CEMPHIL CEMENT GRINDING PROJECT

1.2 MILLION METRIC TONS PRODUCTION PER YEAR
AJUY, ILOILO

Summary Project Information

Name of Project:	Cemphil Cement Grinding Project
Nature of Project:	Non-metallic Mineral Processing
Name of Proponent:	Cemphil, Inc.
Project Location:	Sitio Punta Daku, Barangay Bay-Ang, Ajuy, Iloilo, Panay Island
Address of Proponent	86 Commission Civil St. Jaro, Iloilo City, Iloilo, Panay Island
Project Size	1,200,000 metric tons (mt) ground cement annually, broken down to: Phase 1: 600,000 mt/year Phase 2: Additional 600,000 mt/year Private land area: 6.1051 hectares Construction footprint: 4.5 has. FLA applied area: 0.97 hectares Wharf construction footprint: 3,069 m2 0.31 has. **Total Project Area applied for ECC: 7.0751 hectares** Marine buffer zone 3.515 has. (fifty meters coastal perimeter of Plant)
Project Components	❖ Jetty Port /Wharf on Piles with 306 m2 rock-fill causeway with 99m access trestle, 2,025 pier deck and cross-current culverts ❖ 4.5 hectares stockyard /stockpile sheds ❖ Two (2) Closed Bucket Conveyor Systems ❖ 4 cement storage silo ❖ Cement Grinding Plant and Packing Equipment
Environmental Control and Enhancement Measures	❖ Particulate bag filters with total capacity of 177,520 m^3/hr capacity. ❖ 1 main drainage trench,12 silt traps & settling ponds. Holding capacity 8,085 m^3. ❖ 7 units oil and water separators, each at least 5 m^3 capacity ❖ Stabilization of sloping land through benching, retaining walls and revegetation ❖ Mangrove reforestation ❖ Marine buffer zone
Project Activities	**Phase 1 Stage 1 Construction:** Land preparation, Slope stabilization, Material Storage Facilities, Drainage & surface water management system, Jetty-port and conveyor system construction Phase 1 Stage 2 Construction: Construction of 600,000 MTPY Cement Grinding Facilities (Grinding mill house, Grinding facilities Cement Silo 2 units Pack house and packing equipment Administrative Office and laboratory, Machine shop Equipment erection & commissioning: 10 months **Phase 2:** Additional cement grinding equipment Additional Crushers and 2 x 1,000 MT silos **Project does not include quarry nor clinker production.**

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Summary Project Information	
Authority Over Land /Sea	Land Titles DENR-Received application for Miscellaneous Lease Agreement
Responsible Officer and Contact Person	Stephen Pol Buenconsejo, President admin@cemphil.com
EIA Preparer	Teodora H. Salvador, EnP. Envitech Environmental Management Consultancy Services 5 Joshua St. Filinvest Heights, Bagong Silangan, Quezon City 1119 (02) 961-6600; 0916 708-9835 in partnership with Environmental Professionals and Associates (EPA) Engr. Cesar S. Siador, Jr., Environmental Quality Management Specialist Unit 1-C-12, Bahay Caridad, Bayani St. Brgy Doña Imelda, Quezon City +639202377070

1. Summary Project Description

The Cemphil cement grinding plant project is a cement processing plant that will finish grind clinker, gypsum, and tuff to produce cement using dry process. The project will be sited in a six (6) hectare idle, stony, slightly sloping land in Punta Daku, entirely within Barangay Bay-ang. The site is bounded by Canal Bay in the southeast and by Guimaras Strait in its southwest sections. The Project will have a 3,069 square meter (m^2) jetty–port inclusive of a 306m^2 rock causeway, a 99m access trestle and 2,025 m^2 pier deck. The production inputs such as clinker and gypsum will be imported, meeting the Philippine National Standard for these materials. Pozzolan or Tuff will be sourced from permitted suppliers in Albay, Bicol Region. Cemphil will contribute to the development of local cement production capacity to supply the growing cement demand in view of the Government's massive infrastructure development and continuing expansion of the private construction sector. Its products will replace the similar volume of imported cement, creating jobs for residents of Ajuy and Iloilo, creating resources for Social Development Programs and start-up the private-sector driven Ajuy Economic Development Zone (AEDZ) project conceptualized to promote local economic production, generate jobs, generate taxable incomes, and better land use of an otherwise least-used but disturbed land area in Ajuy. The Regional Development Council (RDC) Region VI and the Department of Public Works and Highways (DPWH Region VI) has inspected the project area and support this project. The process for developing the access roads to the AEDZ is on-going, hinged on the implementation of this Project as the economic attractor for other locators to the AEDZ.

2. EIA Process Documentation

The study team is comprised of experts with interdisciplinary experience in environmental impact assessment, and academically prepared new consultant members, enumerated in the table below.

Table 1 The EIA Study Team

EIA team member	Field of expertise / Module
Teodora Haresco-Salvador	Team Leader, Environmental Planning, Land Use Assessment and Social Module
Alan Salvador	Water Quality, Hydrogeology and Hydrology
Nazario Sabello	Air Quality
Katherine Escalona-Sanchez	Marine Ecology
Victor Valderrama	Terrestrial Floral Survey
Wencelito Hintural	Terrestrial Floral Survey
Beatrix Labrador Borja	Environmental Planning, EIA Consolidator
Cesar S. Siador, Jr.	Peer Reviewer

3. The EIA Process and Schedule

The EIA studies started in May 2019 and overall, took six (6) months. The EIA report preparation took two (2) months. The pandemic and difficulty to obtain acceptance for the Foreshore Land Application for the jetty port constrained an extended ECC application period. The EIA process undergone by the project is shown in Table 2 below.

Table 2 Environmental Impact Study Area, Methodology and Schedule

Module	Baseline	Methodology	Intermittent within the following dates
Land	Project site topography, Land Use, Land Classification, Land Cover, Pedology, Soil Erosion	Use of third-party geodetic survey data Key Informant Interview (KII), Use secondary soil data from Bureau of Soil and Water Management, Review of draft Comprehensive Municipal Land Use Plan of Ajuy, Aerial reconnaissance of Project site by Drone, GIS mapping, aanalysis and interpretation of aerial images and NAMRIA satellite imagery for soil cover, Soil Loss Estimation using modified Universal Soil Loss Equation	May 14-to December 15, 2019
	Regional and Area Geology and Geomorphology, Geohazards	Secondary data from NAMRIA Ready Project, KII, use of third-party drilling soil investigation data	June 1 to July 5, 2019
	Area Terrestrial Biology	Floral survey using quadrat sampling Faunal survey using transect walk, mist net and traps	May 14 to June 30, 2019
Water	Area Natural Drainage Pattern, Hydrogeology, Water Balance Study	Use of secondary data on geology and hydrogeology from MGB and the Municipal Coastal Resources Management Plan, analysis of water balance using normal rainfall data from	July 5 to 8, 2019 to January 5, 2020

Module	Baseline	Methodology	Intermittent within the following dates
	Water Quality, Marine ecology, Oceanography	PAGASA and Soil Moisture Balance Formula; Water quality sampling and laboratory analysis, manta tow and spot dives for survey of corals, seagrass, and fish , laboratory analysis for benthos ID, hydrodynamic modeling using Delft3D modeling suite from Deltares for sediment plume circulation	
Air	Air Quality	Use of climate data from PAGASA, KII, 24-hr sampling for TSP in Purok 4 and 1, Bay-ang, Emission inventory and Tier 4 Air Pollutants Dispersion Modelling using AERMOD	May 1 to December 23, 2019
People	Public Perception, Socio-economic Profile of Direct Impact Population, Social Acceptability, Survey	Use of secondary data from Municipal Comprehensive Land Use Plan, Coastal Resource Management Plan, Census of Population and Households and Statistical Tables from the Philippine Statistics Authority, IEC and Ffocus Group Discussions (FGD) with Sectoral Representatives and the Direct Impact Population, KII with LGU leaders, Household Survey of Direct Impact Population and Participatory Micro Community Development Planning	May 14 to - January 10, 2020

4. Public Participation

Public participation in the EIA process was obtained through Key Informant Interviews (KII), Focus Group Discussions (FGDs), Household Survey of Direct Impact Population and the prescribed Information, Education and Communication (IEC) social preparation activities, the conduct of Public Scoping as mentioned in Table 2. The documentation of IEC activities and Public Scoping are annexed to the EIS report.

5. Summary of Project Alternatives

Alternative	Main Environmental Impact/s	Evaluation/Decision
Technology and Process: Cement production that	Heightened pollutive air emissions	Not favored due to perceived longer ECC processing period, potentially more environmental pollution issues.

Alternative	Main Environmental Impact/s	Evaluation/Decision
includes clinkering		
Site selection Ajuy is selected due to:	Availability of sufficiently deep harbor near established sea transport routes Declared LGU support to ECC and other permitting processes Better controlled dust dispersion	Ajuy is preferred over the initially identified site in Barotac Viejo to important coral formations thereat. Bay-ang site features provide alternative deep harbor formation and hilly landform shielding nearby populated areas from the potential source of increased ambient dust and noise.
Resources	Reduction of other industrial waste by-products prepared into synthetic gypsum. Minimization of ground water extraction through rain harvesting	The use of synthetic gypsum, an industrial waste material is environmentally beneficial, involves less cost and Government permitting. Public water supply services Bay-ang and Ajuy are limited. Rainwater harvesting using settling ponds serving as rainfall collection basins will augment water requirements for general cleaning, dust suppression and landscape irrigation.
"No Project" Scenario. The Project will not continue.	No changes to existing air quality, no potential source of marine water pollution, no potential cause for traffic congestion and road safety issues at access roads from Pedada to Bay-ang and from Bay-ang to Pedada along coastal alignment. Erosion-prone hilly land Project site with stony and loose soil not suitable for agriculture will continue to contribute to coral reef siltation in Bay-ang and Pedada coastal areas.	Loss of socio-economic benefit valued at PhP 80 trillion from 50-year project life, derived from lost investment in locally-sourced equipment and factory components, lost employment opportunities, lost opportunities for Social Development project assistance, for national income tax generation, import excise tax collections, increase in real estate tax revenues. Not including the cost of employee social benefits, the value of readily available cement for Government and Private Sector construction in Iloilo and Negros Occidental, lost stimulus for downstream enterprises which otherwise will survive from Cemphil Plant operations.

6. Summary of Key Issues and Concerns Raised During Public Scoping and How These Are Addressed by the Project

EIA Module	Issues/Suggestions Raised by Stakeholder	Suggestion Sector or Representative Who Raised the Issue	How Issue is addressed by the Project /Mitigating Measures
1. Land	Where to dispose Project's solid waste	Ms. Precy Santamina, BHW, Purok 7, Bay-ang	The Project will import pre-processed raw materials and will have no waste raw materials. It will implement the "Zero Waste" policy.
2. Water	Pollution of local residents' potable water supply	Noel Cantancio, Resident of Purok 6	Project has no by-product that will pollute local drinking water sources.
3. Air	Air pollution may cause health issues.	Noel Cantancio, Resident of Purok 6	CEMPHIL will install adequate air pollution control equipment to meet Government standards. It will also provide medicines and other health services for Barangay Bay-ang and nearby Barangays whether or not it is the cause of illness.
	Cement Plants such as those operating in Iligan City, are required to have anti-air pollution devices. Local people can help control air pollution by planting of more trees. Factories provide income to residents, generate tax revenues and other economic benefits.	Prof. Basinang, DEP-ED District Supervisor, Bay-ang	CEMPHIL project design includes numerous air pollution control installations (APCI) to meet the requirements of the Philippine Clean Air Act. A Multipartite Monitoring Team will help enforce compliance to laws.
4. People	What will happen to the displaced households residing in the Project site.	Roger Claro (project affected persons)-Brgy Bay-ang	With endorsement from the Local Government for NHA housing for storm-surge vulnerable communities in

EIA Module	Issues/Suggestions Raised by Stakeholder	Suggestion Sector or Representative Who Raised the Issue	How Issue is addressed by the Project /Mitigating Measures
	Relocation site should be established near the present residential site, and the sea. Will the relocation housing be for free?	Noli Laraga, Brgy Bay-ang	Ajuy, the residents in Lot 23 will be awarded free permanent housing in Barangay Luca. Cemphil will provide Php 50,000 livelihood assistance per household.
	Can we request for a 6-classroom building?	Ms. Janet Academia, Principal, BTMES, Bay-ang	When the Project is operational, CEMPHIL will make it a priority.
	The project seems to be beneficial to the local people. However, what if there are negative impacts that may occur, such as health effects due to air pollution.	Marlin Calera, Brgy Culasi.	Severe negative health impact is not expected from Project. [There will be a Multipartite Monitoring Team (MMT) that meets quarterly where you can bring your complaints.
	Is it possible to fish in the Project vicinity?	Noli Laraga, Purok 6, Punta Daku	The area is under "No Take Zone" per Municipal Ordinance.
5. Biodiversity	Protection of marine fisheries resources of Bay-Ang, under the present proposal and future expansion.	Kagawad Villaret, Brgy Culasi	The project will protect and create additional habitat for shellfish. There is no Project plan to expand toward the sea.
	Monitoring of adverse effect by Project to marine resources	Sandra Tupas-Dilag, Brgy. Santiago, Barotac Viejo	There will be annual marine ecosystem monitoring by a marine biologist, and results will be reported to the MMT.

7. Summary of Main Impacts and Target Environmental Management Performance

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
Pre-Construction Phase			
Area preparation	Displacement of 24 Informal Settler-families from Cemphil project site	• Resettlement to formal NHA Housing Project; • Transportation assistance • Provision of livelihood assistance	100% of Project-affected Families (PAFs) are resettled and provided with PhP 50,000 livelihood assistance per household
Project preparation	No environmental impact. However, preparations to secure environmental compliance are implemented during this phase.	• Incorporation of provisions to comply with environmental management commitments and ECC conditions are incorporated in the specifications in the Tender documents issued for Project equipment design, facility design, and Plant construction.	Project equipment, facilities and civil works are designed and built to meet 100% of pertinent environmental impact mitigation requirements
Construction Phase			
Site preparation : – Heavy equipment mobilization, , – vegetation removal – earthworks Land development; Facility construction, Equipment erection and installation	Habitat disturbance, fauna displacement	• Gradual vegetation removal to give fauna ample opportunity to escape. • Minimize vegetation removal as much as possible • Habitat restoration by establishment of nursery to receive viable removed vegetation and preservation of removed topsoil. • Prepare replacement planting materials in nursery in advance, for stability before out-planting, for habitat	100% trees in project area are inventoried and tree cutting permit is secured, leading to terrestrial habitat replacement Replacement of 100% of affected trees through replanting of 50 trees per planted tree species and 100 per naturally growing tree species. 100% of area not required for industrial activities are revegetated.

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		restoration / site regreening • Preferably use indigenous flora species in regreening	
	Solid waste generation: Construction waste Domestic waste	• Carefully plan concrete delivery and placement for zero waste and spills. • Immediately clean-up cement spill while wet. • Waste minimization, waste segregation, material recovery and recycling • Use of 5000 metric tons surplus excavated soil for backfill of separate Bay-ang Coastal Road Project • Provide for at least 200m^2 stockyard area to properly sort &store recyclable materials for easy & safe retrieval of recyclers • Consider blending of selected shredded plastic to mortar for non-load- bearing concrete walling panels, satisfying DPWH standards. • Composting of biodegradable waste.	Zero littering of construction waste 98% of construction waste are properly stockpiled for easy haul-out 100% of recyclable / recoverable materials are segregated and disposed through accredited /registered material recovery agents 100% of residual waste are hauled out weekly 100% of biodegradable waste are properly composted 100% of excavated materials are used for construction backfill
	Kitchen waste	• Provide for mobile kitchen waste receptacles for safe and convenient transport to compost pit. Total estimated daily volume of vegetable waste to be transported is 1.6 tons at peak period.	100% of raw kitchen and expired food waste are collected and contained separately, hauled and properly composted daily. 100% of livestock food receptacles are disinfected daily.

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		• Separation, safe containment and handling of estimated max. 228 kilos food waste per meal, given as livestock feed amelioration by partner cooperative for livestock farming to supply Project kitchen. • "Expired" food waste and other kitchen waste will be properly composted	100% of food waste are handled safely and quickly dispatched to partner livestock producer cooperative
	Hazardous waste generation	• Segregate hazardous waste (busted light bulbs, spent batteries, clinic waste, broken equipment with electronic components) • Provide safe and sealed containers for each waste type • Place placards with the symbol representing the hazard classification of the waste per (DAO 2004-36) • Store hazardous waste in safe, dry, and well-ventilated shed if not hauled out immediately. • Haul out of hazardous waste by accredited TSD agent.	100% of hazardous waste are properly contained, handled, and hauled out in compliance with DAO 29-92
	Waste water generation Kitchen wastewater Septic waste	• Provide for 9m3 kitchen grease trap that discharges to a dug-out ground infiltration basin at least 50m2 x 0.3 meters • Schedule the construction of Plant	100% of hazardous waste are properly contained and disposed in proper manner 100% of kitchen wastewater is passed

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		septic tank ahead so it serves the construction personnel, or • Provide sufficient septic tank capacity for the sanitation need of construction workers.	through a grease separator before discharge to a dug-out open bottom receiving pond 100% of septic waste are processed in adequate septic tank meeting the standard under the Philippine Plumbing Code as revised.
	Potential soil contamination	• Do not allow discharge of waste concrete in Plant site. • Prevent oil and lube spill through regular engine maintenance, proper handling and storage of fuels, oil and lubricants in motor pool. • Use of DOE-compliant fuel and lubricant containers and dispensers. • Equipment maintenance only in motor pool provided with oil collection sump in flooring and perimeter containment lip.	Soil contamination observed in project site less than 2 square meter2 total affected surface area, with depth not more than 2cm.
	Resource use competition	• Use of pre-mixed concrete delivered and injected by fitted cement mixer trucks, no cement mixing at site. • Use delivered water supply from permitted water service provider • Secure NWRB permit to operate project well	Zero (0) complaint regarding water resource use competition from local community Zero (0) ground water extraction unless permitted by NWRB

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		• Construct all facility roof and downspout connected to drainage /reservoir to harvest rainfall • Build drainage/rainfall collection system with 8,035 m3 capacity	
	Marine water pollution Increased marine water turbidity Increased oil and grease sources	• Install silt control measures (perimeter cut-off channel, adequate settling ponds) before implementing earthworks • Course storm drainage discharge to sea through a 3-basin series settling pond. • Schedule major earth works and slope stabilization during dry season, if possible. • Implement "cut-haul-lay-and-tamp" method for earthworks • Ensure slope stability and provision of 3% run-off channel to avoid excessive rainfall ground infiltration during slope excavation. • Immediately plant open spaces including open bench faces right after construction • Prohibit washing of cement trucks at site • Equipment maintenance only in authorized designated area with oil collection sump.	Concentrations of total suspended solids in marine receiving waters, specifically 50meters distance from coral communities should be <70 mg/L., 75% of the time Concentrations of hydrocarbons in project water quality monitoring stations should be < 5.0 mg/L., 75% of the time

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
	Exceeding ambient dust	• Water sprinkling along haul roads and active construction areas at least 2x a day in dry season, at rate of 5 liters per square meter unpaved road or open earth • Require contractor to maintain particulate filters in exhaust of diesel-fed heavy equipment and meet equipment emission standard. • Set project vehicle speed limit to 30kph • IEC for community participation in dust suppression • Lobby with Local and National Government to implement access road support to Ajuy economic zone • Construct tire wash in Plant for incoming and outgoing vehicles	Zero (0) road accident involving Project equipment and personnel. Ambient road dust ≤ 300 µg/Ncm in 1 hr. sampling Materialization of access road to Ajuy economic zone within five (5) years of Project start-up
	Exceeding, disturbing noise	• All heavy equipment must be properly maintained • Limit construction work between 6:00am to 6:00pm • Schedule heavy equipment operation between 7:00am to 6:00 pm • Plan the operation of noisy equipment use outside of 1:00 pm to 4:00 pm • Plan the work as to avoid proximate simultaneous	Noise level from Project activities perceived in residential areas nearest to project site (in Purok 6, 3 and 4) are within the following noise limit for residential areas: Period dB(A) Morning 50 Daytime 55 Evening 50 Nighttime 45

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		operation of more than two(2) noisy equipment	
	Unmitigated greenhouse gas emissions	• Carbon offsetting through reforestation of 10 hectares mangrove areas annually over 25 years and maintenance for another 25 years with at least 85% survival rate.	Redemption of 100% of carbon footprint
	Road safety risks	• Provide road safety signages along haul roads, 1 signage per kilometer in both directions • Provide traffic aides at school gates during 7:00 to 9:00, 11:00 to 14:00 HH and 16:00 to 18:00. • Provide capped traffic mirror/s in narrow, highly populated road sections with blind curves. • Require contract heavy equipment to comply with LTO regulation on visibility of markings for large vehicles. • Avoid or minimize the use of Barangay roads by heavy equipment during high during peak population traffic hours (7am to 9am, 11am to 1pm, 5 to 6pm)	Zero (0) accidents involving project-associated vehicles
Jetty port construction	Marine water pollution :	• Installation of silt curtain and oil boom around active jetty port construction area, as necessary	Concentrations of total suspended solids at 50meters distance with current toward coral

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
	Increased marine water turbidity Increased oil and grease sources		communities should be <70 mg/L. Concentrations of oil and grease in water quality monitoring stations should be < 5.0 mg/L.
	Marine habitat disturbance; wildlife species displacement; threat to abundance, frequency and distribution of important species	• Use of natural rocks and stones to create rough surfaces on causeway and retaining walls from -1 to +2 mean lower low water (MLLW) to recreate habitat for shellfish. • Construction of six (6) concrete anchor blocks for the pier facility	At least 5000 m2 new rocky surfaces at causeway
Project construction (processing plant and jetty port)	Generation of employment and Competition for limited employment opportunities	• Post job opportunities and required qualifications in highly visible places (Barangay and Municipal Halls) • Preferential hiring for local labor • Implement On-The-Job training programs for under-privileged undergraduate youth • Comply with DOLE regulations regarding wages, occupational safety, and contract workers' benefits • Requirements for semi-skilled, skilled and engineers will first be posted in Ajuy	100% of labor requirement is sourced from Ajuy. 100% of DOLE regulations regarding wages and benefits are complied.
	Health and safety hazards to workers	• Construction Contract to include provision for DOLE requirements for occupational health and safety	Zero (0) fatal injuries to workers Less than 10% of man-hours lost due to accidents

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		• Conduct of workers' safety orientation • Weekly safety meetings • Construction Contract to include provision for DOLE requirements for occupational health and safety • Daily safety checks for all operating equipment, suspended structures (scaffolding), electrical connections, oil storage and spills, passages, work areas • Daily checking of correct stockpiling of materials and wastes	
	Generation of benefits to the Community	• Organization, training, and capacitation of the local Labor Service and Producers' Cooperative to provide services and supplies for the Project. • Promotion of school-based development of nurseries for high quality planting materials for food, herbal medicine, forest trees and mangrove cultivars	At least two (2) viable people's cooperatives, established to support Project requirements for employee cafeteria, cleaning materials, etc., becoming viable on 7th year of operation
	Uncontrolled in-migration and proliferation of informal settlers	• Require Municipal Certificate of 3-year residency, for employment • Involve Project Cooperatives to report to the LGU any transient/migrant/ informal vendors/ peddlers / settlers	Zero (0) new informal settlements within 1 km radius of project site. Zero (0) number of non-resident labor workers

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		within Bay-ang and Pedada.	
Operations Phase			
Finish Grinding of Cement, Packing and Dispatch	Reduced soil erosion potential	• Continuing plantation and maintenance of vegetation in the Plant • Intensification of planting deep and widely rooting shrubs and bushes in eroding areas, if any	Reduction of project area soil erosion from existing 14.77 tons to 7.71 tons annually starting Year 6 onwards
	Change in soil quality and soil fertility	• Re-soiling of open/vacant areas with compost-enriched topsoil • Include nitrogen-fixing shrubs and tree species in Plant revegetation • Soil amelioration using project compost and Mycorrhizae	Soil amelioration quality meets DA PNS/BAFS 183:2016
	Habitat disturbance; wildlife species displacement; threat to abundance, frequency and distribution of important species	• Company policy to prohibit workers' predation or harm to wildlife. • IEC to workers for protection of disturbed animals by assisting to reach habitat shelter and safety.	100% Project compliance to Republic Act No. 9147, Philippine Wildlife Act
	Solid waste management	• Proper composting of biodegradable waste • Provision of separate waste bins for biodegradable, recyclable materials and residual waste; • Material recovery, re-use and recycling	100% Project compliance Project compliance to R.A. 9003

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		• Disposal of irrelevant recyclable waste to registered material recycling agents • Weekly haul-out of residual waste to municipal waste management facility.	
	Hazardous waste management	• Proper containment and storage of used oil, spent heavy equipment batteries, spent batteries, busted lightbulbs, ink cartridges, oily wastes and laboratory reagents; • Haul out of hazardous waste by accredited hazardous waste transporter and treater	100% Project compliance to R.A. 6969
	Resource use competition	• Rain harvesting from all Plant surfaces • Ground water extraction only for domestic use.	No resource use competition with local community
	Water pollution from Plant and Stockyard Water pollution from port operations and ships	• Silt control through perimeter cut-off channel, adequate settling ponds and Oil and Water Separators (OWS) • Cooperate with Coast guard on the enforcement of Marine Pollution control guidelines for ships at port • Post signboards in port disallowing discharge of raw bilge and ballast water, and solid domestic waste	Water quality at project impact zone meet Class SB standard, DAO 2016-08 at 75% at least of the time for Oil and Grease, TSS and other parameters as reasonably required.

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		• Coordinate with EMB 6 for TSD services for visiting ships	
	Disturbance of potential coral habitat around jetty port area	• Require docking ships to use anchor blocks. Advice regarding disallowance of random anchoring	No further damage to corals near the jetty port
	Increased ambient dust pollution from cement grinding and product transport	• Install, operate and properly maintain air pollution control equipment as committed • Limit and install signages for vehicle speed to 30kph along access roads • Regular twice daily watering of unpaved access roads and any open spaces in Plant during dry days • Daily road dust sweeping in concrete road sections. • Return of collected road dust to Plant raw material bin to prevent loose dust re-suspension in air • Ensure tire wash has sufficient water to function. Daily removal of collected silt in tire wash.	Monitored Total Suspended Particulates (TSP) and noise in monitoring stations in impact receptor communities will be <230 µg/Ncm for 24-hour averaging or <300 µg/Ncm for 1-hour averaging.
	Increased ambient carbonic particulates emitted by gensets	• Provide a common exhaust stack for the Gensets at least 10 meters high and install catalytic converter or diesel particulate filters	

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
	Increased noise	• Use of rubber pallets and enclosure of noisy equipment • Enclosure of all noisy processes • Design internal walls of noise enclosure buildings with fire-resistant noise dissipators (corrugated gypsum boards, etc.)	Monitored noise in residential areas will comply with standard under the NPCC Regulation for Noise in General Areas 80% of monitored time: Period dB(A) Morning 50 Daytime 55 Evening 50 Nighttime 45
	Slight increase in ambient temperature due to more concrete buildings in the Plant environment	• Maximize planting and maintenance of leafy vegetation in all vacant spaces in the Plant to serve as heat and noise sink	Ambient temperature within Plant is not > 1 °C higher than ambient temperature outside of Plant
	Unmitigated greenhouse gas emissions from genset operation.	• Carbon offsetting through mangrove reforestation and maintenance, ten (10) hectares annually with 1.5mx1.5m, planting interval, for twenty-five years and maintenance for another twenty-five years for total fifty years of Plant operation • Preparation of at least 33,300 viable mangrove cultivars in stabilized in nursery annually, ready for planting season starting September of each year. • Enter into MOA with DEPED for school-based mangrove reforestation and maintenance. • Lobby with Government to	100% of greenhouse gas emissions are offset by mangrove carbon sink 85% of planted mangroves survive and thrive in annual inspection by CENRO.

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		provide incentive to improve renewable energy supply in Ajuy.	
	Employment generation	• Comply with DOLE regulations regarding wages, occupational safety, and contract workers' benefits • Cause/fund the delivery of the following trainings: ↳ Cooperative formation and development ↳ Enterprise development, financial management and sustainability, including simple livelihood project feasibility preparation ↳ Livelihood skills development ↳ Kitchen operations ↳ livestock growing and health protection (chicken, swine, goat) ↳ food safety ↳ food processing (chicken and pork-based products) ↳ snack food production ↳ soap, cleaning materials (incl. ash cleansers) and implements production ↳ tailoring ↳ rag making ↳ Product packaging	100% compliant with Philippine Labor Code At least 2 partner cooperatives continue to manifest viability indicators: -Officers selection and functioning, records keeping, financial management are in accordance with guidelines of Cooperative Development Authority (CDA) 100% of funded livelihood projects are viable and sustainable One (1) community display and trading center for assisted projects is established and operated by local community members. MOA with LGU for the display center space.

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		↳ Product marketing and market networking • Organize, train, and enable local community cooperative partner to supply and operate Project Canteen, and supply own-grown food materials.	
	Threat to delivery of basic services	• Augment Barangay Social Development Projects through: ↳ IEC on the importance of the following: ↳ proper family nutrition ↳ composting, organic soil enrichment and home gardening ↳ organic food production and its potential markets ↳ climate change, mangrove reforestation and sustainable fishery • Establishment and annual replenishment of a revolving livelihood assistance and mutual fund managed by the association of partner cooperatives • Assist the establishment and operation of a common food processing facility identified based on	100% of Cemphil projects augment the LGU's socio-economic development programs MOA with LGU for the required mangrove reforestation areas is secured, covering at least ten (10) hectares per year, for twenty-five years. Municipal Ordinance for protection of replanted mangrove forest is obtained. MOA with DEPED and schools for a total of ten hectares mangrove reforestation and maintenance work is concluded each year. At least one program for Bantay Dagat is supported each year. One nursery and garden for mother stock for nutritious

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		community "felt-need" basis. • Supplement workers' nutritional source by supporting food gardens in vacant areas in Plant • Promote the establishment of barangay- and school-based food and medicine mother stock nurseries and gardens, and mangrove nurseries, through student project incentive system to supplement students' allowance. • Support Bantay Dagat initiatives of local fishermen • Video / keep reproducible record of all trainings, education and information materials for annual replication / continuing efforts	food, medicinal plants, forest trees and mangroves per partner Barangay (initially Bay-ang, Pedada, Luca in Ajuy and in Barangay Santiago, Barotac Viejo). The common food processing facility is viable and sustainable in terms of a) operating system [institutional aspect] (b) economic indicators (net present social value = >1.0, economic internal rate of return =>18%) and financial indicators (cash flow sensitivity => 15% overall). School -based / coordinated nurseries are (a) thriving, (b) provide home planting materials to at least 100 different students annually (c) adequately supply Cemphil mangrove reforestation requirements At least 100 students benefit from Cemphil nursery development program each year 100% of information, education/training modules implemented are recorded, subject-catalogued and safekept

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
	In-migration, proliferation of informal settlers	• Post job opportunities and qualification requirement in highly visible places (Barangay and Municipal Halls) • Requirements for semi-skilled, skilled and engineers will first be posted in Ajuy • Municipal certification for 3-year Ajuy residency shall be a requirement for employment • Hiring of non-resident worker only when the requirement is not locally available • IEC with LGUs on the control of proliferation of informal shops, shanties, stalls and vendors/sellers	100% of labor requirement is sourced locally. Zero (0) shanties and new informal settlers within Barangay Bay-ang Zero (0) employees from new informal settlements (Base year 2021)
	Road safety hazards, traffic congestion	• Scheduling cement transport during off-peak hours. • Road widening and concreting; • Provision of safety signages; provision of traffic aids. • Lobby with DPWH and LGU for realization of access road support to Ajuy Economic Zone • Provision of traffic aids during high foot traffic hour in schools and markets	Zero (0) road accidents caused by Cemphil -related vehicles
	Increased sources of occupational safety hazards	• Regular workers' safety meetings • Provision of safety installations in plant	Project is 100% compliant with DOLE OHS guidelines

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		machinery and structures • Provision of workers' PPE	
	Increase in local tax revenues	• Follow-up with LGU on the approval of Cemphil application for land use reclassification from agricultural to industrial	100% Project real estate tax payments are for industrial land classification after start of Project construction.
Jetty Port Operation	Potential source of pathway conflict with local fishing boats	• Project ships are to follow LGU-provided navigational lane • Project ship arrivals and departures are posted in Bay-ang Barangay Hall Bulletin Board • Project ships blow horn upon entry into Ajuy municipal waters and exit from Cemphil Port	Zero (0) accidents related to Project ship ingress or egress
Abandonment			
Equipment dismantling and demobilization	Waste generation	• Shredding of biodegradable waste and placing in compost pit • All recoverable materials will be disposed through accredited material recyclers • All residual wastes will be hauled out to municipal land fill. • Proper containment and storage of all hazardous waste, and disposed through authorized TSD agent.	100% of waste materials are hauled out from Project site within one year of closure notification. Zero (0) road accidents occur during abandonment phase.
	Potential public and workers' safety risks	• The property will be closed to the public to avoid safety risks	Zero (0) accidents occur during abandonment phase

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
		• All workers are trained for the job and provided with PPE • All structures and facilities that are public safety risks will be dismantled and removed. • Hauling will be done at nighttime to minimize traffic congestion. • All haul trucks will be required to comply with LTO road safety requirement for oversized cargo and visibility markings • All settling ponds, drainage systems and oil and water separators will be cleaned-out. • All sources of environmental deterioration, if found, will be remediated by Cemphil. • A final air and water quality sampling will be undertaken, witnessed by the MMT and EMB6 or equivalent entities, to verify that environmental quality at abandonment comply with environmental regulation.	100% of final air and water quality sampling results, and report on final inspection for project exit from environmental indicate that the Project site is free from the existence of, and as source of environmental risks.
	Water pollution from Plant and Stockyard	Desilting of settling ponds and desludging of Oil and Water Separators by TSD agent.	Water quality in project receiving waters are 100% compliant with Class SB under DAO 2016-08.

Activity	Potential Environmental Impacts	Mitigating Measure	Target Performance / Efficiency
	Increased ambient dust from facility dismantling	Overhead sprinkling for dust suppression	Total Suspended Solids sampled at nearest community (Purok 4) is < 300µg/Ncm for 1-hr averaging.
	Mitigation of accumulated greenhouse gas emissions during project lifetime	• Offsetting of project carbon footprint through mangrove forestation	CENRO concerned issues certification of average 85% survival rate of all Cemphil mangrove forestation or 3rd Party Audit confirms at least 85% mangrove survival rate
	Loss of employment	• Provide employee benefits as per DOLE regulations • Early education of employees regarding personal savings and retirement investment planning • Prepare employees to avail of unemployment benefit from the Social Security System • Provide employee benefits as per DOLE regulations	Zero (0) employees are deprived of legally slated benefits 100% of employees are members of the Social Security System and have savings in emergency unemployment and retirement fund

8. Risk and Uncertainties Related to the Findings and Implications for Decision making

The risks and uncertainties related to the findings and implications for decision making are presented in the following table:

Table 1 Summary of Risks and Uncertainties

Module	Risks and Uncertainties	Implications for Decision Making
Land	Project site land use zone is officially still under Agricultural classification.	The Project area may not be approved for Land Use conversion for unknown reason.

Module	Risks and Uncertainties	Implications for Decision Making
	The process for updating the Municipal Comprehensive Land Use Plan has not been completed.	However, if the consideration simply evaluates Project merit based on "best use of the land and environmentally sustainable land use, there is no reason for denial of application. The Project land form as proposed, adheres to sound environmental basics for sustainable land use. The ECC requirement for land zoning use compatibility is safe to be a post-ECC requirement.
Water	Well pumping productivity studies have not yet been undertaken to identify the exact location of production well, although soil investigation indicates the water table was encountered at depths between 0.5m to 6m.	The Project is not a water-intensive undertaking. Process temperature management will use circulating cooling oil. Rainwater harvesting and collection will be incorporated in all building design, for use in dust suppression, cleaning, and landscape irrigation. Groundwater extraction will be limited for drinking, cooking and sensitive domestic uses. The NWRB permit for groundwater extraction is safe to be a post-ECC requirement.
Air	Tier 4 air pollutants dispersion model was used in predicting Project air quality impact and identifying Area Sensitive Receptors who may experience an increase in ambient particulates due to the Project. Actual air quality impact during operation may be different from values forecasted using USEPA approved dispersion model tool AERMOD, due to seasonal and other background factors.	A wealth of knowledge, experience, and data exist regarding air quality impacts of cement finish grinding operations. It is fully known that these air quality impacts can be and are usually managed within the Implementing Rules and Regulations of R.A. 8749, the Philippine Clean Air Act. The required quarterly air quality monitoring within the Plant and the nearest impact receptor communities, the Multipartite Monitoring Team meetings, the Grievance Mechanism, and regular EMB monitoring will help ensure Project compliance to Air Quality standards.
People	The project aspiration to assist the local community to develop involves a number of factors that are outside of the Project control, that is, the motivation and	This concern to enhance the project development impact is a goal of many projects which however involves, to a great degree, the chance of coinciding

Module	Risks and Uncertainties	Implications for Decision Making
	inspiration of community members for self-determination and self-sacrifice, both of which are necessary in overcoming poverty.	with dynamic, talented and self-less local / community leaders, and massive resources to kick-start and sustain interventions until a model grows to be self-sustaining after 7 years of hard work. Local elected leaders cyclically change due to the electoral process. Talented leaders are also often are stretched to take care of an increasingly widening range of local development concerns, and full impact may not be attained if for some reason, the Local Leader is unable to continue supporting the Project interventions. Expectations for the Project social development impact is thus forecast to be “moderate”.