

Department of Agriculture
Philippine Rural Development Project
Rehabilitation of NRJ Gamis-Calaocan Road

Social and Environmental Assessment

A. Social Assessment

1. Project Beneficiaries

Based on the 2010 NSO survey, a total population of 9,957 from the eight influence barangays in the municipalities of Aglipay, Cabarroguis and Saguday will be benefited. Out of this population, a total of 2,189 households will be directly benefited, wherein 48.18% of this are female. Table 1 shows the distribution of project beneficiaries from the eight barangays.

Table 1. Project Beneficiaries

Barangay	Number of H.H.	Population 2010	Male (2013)	Female (2013)	Population 2013
1. Gamis	220	866	502	450	952
2. Banuar	149	528	315	293	608
3. Dumabel	284	985	610	541	1151
4. Cabugao	125	493	257	257	514
5. Eden	282	1260	673	580	1253
6. Burgos	841	3799	1997	1973	3970
7. Gomez	127	615	339	276	615
8. Calaocan	161	902	466	428	894
TOTAL	2,189	9,448	5,159	4,798	9,957

Source: NSO, 2010; Municipal Nutrition Program Coordinator (Situational Analysis-2014)-Aglipay, Quirino

Farmers in the road influence barangays are engaged in the production of rice, corn and coffee. In addition, farmers raise hogs and poultry/broiler in their backyards. Farmers normally earn Php3,700.00 and Php6,500.00 monthly on the average for rice and corn respectively. Women, particularly in Gamis, are active in fossilized flower making. Their produce are being exported to other countries. Participants to this activity are based on the number of pieces and sizes they are able to produce. Fossilized flower prices ranges from Php5.00 to Php50.00 per piece depending on the design and size.

Community members of the different barangays were consulted regarding the rehabilitation of the roads. During the project consultation last August 11 & 13, in San Leonardo, Aglipay and Burgos, Cabarroguis respectively, about 163 attended the meetings and about 50% of the participants were female, indicating the active participation of women on issues concerning the welfare of the community. The meeting was held for about two hours with a presentation of the proposed project on coffee enterprise and the respective road improvement that will connect the community including coffee farms in these barangays to the market, suppliers of inputs and to other services.

The consultation was carried out by the PPMIU members headed by the PPMIU I-PLAN Head/PPDC, Engr. Dencio A. Pagbilao. The said consultation started with an introduction of the Philippine Rural Development Project (PRDP), its purpose and objectives. Engr. Pagbilao as the presenter stressed out that eight barangays were considered for the road improvement because of the existing coffee trees in the area. He further explained that the improvement of the roads will provide linkages and networks for possible market of coffee in order to revive this enterprise. He also explained that in case there will be households or cultivated areas that will be affected by the road rehabilitation that are found to be within the Road Right of Way, farmers will be given due compensation.

The process flow and mechanism of the proposed coffee enterprise was explained well and farmers were encouraged to improve and protect their coffee areas. Questions and clarifications raised by the community were answered and clarified. Highlights of the issues were on their planted coffee seedlings provided by the UDP, particularly on the maintenance aspect. Women's group also expressed their appreciation that their barangay are included in the development particularly in the rehabilitation of their farm to market roads. Details of the questions and answers were elaborated in the minutes of meeting. After the presentation of the coffee enterprise and road rehabilitation/improvement, members of the community were all delighted and accepted the project proposal.

1.a Grievance Redress Mechanism

A Grievance Redress Mechanism (GRM) shall be put up by the PPMIU. The PPMIU Executive Order will be amended for the inclusion of a Grievance Redress Mechanism as one area of the I-SUPPORT component. The PPMIU have discussed and agreed that the point person to lead in carrying out the grievance mechanism will be the Provincial Legal Officer. Once the Executive Order will be amended, the designated Grievance Point Person (GPP) shall undergo with the necessary trainings identified and/or listed under the Grievance Redress Mechanism Framework. Grievance Investigation and Resolution Process shall be carried out by the GPP in collaboration with PSO, RPCO and LGUs concerned. This can be accessed by any person in case there will feedback or complaints regarding the pre-implementation up to the completion of the subproject.

Public awareness campaigns, Training and Capacity building in the implementation of the Project shall be ensured and this shall spearheaded by the PPMIU I-SUPPORT.

2. Indigenous Cultural Community/Indigenous Peoples (ICC/IP)

In the conduct of detailed Engineering Survey of road along these identified barangays, it was found out that the project is not within the area of Ancestral Domain and no member of the IP will be affected or displaced. Thus, a certification was issued by the National Commission on Indigenous People (NCIP) that the location of the road project did not overlap with the Ancestral Domain of the Bugkalots and Agtas in Quirino.

3. Site and Right-of-Way acquisition

The proposed road project is an existing road linking the eight barangays which starts at the National Road Junction at Gamis-Banuar-Dumabel-Cabugao-Eden-Burgos-Gomes-Calaocan with a road right of way of 15 meters and has no road right of way problems. The road right of way is owned by the Provincial Government.

4. Damage to standing crops, houses and/or properties

The proposed farm to market road is an existing provincial road and it satisfies the width requirement of 4 meters for concrete pavement and 1.5 meters of shoulder on both sides. However, there are planted corns owned by eight farmers that encroached the road right of way. These standing crops will be harvested on or before October 30, 2014. After harvesting the corn, the farmers were advised and signed a waiver that they will no longer plant within the road right. The duly signed waivers are attached.

5. Physical displacement of persons

During the conduct of data gathering in each influence barangays, it was found that there are no persons who will be adversely affected or displaced in the implementation of the project thus, no resettlement action plan is needed.

6. Economic displacement of persons

Eight farmers have standing crops encroaching the road right of way. These corn crops will be harvested before the start of project implementation. These farmers have signed a waiver and agreed not to plant anymore within the road right of way after the harvest season.

B. Environmental Assessment

1. Natural habitat

The total road length of the farm-to-market road is 19.380 kilometers. This road project will traverse a large tract of agricultural land starting from Barangay Gamis in Saguday, Barangays Dumabel and Cabugao in Aglipay, and Barangays Eden, Burgos, Gomez, and Calaocan in Cabarroguis.

Part of the Province of Quirino has been declared as Quirino Protected Landscape (QPL) under Presidential Proclamation # 548 dated February 9, 2004 and #779 as amended, encompassing a total of about 175,000 hectares out of the total land area of the province of about 306,000 hectares. Under the NIPAS Act, the province has been classified as landscape instead of natural park and/or national reserve as there are already existing communities prior to its proclamation. As defined in the National Integrated Protected Area System Act (NIPAS) under Republic Act 7586, **Protected landscapes/seascapes** are areas of national significance which are characterized by the harmonious interaction of man and land while providing opportunities for public enjoyment through recreation and tourism within the normal lifestyle and economic activity of these areas. While **Natural park** is defined as a relatively large area not materially altered by human activity where extractive resource uses are not allowed maintained to protect outstanding natural and scenic areas of national or international significance for scientific, educational and recreational use.¹ Hence, normal economic activities are allowed within the QPL being classified as protected landscape.

Out of the eight barangays in this Subproject, Barangays Dumabel, Cabugao and Eden are within the QPL multiple use zones (MUZ). Part of Barangays Calaocan, Gomez and Burgos are also within MUZ and Alienable and Disposable (A and D). Barangay Gamis and Banuar are both within the A and D. As defined in the QPL Management Plan, MUZ are areas where settlement, traditional and/or sustainable

¹ NIPAS Act

land use, including agriculture, agroforestry, extraction activities and other income generating or livelihood activities, may be allowed to the extent prescribed in the management plan. Land tenure may be granted to tenured residents, whether indigenous cultural members or migrants. This implies that road improvement is allowed and this would entail lesser pressure to the forest as farmers will be more encouraged to improve their farms instead of encroaching the forest. Improved road conditions imply more opportunity for the farmers to market their farm products. Attached is map showing the barangays within the MUZ and A and D.

In-situ conservation is one management strategy of QPL wherein communities are inside the PA. Adopting the different management zones described in the QPL Management Plan is ensured by the members of the Protected Area Management Board (PAMB).

2. Physical Cultural Resources

During the consultation/dialogue with the barangay councils and the beneficiaries with the participation of other sectors, reconnaissance survey was conducted in order to ascertain presence of any cultural and historical structures, features, landscapes, archeological sites monuments and physical or cultural resources. The reconnaissance survey revealed that no existing structures nor trees will be damaged or demolished.

In case there will be discovery of artifacts, bones or other objects of interests during the implementation stage wherein digging, drilling and other earthmoving activities within the radius of 10 meters from the discovery point, the said activities shall be suspended. This procedure shall be made known to the municipal LGU concern, the Contract Administrator, the Contractor, the Site Engineer, all Construction Foremen and all On Site Supervisors.

3. Terrain, Soil Types and Rainfall

The terrain along the 19.38-kilometer farm to market road as identified by the NAMRIA topographic map has an elevation that ranges from 80 meters to 126 meters above sea level. Generally the slope inclination is more than 18%, which according to land use planning guidelines, are exempt from intensive agricultural land use. In general, the capability of land to support agricultural production decreases as slope inclination increases.

The Department of Agriculture (Soils) revealed that there are 19,904.92 hectares or 63.80% of the total land area of the town is clay loam. This particular type of soil is presently devoted to agriculture (i.e., rice and corn). The Clay Soil on

the other hand which covers 7,971.2 hectares or 25.60% of the municipality offers good potential for such agricultural lands use like orchards, woodland and pasture grazing lands. Sandy loam covers only 180.48 hectare while Mountain Soil undifferentiated covers 3,158.4 hectares.² Consequently, soil type within the road influence area is suitable for agricultural production. Combination of the different soil types possess high to medium infiltration rates which implies that less runoff and less erosion will likely to occur. It can be considered as structurally stable soil aggregates that can resist disintegration by raindrops into smaller particles.

The maximum rainfall gathered in the proposed project is 1500mm to 1600mm. Flooding occurs during typhoon.

4. Hazard/ risk assessments

The whole stretch of the proposed road is rolling terrain. However, there are some sections in Cabugao, Eden and Calaocan where slope protection structures need to be constructed, particularly the embankment portion of the road for erosion control and road stabilization. Drainage structure should also be constructed at identified location/station to avoid flooding of the road bed. (See attached stone masonry for the stations for the slope protection works.)

Flood prone areas of the municipality are almost nil. Aglipay drains its surface water easily because of the presence of numerous creeks and tributaries of the Addalam River, hence flooding within the road influence area barely occur. (Please see attached Stone Masonry for the stations for the slope protection works).

The Office of the Provincial Agriculturist (OPAg) in cooperation with the Municipal Agriculturist (MAO) has been promoting the Integrated Pest Management (IPM) in all the agricultural areas of the province. Based on the assessment made by the Municipal Agriculturist of Aglipay, there is a 70% rate of adoption by the farmers. As a result of this practice, farmers decreased the frequency of using chemical pesticide from twice a week and slowly reducing. Farmers adopted the IPM technology such as spraying only when needed. This means that they only apply pesticides when the population of a particular pest is beyond the so called economic threshold level (ETL) or that beyond 5% of the population of the natural enemies.

Based on the monitoring and assessment of OPAg, most barangays are now engaged in vermicomposting. The use of pesticides is expected to decrease in the next two years by 30% as an offshoot of the continuous promotion of IPM. The PLGU through the OPAg shall carry on the promotion of IPM by continuously conducting season-long Farmers' Field Schools. Furthermore, the use of organic

² CLUP-Municipality of Aglipay

fertilizers and at the same time to put up organic demonstration farms are being lined up to be implemented

To ensure sustainability on the practice of IPM, the Provincial LGU through its Special Projects Unit is now advocating the implementation of the biodiversity – friendly agricultural practices wherein one major activity is to promote the use of organic fertilizers. This project is being implemented by the PGQ in collaboration with the Bureau of Soils and Water Management (BSWM). This project is being funded by the United Nations Development Program (UNDP) through the Biodiversity Management Bureau (BMB) of the DENR. This project will complement other projects in advocating the use of organic fertilizer and eventually decrease the use of pesticides and other chemical based for farming.

Hence, there is an assurance that there will be no increase in the usage of pesticides along the influence road area. A monitoring team shall be created to conduct monitoring activities from the pre-implementation stage of the project up to its completion.

5. Status of Environmental Clearances

An Environmental Compliance Certificate (ECC) has been issued by the Environmental Management Bureau (EMB) Regional Office 02 for the rehabilitation of the proposed subproject. Copy of the ECC is attached.

The Regional Office 02 of the Department of Public Works and Highways certified that the fine and coarse aggregates and concrete aggregates in Maddela, Quirino meet the department's standard specifications. It was also certified that the quantity in these quarries are adequate.

Source of quarry materials is 30 kilometers away from the project site. Existing road from the quarry sites to the project area are concrete roads. Potential damage to the existing roads during transportation of quarry materials from source to the project site can be minimized through conduct of regular monitoring of existing roads and strict enforcement of load limits.

Dumping site of the surplus common excavation are to be located in Eden and Cabugao in Cabarroguis. Necessary certifications have already been secured where some farmers are willing to accept these materials to be dumped in their farms since these are low lying areas.

6. Proposed Sources and Location of Quarries, Borrow Pits and Construction Materials

Source and location of quarries as identified by the DPWH/Quirino Engineering District is located at Addalam Quarry, Aglipay, Quirino for Sub-base Course and gravel bedding, Maddela Crusher, for concrete aggregates and Maddela Quarry, San Pedro, Maddela for concrete fine aggregates. These are approximately 44 and 60 kilometers away from the road project. These quarries were certified by the DPWH to have a good quality suited for road construction. For concrete aggregates, the DPWH also certified that a crusher plant in San Pedro-Villa Sur boundary has sufficient volume and good quality crushed aggregates.

7. Installation/Setting of Batching Plant

Before the project implementation and/or after the awarding of the contract, the Contractor shall be responsible in identifying the most feasible location where to install or set up the batching plant. Necessary requirements in setting up a batching plant shall be accomplished prior to the road construction.

The Batching plant to be used is mobile and it will operate only for less than a year. The Environment Management Bureau (EMB) does not require Environmental Clearance Certificate (ECC) for mobile Batching plants and which operations does not lasts for more than a year. Initial Environmental Examination (IEE) shall be done and Environmental Impact and Climate Change Mitigation Plan shall be provided as part of the requirements.

8. Impacts during construction

As a result of the implementation of the road project, some environmental and social impacts may occur. These impacts are presented with some recommendation on how to manage them:

- a. Temporary erosion and increase in sedimentation: topography of the road alignment necessitates massive earthmoving and cutting of clay or topsoil, thus increasing the soil erosion during construction. The standard design must be carried out on the ground to achieve the desired road with minimal impact on the environment;
- b. Mitigation of Noise Construction-Residents along the road influence areas will be affected by the noise during operations of workers and heavy equipment. Work activities and operations of heavy equipment should be avoided during night time;

- c. Potential contamination of surface and ground water with oil grease due to the presence of Heavy Equipment working in the area: Proper handling and disposal of waste materials is recommended;
- d. Potential contamination of human waste. Because most worker are skilled labor who are local residents who live in the area, they have easy access to private toilets, thus there is no contamination of human waste;
- e. Potential mud-dust during construction. The construction will not affect daily movement of residents and farmers. Dust control measures are recommended to include minimization of soil disturbance, water spraying, surface roughening, mulch and vegetation, and applying polymers and barriers;
- f. Inadequate drainage resulting in flooding or ponding. Provide adequate drainage structure;
- g. Local employment. The construction provide local employment and opportunities to local residents;
- h. Conversion of land use- natural habitat. Quarry site is existing and proven as a good source of quarry materials at crusher site Villa Sur, Maddela Quirino;
- i. Potential damage to existing road due to hauling of aggregates which is 40 kilometers from the project sites. There will be no potential damage to existing roads since these are concrete and asphalted or all-weather roads.

9. Environmental Issues and Mitigation Measures

Table 2. below are the prescribed mitigation measures to address potential impacts of the project to the environment

Issues (Potential Impacts)	Assessment	Mitigation Measures	Schedule/Duration of the Mitigation Measures	Instrument of Implementation	Responsible Unit
1. Temporary increase in sedimentation during construction	Cut materials will consist mainly of hard rocks and are unlikely to generate significant sediments	Proper disposal and compaction of spoils	Upon the start of the project implementation	DED/POW; Contract	PEO, Contractor
2. Potential contamination of surface and groundwater with oil/grease	Minimal or insignificant amount of waste oil/grease	Proper handling and disposal of waste oil and grease	During construction/rehabilitation	Contract, O and M	PEO, Contractor
3. Potential contamination with human waste	<ul style="list-style-type: none"> Workers would be mostly locals and are expected to go home to their respective houses after works Construction workers would be temporary housed in a based camp 	Set up adequate latrine/toilet facility at the base camp to be used during working hours	Upon start of construction/rehabilitation	Contract, O and M	PEO, Contractor
4. Potential disruption of traffic flow	The construction will not affect daily movement of residents and farmers	<ul style="list-style-type: none"> Keep the road open to traffic flow and minimize disruptions along the access road and/or 	Upon start of construction/rehabilitation	Contract, DED, O and M	PEO, Contractor

		<p>construction area;</p> <ul style="list-style-type: none"> • Provide adequate warning signs and traffic personnel when necessary; • Undertake regular maintenance measures on the passable portions of the roads 	Duration of the construction/rehabilitation period		
5. Potential dust/mud nuisance during construction	<p>Roads could become powdery during dry days and muddy during rainy days of the construction period</p> <p>Access road and/or the construction/rehabilitation works passes through a minimal populated area</p>	<ul style="list-style-type: none"> • Undertake sprinkling of road (including access roads) during dry days, and filling up of potholes during rainy days, especially in residential areas; • Set up speed limits for vehicles, especially within residential areas 	Upon start of the construction/rehabilitation period up to its completion	Contract, O and M	PEO, Contractor
6. Landslide/erosion of exposed road sides resulting in sedimentation of waterways	The road passes through a relatively benign terrain, cuts will be minimal	<ul style="list-style-type: none"> • Placement of adequate drains outlets and turn outs; • Seeding and planting on erodible surfaces 	Upon start of the construction/rehabilitation period up to its completion	DED/POW Or (if budget does not permit) LGU Commitment Letter	PEO, Contractor
7. Inadequate drainage resulting in flooding or	Drainage issues unlikely	Installation of cross drain system	Start of project implementation	DED	QPLGU

ponding					
8. Potential increase use of pesticides due to intensification of cash crop production in the area	There is an ongoing IPM program of DA in the service area	DA to continue to support IPM program	Continuing activity	Capacity Building Plan O&M Plan; Capacity Building Plan	QPLGU, Office of the Provincial Agriculturist (OPAg)
9. Potential acceleration of denudation of the upland/hilly areas due to intensification of crop production	The road connects only lowland farms to the market	DA to coordinate with LGU for the introduction of sustainable upland farming systems in the area	Continuing activity	O&M Plan; Capacity Building Plan	PNREO, PEO
10. Potential increased in encroachments of human activities into the nearby public forest	The proposed road does not improve access to a public forest	No measure required		O&M Plan; Capacity Building Plan	PEO
11. Local employment	Construction will provide local employment opportunities	Hiring priority shall be given to qualified local residents; Implement RI Manual on local hiring	Before the start of the construction/rehabilitation	Contract	PEO, PPMIU
12. Potential to accidents to workers	Workers are exposed to work related hazards such as tripping, slippage that may result to injuries and even loss of life	<ul style="list-style-type: none"> • Sealing of construction site • Placement of warning signboards • Use of proper construction uniform 	From the start of the project up to the end of its implementation	Contract	PEO, Contractor
13. Potential disturbance of noise	Noise generation maybe at its peak during	Avoid use of heavy equipment during night time	From the start of the project up to the end of its	Contract	PEO, Contractor

	certain phases		implementation		
14. Potential disturbance to wildlife	Closure of migratory routes, disturbance of habitats and noise related problems	<ul style="list-style-type: none"> • Intermittent use of heavy equipment • Distance from thickly vegetated areas 	From the start of the project up to the end of its implementation	Contract	PEO, Contractor
15. Potential to siltation	Stack file of soil and rocks could be eroded during heavy rains and silt up creeks and streams	Enclose hazardous areas with fence and barriers	From the start of the project up to the end of its implementation	Contract	PEO, Contractor
16. Potential landscape damages	Scarred from road cuts and induce landslides	<ul style="list-style-type: none"> • Maintenance and restoration of roadside vegetation • Construction spoils and other waste materials are properly disposed 	From the start of the project up to the end of its implementation	Contract	PEO, Contractor
17. Potential on Vegetation Control	Avoid cutting of trees as necessarily	<ul style="list-style-type: none"> • Replanting of trees to allow regeneration and for embankment protection; • Adherence to DENR guidelines on tree cutting permit 	From the start of the project up to the end of its implementation	Contract	PEO, Contractor
18. Potential on domestic solid waste	Lack of garbage disposal of construction waste materials and workers garbage	<ul style="list-style-type: none"> • Enforcement of SWM; • Efficient housekeeping services; • Proper collection and disposal of construction waste 	From the start of the project up to the end of its implementation	Contract	PEO, Contractor
19. Potential issue on road	Affected landowners will	<ul style="list-style-type: none"> • Conduct consultation 	From the start of the project	Contract	PEO, Contractor

right of way	voluntarily donate or waive their rights on the affected portion for the road widening	meeting with the affected landowners; <ul style="list-style-type: none"> Establish Grievance and Redress Mechanism based on IESSF and accessible to the beneficiaries/affected households for their feedback 	up to the end of its implementation		
20. Potential issue on compensation for the demolition and restoration of affected structures	The affected structures for the road widening are temporary structures such as fences and makeshift sari-sari stores	<ul style="list-style-type: none"> Proper dissemination of information during consultation meetings; The demolition of the affected structures will be done by the contractor under the supervision of the PEO; The reconstruction of the affected temporary structures will be provided by the municipal government in coordination with the concerned households and the barangay 	<ul style="list-style-type: none"> Consultation meetings before the implementation Demolition of structures- Clearing and Grubbing Phase Reconstruction of structures— after the clearing and grubbing phase 	DED, POW, Contract	PEO, Contractor
21. Possible discovery of artifacts, bones or other objects of	Presence of artifacts, bones or other objects of interest in the project site	Adoption of the Chance Archaeological/Paleontological Finds Procedure	Before the start of project implementation up to its completion	Contract, O and M	PPMIU, Contractor

interests		will be observed			
22. Possible feedback or grievance	Negative feedback from any person or group of persons from pre-implementation up to its completion	<ul style="list-style-type: none"> Grievance Redress Mechanism (GRM) shall be put up by the PPMIU which can be accessed by any person in case there will feedback or complaints regarding the pre-implementation up to the completion of the subproject; Public awareness campaigns, Training and Capacity building in the implementation of the Project shall be ensured and this shall spearheaded by the PPMIU I-SUPPORT. 	<p>Before the start of the project implementation</p> <p>Before the start of the project implementation</p>	<p>Contract; O and M</p> <p>Contract; O and M</p>	PEO, PPMIU, Contractor
23. Quarry Sites	<ul style="list-style-type: none"> Minimal effect to humans and to the environment Temporary disturbance on water turbidity 	<ul style="list-style-type: none"> The quarry sites are already existing and are far away from households Maintain the recommended distance from the waterline Maximize 	Continuing activity	O and M	PLGU

	<ul style="list-style-type: none"> • Temporary disturbance to fresh water organisms 	<p>operation during summer time;</p> <ul style="list-style-type: none"> • Avoid/minimize washing of equipment within the waterline 			
24. Potential damage to existing road due to hauling of quarry materials	<p>Source of quarry materials is about 30 kilometers from project site Transportation of quarry materials from source to the project site will cause damage to existing FMR</p>	<p>Regular monitoring of existing roads and strict enforcement of load limits</p>		<p>Certification of DPWH</p>	<p>Contractor</p>
25. Conversion of land use /natural habitat due to quarry	<p>The proposed quarry site is within the private land and there is no need to convert existing land use</p> <p>Quarry site is existing and is a proven source of good quality materials</p>			<p>Certification of DPWH and PENRO</p>	<p>PLGU; Contractor</p>

	Quarry materials will be procured from the accredited quarry site of DPWH				
26. Batching Plant	Batching Plant is mobile and will not operate more than a year	Secure EMB requirements for Batching plant	Before the project start	Contract	Contractor