inaccessible			Number and types of services/facilities (Water supply, power connection, road, school, market, religious center, etc.)
Crops, trees that will be lost/damaged			Number and type of crops and trees
Tenants/lessees losing crops and /or trees			Number of tenants/households and persons losing what type of crop/trees and the number of crop and trees e.g. 5 households will be losing 6 mango trees; 7 households will be losing > 0.5 hectares of vegetables
Informal settlers losing crops/trees			Number of informal settlers households and persons losing what type of crop and/or tree; and number of crops or trees
INDIGENOUS PEOPLES			
Ancestral domain affected			Land area (hectares)
			Name of affected ethnic group, number of households and persons per ethnic group affected Indicate impact/effect per ethnic group

Attachment 2:

PROJECT DATA AND REQUIRED SOCIAL SAFEGUARD DOCUMENTS

No. of Displaced Persons	**Required Documents**
• More than 200 persons • Adversely affected ancestral domain and indigenous cultural communities	• Full Resettlement Plan • Indigenous Peoples Plan
• Less than 200 persons will be relocated or less than 10% of their assets are displaced • Presence of an ethnic community outside their ancestral domain which has retained its indigenous system or way of life (different from the mainstream community) and no adverse impact	• Abbreviated Resettlement Action Plan • Indigenous Peoples Plan
• No relocation; impacts are limited to temporary disturbances	• ARAP; Compensation Plan

Attachment 3

Full RESETTLEMENT ACTION PLAN OUTLINE

1. Description of the project.

2. Objectives.

3. Social Assessment

(a) The results of a census survey covering:

- Current occupants of the affected area to establish a basis for the design of the resettlement program and to exclude subsequent inflows of people from eligibility for compensation and resettlement assistance;

- standard characteristics of displaced households, including a description of production systems, labor, and household organization; and baseline information on livelihoods (including, as relevant, production levels and income derived from both formal and informal economic activities) and standards of living (including health status) of the displaced population;

- The magnitude of the expected loss—total or partial—of assets, and the extent of displacement, physical or economic;

- Information on vulnerable groups or persons as provided for in WB OP 4.12, para. 8, for whom special provisions may have to be made; and

- Provisions to update information on the displaced people's livelihoods and standards of living at regular intervals so that the latest information is available at the time of their displacement.

- Public infrastructure and social services that will be affected; and

- Social and cultural characteristics of displaced communities, including a description of formal and informal institutions (e.g., community organizations, ritual groups, nongovernmental organizations (NGOs)) that may be relevant to the consultation strategy and to designing and implementing the resettlement activities.

4. Legal framework.

- the applicable legal and administrative procedures, including a description of the remedies available to displaced persons in the judicial process and the normal timeframe for such procedures, and any available alternative dispute resolution mechanisms that may be relevant to resettlement under the project;

- Gaps, if any, between local laws covering eminent domain and resettlement and the Bank's resettlement policy, and the mechanisms to bridge such gaps; and

- any legal steps necessary to ensure the effective implementation of resettlement activities under the project, including, as appropriate, a process for recognizing claims to legal rights to land—including claims that derive from customary law and traditional usage (see WB OP 4.12, para.15 b).

5. Institutional Arrangement.

- The identification of agencies responsible for resettlement activities and NGOs that may have a role in project implementation;

- An assessment of the institutional capacity of such agencies and NGOs; and

- Any steps that are proposed to enhance the institutional capacity of agencies and NGOs responsible for resettlement implementation.

6. Eligibility.

Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.

7. Valuation of and compensation for losses computed at replacement value.
8. The methodology to be used in valuing losses to determine their replacement cost;
9. Resettlement measures.

This describes the package of compensation and other resettlement measures that will assist each category of eligible displaced persons to achieve the objectives of the RAP. In addition to being technically and economically feasible, the resettlement packages should be compatible with the cultural preferences of the displaced persons, especially if they are IPs, and prepared in consultation with them.

10. Site selection, site preparation, and relocation.

Alternative relocation sites considered and explanation of those selected,

11. Housing, infrastructure, and social services.

- Plans to provide (or to finance resettles' provision of) housing, infrastructure (e.g., water supply, feeder roads), and social services (e.g., schools, health services); and

- Plans to ensure comparable services to host populations; any necessary site development, engineering, and architectural designs for these facilities.

12. Environmental protection and management.

A description of the boundaries of the relocation area; and an assessment of the environmental impacts of the proposed resettlement and measures to mitigate and manage these impacts (coordinated as appropriate with the environmental assessment of the main investment requiring the resettlement).

13. Community participation and integration with host community

- Description of the strategy for consultation with and participation of resettlers and hosts in the design and implementation of the resettlement activities;

- A summary of the views expressed and how these views were taken into account in preparing the resettlement plan;

- Arrangements for addressing any conflict that may arise between resettlers and host communities; and

- Any measures necessary to augment services (e.g., education, water, health and production services) in host communities to make them at least comparable to services available to resettlers.

14. Grievance procedures.

Affordable and accessible procedures for third-party settlement of disputes arising from resettlement; such grievance mechanisms should take into account the availability of judicial recourse and community and traditional dispute settlement mechanisms.

Attachment 4

ABBREVIATED RESETTLEMENT ACTION PLAN

An abbreviated plan covers the following minimum elements:

1. Census survey of displaced persons and valuation of assets;
2. Description of compensation and other resettlement assistance to be provided;
3. Consultations with displaced people about acceptable alternatives;
4. Institutional responsibility for implementation and procedures for grievance redress;
5. Arrangements for monitoring and implementation; and
6. Timetable and budget.

Attachment 5

COMPENSATION AND ENTITLEMENT TABLE

Type of Loss	Application	Entitled Person	Compensation / Entitlement
1. Arable Land	Actual area needed by the project and the remaining land is still economically viable	*Category A* - Owners with full title, tax declaration or who are covered by customary law (e.g. Possessor's rights, usufruct) or other acceptable proof of ownership	For the portion of land needed: Cash compensation at replacement cost for the land as determined by a licensed independent appraiser using internationally recognized valuation standards as provided in 2.b and 2.q of the Policy. Subject to the provisions set forth in Section 5 of RA 8974 Cash compensation for perennials of commercial value as determined by the DENR or the concerned appraisal committee. DP will be given sufficient time to harvest crops on the subject land
		Category B - DPs without title, tax declaration, or are not covered by customary law or other acceptable proofs of ownership	For the portion of the land needed: DP will be given time to harvest crops Cash compensation for perennials of commercial values as determined by DENR or the concerned appraisal committee Financial assistance to make up for the land preparation in the amount of Php 150 per sq.m.

	Remaining land becomes economically not viable (i.e. DP losing >20% of land holding or even when losing <20% but the remaining land is not economically viable anymore)	*Category A*	Cash compensation at replacement cost for the land as determined by a licensed independent appraiser using internationally recognized valuation standards as provided in 2.b and 2.q of this Policy; or, if feasible, 'land for land' will be provided (a new parcel of land with an equivalent productivity, located at an area acceptable to the DP and with long term security of tenure. Subsistence allowance of Php 15,000 per ha. DP will be given time to harvest crops Cash compensation for perennial of commercial value as determined by the DENR or the concerned appraisal committee If relocating, DP to be provided free transportation Rehabilitation assistance (skills training and other development activities) equivalent to Php 15,000 will be provided in coordination with other government agencies if the present means of livelihood is no longer viable and the DP will have to engage in a new income activity.

Type of Loss	Application	Entitled Person	Compensation / Entitlement
		Category B	Financial assistance equivalent to the average annual gross harvest for the past 3 years but not less than Php 15,000 DP will be given sufficient time to harvest crops Cash compensation for perennials of commercial value as determined by the DENR of the concerned appraisal committee Financial assistance to make up for land preparation in the amount of Php 150 per sq. m. If relocating, DP to be provided free transportation Rehabilitation assistance equivalent to Php 15,000 will be provided in coordination with other government agencies if the present means of livelihood is no longer viable and the DP will have to engage in a new income activity.
		Category C - Agricultural lessees	As per RA 6389 and EO 1035 Disturbance compensation equivalent to five times the average gross harvest on the land holding during the five preceding years but not less than Php 15,000 Rehabilitation assistance equivalent to Php 15,000
	Temporary use of land	All DPs	Compensation to be provided for loss of income during the period, standing crops, cost of soil restoration and damaged structures
2. Residential land and or Commercial land	Actual area needed by the project and the remaining land is still viable for continued use	*Category A*	For the portion of the land needed: Cash compensation at replacement cost for the land as determined by a licensed independent appraiser using internationally recognized valuation standards as provided in 2.b and 2.q of this Policy. Subject to the provisions set forth in Section 5 of RA 8974 Cash compensation for perennials of commercial value as determined by the DENR of the concerned appraisal committee

Type of Loss	Application	Entitled Person	Compensation / Entitlement
	Remaining residential or commercial land becomes not viable for continued use	*Category A*	Cash compensation at replacement cost for the land as determined by a licensed independent appraiser using internationally recognized valuation standards as provided in 2.b and 2.q of this Policy. Subject to the provisions set forth in Section 5 of RA 8974 or if feasible, 'land for land' will be provided in terms of a new parcel of land of equivalent productivity, at a location acceptable to the DP, and with long-term security of tenure. The replacement land should be of acceptable size under zoning laws or a plot of equivalent value, whichever is larger, in a nearby resettlement with adequate physical and social infrastructure. When the affected holding is larger in value than the relocation plot, cash compensation will cover the difference in value. Cash compensation for perennials of commercial value as determined by the DENR of the concerned appraisal committee If relocating, DP to be provided free transportation
	Temporary use of land	All DPs	Compensation to be provided for loss of income during the period, standing crops, cost of soil restoration and damaged structures
3. Main structures (e.g. house, shops etc)	Structure with or without a building permit, partially affected and the remaining structure is still viable for continued use.	Owners of structure with full title or tax declaration to the land or those who are covered by customary law	Compensation in cash for affected portion of the structure including the cost of restoring the remaining structure as determined by the concerned appraisal committee with no deduction for salvaged building materials. DPs that have business affected due to partial impact on the structure are entitled to a subsistence allowance for the loss of income during the reconstruction period. (to be computed by MRIC)
		Owners of structures, including shanty dwellers in urban areas, have no title or tax declaration to the land or other acceptable proof of ownership.	Compensation in cash for affected portion of the structure including the cost of restoring the remaining structure as determined by the concerned appraisal committee with no deduction for salvaged building materials. Shanty dwellers in urban areas who opt to go back to their place of origin or to be shifted to government relocation sites will be provided free transportation DPs that have business affected due to partial impact on the structure are entitled to a subsistence allowance for the loss of income during the reconstruction period. (to be computed by the Land Acquisition/Resettlement Commitee) Professional squatters will not receive compensation but they can collect their salvaged materials

		Renters of structures including renters of shanty dwellings in	Give 3 months notice on the schedule of demolition If shifting is required, DP is given transitional allowance equivalent to one month rent of a similar structure within the area. For house tenants renting outside of, or within the ROW,

Type of Loss	Application	Entitled Person	Compensation / Entitlement
		urban areas	and who have to transfer elsewhere, free transportation will be provided Renting shanty dwellers in urban areas who opt to go back to their place of origin in the province or be shifted to government relocation sites will also be provided free transportation
	Entire structure affected or when the remaining structure becomes not viable for continued use with or without a building permit	Owners of structures with full title or tax declaration to the land or those who are covered by customary law.	Compensation in cash for the entire structure at replacement cost as determined by the concerned appraisal committee without deduction for salvaged building materials Inconvenience allowance of Php 10,000 per DP DPs that have business affected due to the severe impact on the structure are entitled to a subsistence allowance for the loss of income during the reconstruction period. To be verified and computed by the MRIC Free transportation if relocation is necessary Rehabilitation assistance in the form of skills training and other development activities and equivalent to Php 15,000 will be provided in coordination with other government agencies if the present means of livelihood is no longer viable and the DP will have to engage in a new income activity. Professional squatter will not receive compensation but they can collect their salvageable materials
		Renters of structures including renters of shanty dwellings in urban areas	Given 3 months notice on the schedule of demolition If shifting is required, DP is given transitional allowance equivalent to one month rent of a similar structure within the area. For house tenants renting outside of, or within the ROW, and who have to transfer elsewhere, free transportation will be provided Renting shanty dwellers in urban areas who opt to go back to their place of origin in the province or be shifted to government relocation sites will also be provided free transportation Rehabilitation assistance in the form of skills training and other development activities and equivalent to Php 15,000 will be provided in coordination with other government agencies if the present means of livelihood is no longer viable and the DP will have to engage in a new income activity.

Type of Loss	Application	Entitled Person	Compensation / Entitlement
4.Independent shops	Shops with or without building permit, partially affected and the remaining structures are still viable for continued use.	Owners of structure with or without full title of tax declaration to the land or those who are covered by customary law.	Compensation is cash for affected portion of the structure, including the cost of restoring the remaining structure as determined by the concerned appraisal committee with no deduction to salvaged building materials. , DPs will be entitled to transitional allowance to cover for their computed income loss during the demolition and reconstruction of their shops, but not to exceed a period of one month.
		Renters (tenants) of affected shops	Shop renters will be entitled to a transitional allowance to cover for their computed income loss during the period that their business is interrupted.
	Entire shop affected or when the remaining structure becomes not viable for continued use with or without building permit	Owners of structure with or without full title of tax declaration to the land or those who are covered by customary law.	Compensation in cash for the entire structure at replacement cost as determined by the concerned appraisal committee without deduction for salvaged building materials. Subsistence allowance of Php 15,000 to each DP. Free transportation if relocating Rehabilitation assistance in the form of skills training and other development activities and equivalent to Php 15,000 will be provided in coordination with other government agencies if the present means of livelihood is no longer viable and the DP will have to engage in a new income activity. Professional squatter will not receive any compensation but they can collect their salvageable materials.
		Renters (tenants) of affected shops	Given 3 months notice on the schedule of demolition , Shop renters will be entitled to a transitional allowance to cover for their computed income loss during the period that their business is interrupted, but not to exceed a 3-month period.
5. Other fixed assets or structures	Loss of, or damage to, affected assets, partially or entirely	DPs	Cash compensation for affected portion of the structure including the cost of restoring the remaining structure, as determined by the concerned appraisal committee, with no depreciation or deduction for salvaged building materials.
6. Electric and or water connection	Loss of, or damage to, affected assets, partially or entirely ,	DPs	Compensation to cover cost of restoring the facilities

9. Public facilities	Loss of, or damage to, public infrastructure	Concerned agencies	Compensation in cash at replacement cost to respective agencies

PHRED Indigenous Peoples Policy Framework

Objectives:

The general objective of this framework and operational guidelines is to ensure that Indigenous Peoples are informed, meaningfully consulted and mobilized to participate in the identification, planning, implementation and monitoring of sub-projects to be supported by the Philippine Renewable Energy Project. By doing so, benefits may be shared with them in greater certainty and/or protection from any potential adverse impacts of sub-projects to be financed by the Project may be mitigated if not fully avoided.

It updates the Policy Framework of the Rural Power Project, a Bank financed project managed by the Development Bank of the Philippines.

Definitions:

"Indigenous Peoples" will be used to refer to cultural communities, tribal groups that can be identified in particular geographical areas by the presence in varying degrees of the following characteristics: (a) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; (b) collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories; (c) customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and (d) an indigenous language, often different from the official language of the country or region.

Legal Framework:

The Policy Framework and Procedural Guidelines for Indigenous Peoples proposed for the Project have been prepared within the context of the World Bank Operational Policy 4.10, which instructs Bank-supported Projects to that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. and requires the development of an IP Plan should IP groups be found present in the area of influence of the sub projects.

It supports the priority given to Indigenous Peoples by the GOP, embodied foremost in the 1987 Constitution, which recognizes the rights of the IPs to their ancestral domains and their power of dominion over their lands and resources. Among its pertinent provisions are:

1) Section 17, Art. XIV: "customary laws governing property rights or relations shall be applied in determining the ownership and extent of ancestral domains;

2) Section 22, Art. II, Section 5, Art. XII: "...the rights of indigenous peoples to natural resources pertaining to their lands shall be specially safeguarded..." These rights include the right of the IPs to participate in the use, management and conservation of natural resources.

3) The right to stay in their territory and not be removed therefrom except when relocation is necessary as an exceptional measure, as in the case of an ecological disaster or armed conflict. IPs have a right to return to their territories once the ground for relocation ceases.

Another nationally legislated instrument protecting the rights of IP is the Indigenous Peoples Rights Act (IPRA or RA 8371), which state certain requirements in activities and programs affecting Indigenous Peoples. Some relevant provisions include:

1) Chapter 1II, Section 7b: "...lPs have the right to an informed and intelligent participation in the formulation and implementation of any project, government or private, that will impact on their ancestral domain...",

2) Chapter IV, Section 16: "...IPs have the right to participate in decision-making, in all matters which may affect their rights, lives and destinies, through procedures determined by them as well as to maintain and develop their own indigenous political structures..."

Specific to the proposed subproject area within the boundaries of the Autonomous Region of Muslim Mindanao (ARMM), the new ARMM Law, RA 9054, provides through Sec. 5, Article IlIl (Guiding Principles and Policies) that the "...regional government shall ensure the development, protection and well-being of all indigenous tribal communities..." This new law, as well as pertinent provisions in the 1987 Constitution and in the IPRA, attempt to correct centuries of oppression and marginalization of the indigenous populations in the country.

Additionally, the Philippines supported various international agreements and conventions to protect the rights and culture of IPs, among them: Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities; United Nations Draft Universal Declaration on the Rights of Indigenous Peoples; and the 1996 International Labour Convention concerning Indigenous and Tribal People's in Independent Countries.

Guiding Principles:

The sub project proponent must ensure at all times that development processes implemented by the Project foster full respect for the Indigenous Peoples' dignity, human rights and cultural uniqueness.

It shall initiate actions to ensure that communities of Indigenous Peoples in their ancestral domains have given their free and prior informed consent using the IPRA approved procedure for consultation and decision-making processes, when the project location is within an ancestral domain. The conduct of field-based investigation and the process of obtaining the Free and Prior Informed Consent (FPIC) shall take into consideration the primary and customary practices of consensus-building, and shall conform to Section 14 (Mandatory Activities for Free and Prior Informed Consent) of NCIP Administrative Order No.1, series of 2006. If the project is located or will affect ancestral domains, a Certificate Precondition shall be sought from NCIP.

In instances when the IPs are residing outside their ancestral domain, the requirement is to ensure the conduct of IP dedicated consultation and that broad community support has been generated for the subproject.

With absolute certainty, IPs should receive culturally compatible social and economic benefits and must not suffer adverse effects during and after project implementation

Consensus of all IP members affected must be determined in accordance with their respective laws and practices, free from any external manipulation, interference and coercion, and obtained after fully disclosing the intent and scope of the sub-project activity, in a language and process understandable to the community.

For IP communities outside their ancestral domains, an NCIP Certificate of Non Overlap must be submitted by proponent. For both instances, an IP Plan with clear description of mechanism for IP participation in the project benefit shall also be prepared and submitted by the proponent of the subproject.

No infrastructure or related projects will damage non-replicable cultural property. In cases where sub-project infrastructure or transmission lines will pass through sites considered as cultural properties of the IPs, the subproject proponent must exert its best effort to relocate or redesign the sub-projects, so that these sites can be preserved and remain intact in situ.

Project designs and implementation approaches must at all times be consistent with the traditional and cultural practices of the IP group in the area (like performance of certain rituals if springs or rivers found in ancestral domains are utilized as sources of renewable energy).

Operational Strategies:

Specific subprojects for the Project are not yet known at appraisal time. For this reason, the screening of the PHRED project on whether or not subprojects it may support could have IP presence is not yet known. Individual sub project screening is expected to be done by the subproject proponent using the project checklist found in Annex 2. NEA-ORED will provide technical guidance for this activity. This is likely to happen during the preparation of the feasibility study and should therefore be covered by the TOR of the Environment and Social Impact Assessment (ESIA) to:

a) Social Assessment of IP Communities

The sub project implementer undertakes a social assessment within the ESIA. It shall:

> screen the presence of Indigenous peoples in the subproject's area of influence or their collective attachment to it Among others, collective attachment includes use of the area for worship or food gathering.
> evaluate the project's potential positive and adverse effects on the Indigenous Peoples,
> Identify the key leaders and other stakeholders of the IP community(ies)
> determine cultural sensitive ways of consulting, grievance mechanism and issue resolution, and
> examine project alternatives where adverse effects may be present.

The breadth, depth, and type of analysis in the social assessment are proportional to the nature and scale of the proposed project's potential effects on the Indigenous Peoples, whether such effects are positive or adverse. To carry out the social assessment, the borrower engages social scientists whose qualifications, experience, and terms of reference are acceptable to the Bank.

The IPs/Cultural Communities shall participate in the social impact validation, identification of facility locations and planning for sub-projects located within their barangay or ancestral domains. In barangays where IPs are not dominant , subproject proponent shall ensure that sub-project proponents IP dedicated meetings and would provide technical assistance to enable the IPs to participate meaningfully in the planning process. This may mean deployment of competent and committed Project partners who can work with IP communities and ensure that IPs fully understand, accept and support the implementation of the proposed electrification project.

b) Use of Appropriate Communication Media, Strategies and Tactics for Mobilization

Presentation meetings must be conducted in the local or native language. In addition facilitators must use simple and uncomplicated process flows during these sessions.

c) Adherence by implementing units for documentation of interactions with IP communities and compliance to agreements made must be established.

d) There should be IP participation in development, monitoring and evaluation of mitigation measures where sub-projects pose potential adverse impacts on the environment and the socio-economic-cultural-political lives of these IP communities. IPs must be informed of such impacts and their rights to compensation. Compensation for land and other assets to be acquired will follow the PHRED Policy Framework on Land Acquisition, Resettlement and Rehabilitation.

Indigenous Peoples Plan

Based from the results of the social assessment, sub project screening and in consultation with the affected Indigenous Peoples' communities, the sub project proponent prepares an Indigenous Peoples Plan (IPP). It discusses mechanisms and measures through which the borrower will ensure the following:

(a) Indigenous Peoples positively affected by the project receive culturally appropriate social and economic benefits; and

(b) when potential adverse effects on Indigenous Peoples are identified, those adverse effects are avoided, minimized, mitigated, or compensated.

The IPP is prepared in a flexible and pragmatic manner, and its level of detail varies depending on the specific project and the nature of effects to be addressed. The subproject proponent integrates the IPP into the project design. When Indigenous Peoples are the sole or the overwhelming majority of direct project beneficiaries, the elements of an IPP

should be included in the overall subproject design, and a separate IPP is not required. In such cases, the subproject design includes a brief summary of how the project complies with the policy, in particular the IPP requirements.

Implementation Arrangement

The responsibility for implementing the policy and guidelines set forth in this document are as follows:

Subproject stages	TASKS	Responsible Unit	When
5. Screening	Identifying which of the subprojects have IP presence in its significant area and if it is within an ancestral domain. Use the Screening Checklist found in Annex 2; checks the NCIP Ancestral Domain Information System (http://202.57.46.78/adis/Public/default.aspx) for AD listing and mapping.	Subproject proponent in coordination with NEA –ORED for the PHRED project. ORED copies LGUGC and WB of received completed checklists for potential subprojects as part of the periodic monitoring report.	During the project development which is way upstream of the PHRED process which starts when the sub project enrolls for guarantee.
6. Preparation of IPP	>Coordinates with NCIP for the FPIC if sub project location is overlaps with an ancestral domain. > conducts IP dedicated consultations when the sub project location is outside an ancestral domain. > Includes in the TOR of ESIA consultants, the preparation of the IPP. For completeness of contents, the outline for IPP is in Attachment 6.	Subproject proponent with technical advice/ guidance from NEA ORED The ESIA Consultant in the preparation of the IPP shall ensure the participation of the IPs through consultation with them in identifying culturally responsive ways of enhancing benefits to them and mitigating adverse impacts, if any. Also coordinates with LGUs and other entities for potential support.	Feasibility time, still upstream of the PHRED process.
7. Implementation	Conduct of activities to comply with the IPP.	Subproject proponent includes culturally responsive mechanisms in project design for IP benefits; complies with provision of agreed Participatory IPP. Cooperation from LGUs and other agencies and organizations for assistance is encouraged.	Prior to initiating civil works in the project implementation.
8. Monitoring and Evaluation	Submission of progress reports by subproject proponent to NEA ORED with copy to LGUGC.	Sub project proponent/ ORED	Prior to issuance of proof of PHRED guarantee coverage

	For projects that will be enrolled as pipeline projects of PHRED. LGUGC submits this report with IPP to WB Task Team together with request for Guarantee coverage. Bank clears for guarantee coverage if compliance to IPP has been completed, if not an Updated IPP is prepared, implemented and monitored.	 LGUGC WB Task Team for all IPPs. Monitoring of compliance to IPP becomes part of the supervision agenda of WB Task Team.	

IPP Clearance and Disclosure

The subproject IPP shall be submitted to the Bank for clearance prior to decision to approve the guarantee arrangement. Upon Approval by the Bank, it is disclosed in the NEA and LGUGC websites and in the InfoShop of World Bank. In the municipality where the subproject is located, a hard copy will be made available in the public library.

Coordination, Supervision and Monitoring:

Supervision meetings/visits subproject activities will be done periodically (frequency to be established during PHRED launch) by the LGUGC and ORED starting from the time it was determined that the project will be among PHRED subprojects. Local IP representatives would be involved in these meetings/visits.

The subproject focal person for safeguards will monitor or help facilitate and document actions required follow-up actions to ensure that the sub-project benefits the IPs according to agreements, and that compensation or mitigation measures as documented are completed on time.

Supportive monitoring will be done regularly, involving affected IP communities and NCIP representatives, with emphasis on the following concerns:

i. Verification as to whether the guiding principles for implementing subprojects with IP groups or communities are followed.

ii. review of subprojects IPP to determine whether these are being implemented as designed and approved;

iii. Documentation of all meetings, assemblies and other gatherings done during the monitoring period, with copies furnished the affected IP community, LGU concerned at the barangay, municipal and provincial levels, NCIP Provincial and Regional office, and the LGUGC.

iv. Assess whether recommended solutions discussed during previous supportive monitoring visits have been implemented as committed.

Complaints and Grievances

In the course of sub-project implementation, complaints or grievances from stakeholders are inevitable. All such complaints must be discussed in the specific IP community or locality where the sub-project is implemented. Said complaints may also be raised with the developer, subproject proponent, LGUGC and NEA-ORED. The formal local leadership at the barangay, together with the Tribal leaders of the affected areas, will be tasked to facilitate public hearings and negotiations to resolve or provide redress to these complaints and possible options presented to them. They should be allowed to elevate such complaints first to the Provincial Representative of either the NCIP or counterpart agency under the autonomous regions.

Should the IP community still find the decisions rendered at the regional level unacceptable, they can elevate the issue to the central level office of the National Commission on Indigenous Peoples. The NCIP shall be tasked to coordinate with the agency subject of complaint to ensure that the issue is resolved to the best interest of the affected IP community. The sub project proponent, LGUGC and ORED must monitor the developments of filed cases.

ORED will take primary responsibility in receiving and monitoring complaints and grievances. It shall appoint a focal person (Head of ORED) for this task who shall keep a log on receipts and resolutions of issues received. Where necessary, an outside arbiter, who may be from NCIP, will be asked to participate in these discussions and/or negotiations. Resolution of the conflicts should be encouraged at the lowest possible, thru the facilitation of the Municipal and Community Tribal Councils. Again, the documentation of such meetings and interactions with affected IP households/communities must be documented and distributed to relevant stakeholders especially LGUGC which will include this in its regular progress report to the Bank.

Attachment 6.

Indigenous Peoples Plan Outline

. The IPP includes the following elements, as needed:

(a) A summary of the information of the legal and institutional framework applicable to Indigenous Peoples,

(b) A summary of the social assessment. The Social assessment shall include the following

- Baseline information on the demographic, social, cultura and political characteristics of the affected Indigenous Peoples' communities, the land and territories that they have traditionally owned or customarily used or occupied, and the natural resources on which they depend.

- Identification of key project stakeholders amongst the IPs and the elaboration of a culturally appropriate process for consulting with the Indigenous Peoples at each stage of project preparation and implementation

- An assessment, based on free, prior and informed consultation, with the affected Indigenous Peoples' communities, of the potential adverse and positive effects of the project. Critical to the determination of potential adverse impacts is an analysis of the relative vulnerability of, and risks to, the affected Indigenous Peoples' communities given their distinct circumstances and close ties to land and natural resources, as well as their lack of access to opportunities relative to other social groups in the communities, regions, or national societies in which they live.

- Identification and evaluation, based on free, prior and informed consultation with the affected Indigenous Peoples' communities, of measures necessary to avoid adverse effects, or if such measures are not feasible, the identification of measures to minimize, mitigate, or compensate for such effects, and to ensure that the Indigenous Peoples receive culturally appropriate benefits under the project.

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(c) A summary of results of the free, prior and informed consultation with the affected Indigenous Peoples' communities that was carried out during project preparation and that led to consent for the project.

(d) A framework for ensuring free, prior and informed consultation with the affected Indigenous Peoples' communities during project implementation.

(e) An action plan of measures to ensure that the Indigenous Peoples receive social and economic benefits that are culturally appropriate, including, if necessary, measures to enhance the capacity of the project implementing agencies.

(f) When potential adverse effects on Indigenous Peoples are identified, include an appropriate action plan to avoid, minimize, mitigate, or compensate for these adverse effects.

(g) The cost estimates and financing plan for the IPP.

(h) Accessible procedures appropriate to the project to address grievances by the affected Indigenous Peoples' communities arising from project implementation. When designing the grievance procedures, the borrower takes into account the availability of judicial recourse and customary dispute settlement mechanisms among the Indigenous Peoples.

(i) Mechanisms and benchmarks appropriate to the project for monitoring, evaluating, and reporting on the implementation of the IPP. The monitoring and evaluation mechanisms should include arrangements for the free, prior, and informed consultation with the affected Indigenous Peoples' communities.