ANNEX XI

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

ECUADOR

ADELCA STEEL COMPANY
EC-L1144

ENVIRONMENTAL AND SOCIAL MANAGEMENT REPORT (ESMR)

March 2015

Project Team: Carlos Narvaez (SCF/CFI), Team Leader; Martha Gutierrez (SCF/CFI), Ana Lozano (SCF/CFI); Tracy García (SCF/SCF); Sabine Prinz (VPP/VPP); Andres Lavarte (SCF/SMU); Katherine Scheider (LEG/NSG); Hilary Hoagland-Grey (VPS/ESG); Pilar Larreamendy (VPS/ESG); Korin Hirato (SCF/SYN), Oliver Sieg (ESG/RMG); with the support of Diana Barrero Zalles (SCF/CFI); under the supervision of: Alexandre F. de Oliveira, Division Chief (SCF/CFI).

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List OF KEY ACCRONYMS

EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
ESAP	Environmental and Social Action Plan
ESCR	Environmental and Social Compliance Report
ESDD	Environmental and Social Due Diligence
ESHSL	environmental, social health and safety and labor
ESMR	Environmental and Social Management Report
ICIM	Independent Consultation and Investigation Mechanism
IFC	International Finance Corporation
IIC	Inter-American Investment Corporation
IUCN	International Union for Conservation of Nature
PM	Particulate Material
PMA	Plan de Medio Ambiente
TL	Transmission Line
USEPA	United States Environmental Protection Agency

ANNEX XI
ADELCA STEEL COMPANY
ENVIRONMENTAL AND SOCIAL MANAGEMENT REPORT

1. BASIC FACTS

Date:	March 2015
Country:	Ecuador
Sector:	Steel
Project name:	Acería del Ecuador C.A.
Project team:	Team Leader; Carlos Narvaez (SCF/CFI); Martha Gutierrez (SCF/CFI), Ana Lozano (SCF/CFI); Tracy García (SCF/SCF); Sabine Prinz (SCF/SCF); Andres Lavarte (SCF/SMU); Katherine Scheider (LEG/NSG); Hilary Hoagland-Grey (VPS/ESG); Pilar Larreamendy (VPS/ESG); Korin Hirato (SCF/SYN), Oliver Sieg (RMG/RMG); Juan Carlos Fernandez-Zara (RMG/RMC); Diana Barrero Zalles (SCF/CFI) Project Assistant.
Supervisor:	Alexandre Fernandes de Oliveira, (Chief, SCF/CFI).
Co-Borrowers:	Acería del Ecuador C.A. ("Adelca") and Adelca del Litoral S.A. ("Adelca Litoral")
Total Project Cost:	[Up to US$ 131 million]
IDB loan:	[up to $37 million]
Co-lenders:	China-Financing for Latin America and the Caribbean [US$12 million] Inter-American Investment Corporation ("IIC"). [US$30 million]
EIC:	A

2. PROJECT DESCRIPTION AND ENVIRONMENTAL AND SOCIAL CONTEXT

2.1. The following sections are based on the information provided in the Environmental Impact Assessment (EIA) and the results of the Environmental and Social Due Diligence (ESDD) process.

A. The Project

2.2. Acería del Ecuador C.A. (Adelca or the Company) is an Ecuadorian steel manufacturer and its activities include the manufacture and sale of steel, scrap metal collection and processing, and recently a ship breaking operation. The main products are steel billets (an intermediate steel product) and rolled steel bars and wires. The primary market for the produced steel is the national construction industry. The current annual installed capacity is 310,000 tons of steel products. The Company began its operations in the 1960s with a manual rolling mill, gradually increasing its capacity and improving its technology, as well as opening regional sales offices for its finished rolled and drawn metal products. In 2008 they opened their melt shop plant (foundry). In 2011 they began their first billets sales and buying scrap across Central America. In 2012 Adelca expanded and upgraded its rolling operations, and a year later began their ship breaking operations which supplies scrap metal for the plant. In 2013, the Company began the process of adding a new steel plant to be developed in Milagro by Adelca's fully owned subsidiary Adelca del Litoral S.A.

Figure 1 Company Facilities

2.3. Adelca operates the following facilities (see Figure 1):

- Current Plant Site (Aloág) and San Alfonso Scrap Yard
- Ship Breaking Facility (Duran)
- Regional Offices that include sales and corporate offices and scrap collection yards where scrap is received from third party collectors
- Manta Secure Cell Landfill (not shown on Figure 1)

2.4. The proposed Project will be a corporate loan of up to US$37 million for the construction and operation of a new steel plant to complement Adelca's current operations. The main production facilities will be a casting plant, rolling mill, and

scrap yard. The plant will have an annual production capacity of 400,000 tons split between the two final products: wire rod and rebar. This will result in a total annual production capacity for Adelca of approximately 710,000 tons. The general process and facilities are discussed in Section D below.

Figure 2 **Site Location**

B. Site Location

2.5. The Project will be located in the Ecuadorian Province of Guayas in the San Francisco de Milagro Canton in Southern Ecuador (see Figure 2). The site is located southeast of the town of Milagro. The land is owned by Adelca and covers approximately 66 hectares. This property was previously agricultural, primarily banana plantations that were owned and managed by absentee landlords. There is also a sub-station and transmission line related to the Project (as Associated Facilities), which are discussed in Section 2.24

C. Plant Site Land Acquisition

2.6. All of the land where they are going to build the project was acquired directly from the landowners by Adelca over the last few years. The land for the Project site consisted of one large parcel of 46 ha and eight smaller parcels (ranging from around 2-7 ha). Three additional properties were acquired for future development (two purchased and one leased). Only on the large parcel was anyone actually living at the time of the land acquisition and that person, in addition to compensation, has a formal agreement allowing him to remain on the land indefinitely as a caretaker until future development occurs. On one of the smaller properties there was an abandoned house. All of the land acquired was being used for agriculture: bananas, tobacco, cacao, plantain, fruit and "*habas*."

2.7. The lands were voluntarily acquired in the framework of a strategy of Land Acquisition carried out by Adelca. The strategy of land acquisition and analysis on the livelihoods of former owners includes an initial negotiation, valuation of the property, the amount of compensation to be paid, and issuing of formal contracts with each land owner. The land for the Project was purchased through private agreements with 11 existing landholders. The majority of the land (45 out of 66 hectares) was purchased from one owner, with the rest from individual owners of smaller parcels. More details are discussed in Section 4.3.

2.8. Additional land acquisition and land use restrictions will be required for the transmission line, which is discussed in Section 2.26.

D. Plant Components and Facilities

2.9. The design for the plant includes the following main components as shown on Figure 3:

- Scrap Receiving, Storage and Processing
- Casting Plant
- Rolling Mill

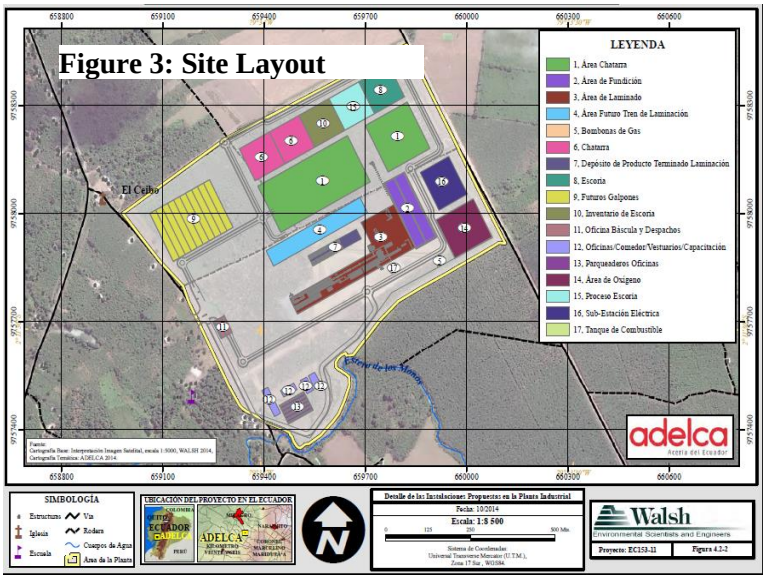

Figure 3: Site Layout

2.10. These components will be supported by typical industrial ancillary activities including a wastewater treatment plant, and oxygen plant to generate pure oxygen that will be used within the furnace; fuel storage (bulk storage of bunker fuel and diesel for the rolling mill furnace); electricity substation on the plant to connect, via a 4 Km 230 kV power transmission line, to a substation in Milagro; maintenance workshop where parts and repairs will be made and other building services. Additional information is provided below.

Scrap Receiving, Storage and Processing

2.11. This process includes the scrap reception, storage and classification. The scrap will be delivered to the Plant or to one of Aldelca's existing receiving centers shown on Figure 1 by one of the existing third party scarp merchants. For context, at the Aloág plant Adelca receives approximately 20,000 tons of scrap per month, and works with more than 3,000 scrap providers. Although the new plant will be significantly increasing the steel production and thus will need additional scrap material as raw material, Adelca has estimated that the current scrap providers are sufficient to meet the additional demand. In addition, scrap may come from the ship breaking operations that currently sends scrap to the original plant in Aloág. The scrap received from all sources is sorted, cut and ground at the Plant to a specific size so that it can be fed into the furnace (see Figure 4 and Figure 5). Some pre-sorting and removal of not recyclable materials may be completed prior to its arrival at the Plant, especially for the steel from the ship breaking yard or one of Adelca's receiving sites.

Casting Plant

2.12. The Project includes an iron scrap casting plant that will use electric arc furnace technology to create steel billets (the intermediate material in the production process). In this recycling technology, the iron scrap is fed into a furnace (or "melt shop") where, through the release of electrical energy, it is melted, obtaining a

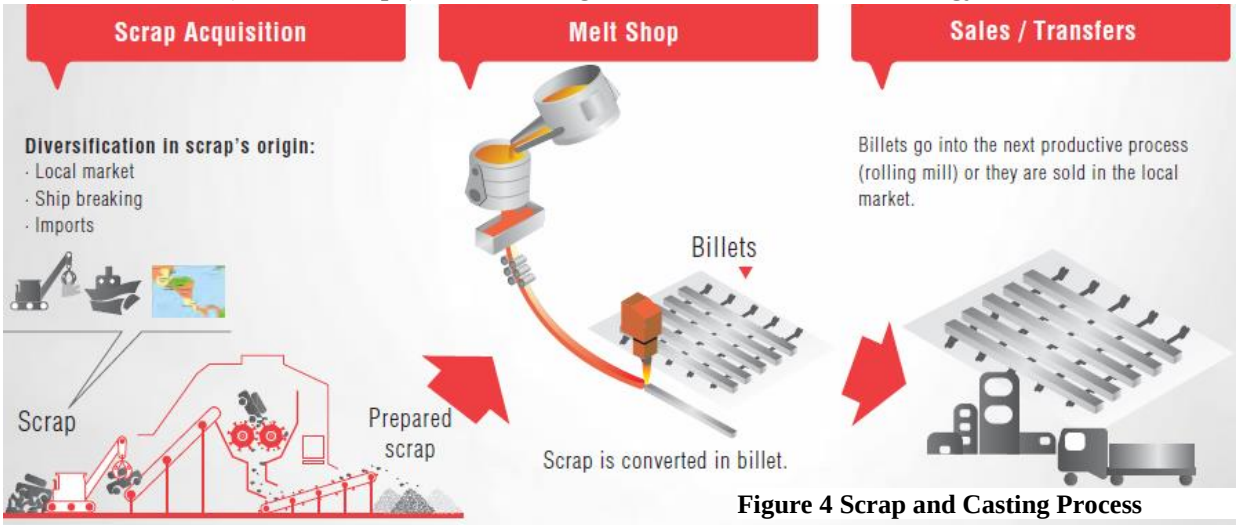

Figure 4 Scrap and Casting Process

metal casting. This casting is then put through to a refining process in a refining furnace, and is finally poured into a continuous casting area to produce the steel billets.

Rolling Mill

2.13. The steel billet is intermediate material for long steel products, mainly steel rods and bars. The rolling process consists of the following activities (see Figure 5)

- Reception of the steel billets
- Entrance into the heating furnace
- Rolling train
- Finishing section

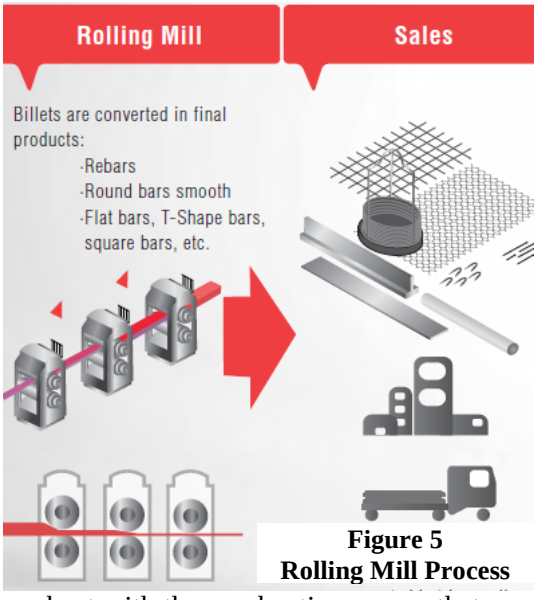

Figure 5
Rolling Mill Process

2.14. The steel billet is fed into the furnaces to heat them for the process of hot rolling. The steel billet storehouses will be located next to the furnace for each sheet steel train. The heating furnace is operated with burners distributed along the lateral and frontal walls and transfer heat to the refractory walls. These burners use a blend of diesel and bunker oil. The refractory walls are heated and proceed to heat the steel billets. The heating furnaces have gas recovery systems in which the air is preheated to 600°C and exchange heat with the combustion gasses that

exit through the chimney. Heat recovery to heat the air combustion increases the efficiency and reduces the consumption of energy by around 10%. An oxygen plant will be used to generate pure (99.5%) oxygen that is used within the furnace.

Water and wastewater

2.15. Water will be used during the industrial process, especially as cooling water in the rolling mill and other processes. This water will come primarily from groundwater – through at least one deep (100 m) onsite well. The water for process use will be treated through an onsite 100 m^3/h capacity treatment plant with a process of flocculation, sedimentation and chlorination. The cooling systems will be closed so that water is recycled and each separate cooling system will have its own water reservoir. The estimated required water for production as well as drinking water and domestic processes in the range of 7-9 l/s which is considerably less than the 30 l/s thought prior to the ESDD. A final water balance will be completed during the detailed engineering stage and the information from this used to obtain the required abstraction permit.

2.16. Wastewater is treated through three different systems:

- A wastewater treatment plant or, "*Planta de Tratamiento de Aguas Residuales Negras y Grises* (PTAR) with a capacity of 200 m^3/h will be used to treat domestic wastewater. The treatment process is a standard sewage treatment plant and will include storage tanks, reactor tanks for control of parameters such as pH, followed by flocculation, and clarification.
- Another wastewater treatment plant, "*Planta de Tratamiento de Aguas Residuales Industriales*" (PTARI) with a capacity of 20 m^3/h will be an industrial waste water treatment plant that will treat drainage from critical industrial areas, mostly covered areas of the facility.
- Scrap Yard Storm water: Stormwater (including run-off from scrap yards and other uncovered areas) will pass through oil-water separator(s) and a metal treatment process (final designs are still pending and may include a 3-chamber oil water separator and metal scavenging process). This storm water will not be routed to the PTARI due to high run-off volumes from storm events. The PTARI would need to be over-dimensioned to accommodate the very high volumes of run-off during infrequent storm events.

2.17. The 2 ha area scrap yard areas will all be paved concrete over a layer of sand and gravel and storm water these areas will be collected and treated: first through a sand trap (to remove grit), then to an API oil and water separator, and finally to the waste water treatment plant. The ESDD raised the issue of potential presence of heavy metals in the effluent, and at the request of the Bank, Adelca is currently evaluating the detailed characteristics of the run-off in order to determine the most effective treatment options, if necessary (see Section 4.12).

2.18. Other non-industrial storm-water will be collected through a gravity flow system of open and closed system that flow to a central closed collection pipe. This water may be reused for dust control on internal tracks or irrigation of green spaces

Gas Conditioning Plant (Air Emissions Control)

2.19. Particulate and other air emissions (mainly carbon monoxide and heavy metals), primarily from casting and rolling operations will be treated in a gas conditioning plant. The emissions will first be treated in a cyclone that will remove the majority of the particulates. The gas will then pass through a series of bag filters. The final concentration of the emissions, confirmed during the ESDD, will meet World Bank Group standards.

Solid Waste Including Hazardous Waste

2.20. During the construction phase most of the waste that will be generated includes concrete blocks, cement, iron scraps, vegetable waste from clearing, and the remains of packaging. It is expected that the volume will not be significant. Many of the residues will be collected for reuse and recycling. The remains of concrete blocks may be crushed and used as a substitute for landfill of gravel. The hazardous waste during construction will mainly be used oils or lubricants and greases from the maintenance of heavy machinery, used batteries, paint rags and other materials contaminated with mineral oil.

2.21. During the operations, the main waste generated will be slag, which is generated by the melting of scrap steel, which is a non-hazardous waste. An estimated 10 thousand tons of slag will be generated annually, which will be sold to cement plants as an alternative raw material for the plant to use in their kilns. This eliminates the need to dispose of the waste. Other general waste includes an estimated 80 t/y common waste - paper/cardboard, glass, non-ferrous scrap, etc. In terms of hazardous waste, about a 1500 t/y of waste steel dust will be generated, which requires special handling and disposal. Waste, including smaller amounts of hazardous materials, is also generated from other activities of the plant. The estimated number of annual generation of hazardous wastes is shown in Table 1:

Table 1: Annual Estimated Hazardous Waste Generation in Solid Waste

Waste	Total annual generation
Steel dust	1536 t
Mineral oils	19.25 m^3
Absorbent Material Contaminated with oils and other contaminants	30365 kg
Contaminated soils	4340 kg
Lights and other mercury containing items	20 kg

2.22. There will be areas to store hazardous and non-hazardous waste, and waste types will be separated and each production unit will have its own designated areas for the storage of waste. In addition, there will be an area of centralized waste management that will have separate spaces for handling non-hazardous and hazardous waste, and this area will be managed by the ADELCA department of Integrated Management. Overall waste management will be part of the ESMP (see Section 5.15).

Other Plant Activities

2.23. Other important ancillary activities include:

- Oxygen plant (to generate pure (99.5%) oxygen that is used within the furnace.
- Fuels storage (bulk storage of bunker fuel and diesel for the rolling mill furnace).
- Electricity Substation on the plant to connect, via a 4 km 230 kV transmission line, to a substation in Milagro. The transmission line, as discussed below, is an associated facility.
- Maintenance workshop where parts and repairs will be made and other building services. This workshop will have areas specifically designed for the storage of oils, solvents and chemicals with full containment built in accordance with local regulations.
- Others: infirmary, recreation area, cafeteria, training rooms, etc.

E. Associated Facilities – Transmission Line

2.24. The power supply will be made through the installation of a main electrical substation located to the southeast of the plant. The electricity will be supplied by a roughly 4 km transmission line (TL) of 230 kilovolt (kV) from an existing substation in Milagro. The electric power at voltage of 230 kV will be converted to 23 kV at the plant. There will be a total of 10 towers, each with a base of 10 by 10 m. The construction of the TL will require earth movement and temporary access is through the adjustment of existing bridle paths.

2.25. The TL will include the towers, access roads to the towers, and a right of way (ROW) along the path of the TL. The design of the layout and routing of the TL and the towers has been prepared in a way that minimizes effects on homes and buildings of the area as well as on the current land use. For access roads to the towers land will be permanently acquired totaling approximately 1.2 ha. The required land for these access roads will be detailed before construction of the TL and compensations provided accordingly. The TL itself will have a 15 m wide right of way (ROW) as well as a 50 m buffer zone on each side. Within this area there will be certain restrictions (see below). The existing 4 ha of Milagro substation and the Adelcas's substation area will occupy a total area of 0.25 ha which will not require land acquisition.

2.26. CELEC-Transelectric is the government entity responsible for the construction and installation of the towers and associated equipment; however Adelca has made an agreement to undertake the construction.

The land owners along the TL must grant permission for use for the right of way, and for that will receive relevant compensation. CELEC-Transelectric is responsible for the process of compensation for the land acquisition, but as with the construction Adelca will be leading the effort as discussed in 4.43.

F. Other Corporate Facilities and Third Parties

2.27. As discussed above, Adelca currently operates several other facilities. These facilities are linked to the Project in several ways: through the corporate structure, but also they will supply raw materials (scrap) or intermediate materials (billets) to the Project, and the regional centers will supply scrap and receive the products. These facilities include:

- Alóag Plant: a plant similar to the proposed new plant that includes similar casting and rolling operations and similar scrap storage, sorting and handling procedures.
- Ship breaking operations in Duran that include an area of approximately 4.6 ha on the east bank of the Guayas River. The site includes two 150 m long piers with ship berthing areas that are up to 6 meters deep. The facility dismantles ships that have been decommissioned by the Harbor Master and Secretary of Ports and Maritime and River Transport, and has an estimated production rate of 3,000 tons per month of scrap steel which is transported to the Alóag plant by truck. There are approximately 85 trips from Duran to Alóag per month. Shipbreaking consists of hull degassing, followed by removal (stripping) of all recoverable non-ferrous (brass, aluminum and copper) equipment or parts and other materials. This is followed by scrapping the vessel itself: cutting the hull into pieces of 10, 15 and 20 tons. Cutting of the steel continues down to a size that can be subsequently handled and transported to Alóag for further processing. All cut material is temporarily stored in scrap "batteries" on a concrete base, until removal by truck and ground transportation to the facilities at Alóag.
- Regional facilities as shown on Figure 1 that include commercial offices, distribution centers, and also where scrap is received from third party scrap collectors. These collectors are required to follow strict procedures for preparing and delivering the scrap. Adelca has also instituted a capacity building program under its "Recyclers Club," as discussed in Section 5.14.
- Manta Secure Cell Landfill: a secure cell landfill in the Aníbal parish of San Andrés, Canton Montecristi, Manabi Province. The property has an area of 102 ha, with approximately 3 ha used for the disposal of hazardous waste, consisting exclusively of steel dust. This steel dust generated as a solid waste from the casting plant in Alóag is bagged and transported by truck to the secure landfill. It is estimated that approximately 12 ton/day of waste material is transported to the landfill, and deposited directly into the operating cell. The site has been licensed by the Ministry of Environment since 2010, based on the preparation of an environmental impact assessment and associated environmental management plan.
- San Alfonso scrap yard (in Mejia) which was required during the construction phase of the current casting plant. The site is located in the municipality of Mejía, and covers an area of approximately 6 ha adjacent to the Alóag-Santo Domingo stretch of the Pan-American Highway. Currently, it is used for storage of recycled refrigerators as part of the government recycling program "Renova Plan" implemented by the national government.

2.28. In addition to their relation to the Project these existing operational facilities provide an insight into how Adelca operates their facilities. Adelca plans to implement the same environmental and social management systems that it maintains at the corporate and facility level (see Section 5) at the new Project, so evaluating the success of these systems in practice provided a good picture of how environmental and social issues are likely to be handled for the Project. The conclusion of the review of these facilities during the ESDD is discussed in Section 4.34.

G. Project Workforce and Schedule

2.29. The construction phase will involve the usual activities for the construction of an industrial plant such as land clearing and movement, civil works, and construction of supporting infrastructure (internal roads, administration buildings, etc.). The duration of the construction phase, including the preliminary testing phase for the verification of the infrastructure and civil works (commissioning) is estimated at approximately two years. The construction phase works will create approximately 277 new jobs which will

require a percentage of 30 - 40 % of specialist manpower (mainly of Guayaquil); the rest of the labor force will be recruited from the existing supply of local labor, through a specific program to encourage local labor employment.

2.30. Adelca will attempt to convert the greatest number of construction jobs for the local workforce into permanent jobs for the operations phase including providing training. No worker camps will be needed as outside labor will be housed in existing hotels or other local accommodation. The initial phase of operation of the plant will employ approximately 290 people directly (265 jobs in the activities of production and 25 jobs for the administrative positions and support. The jobs will increase to approximately 500 people when the Plant reaches its full capacity.

H. Environmental and Social Setting

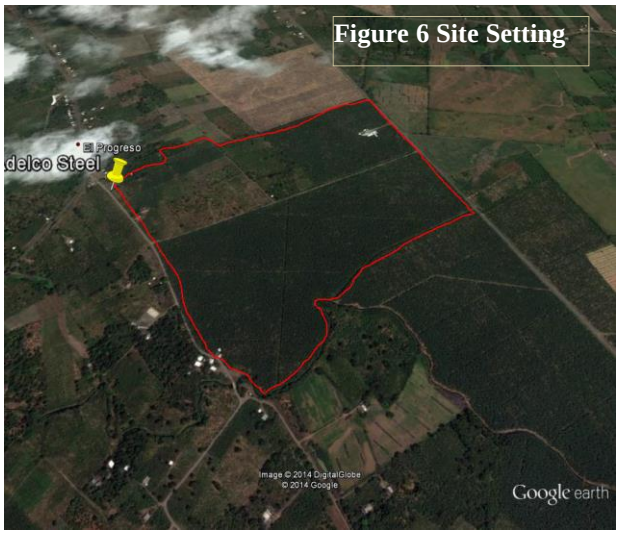

Figure 6 Site Setting

2.31. The industrial plant will be located in a previously intervened agricultural area with some remnant native vegetation. Most activities in the area are agro-industrial (plantain plantation) (see Figure 6). Some area farms are no longer functioning and have been abandoned. The EIA found that ambient conditions of parameters such as air quality and noise are within the national limits.

2.32. The site is located in the central low basin of the Guayas River, is influenced by significant drainage systems, including the Chimbo and Milagro Rivers. The plant area itself is located within a flat floodplain with several rivers in the region – the Yaguachi and Milagro rivers are the two major rivers closest to the site. The Estero de los Monos is a tributary flowing on the site's southern boundary and is used for irrigation, recreation (swimming), and receives runoff from surrounding farms. The river is about 10 m wide and although the flow rates vary significantly with seasonal rains, it has not flooded the project area in recent memory. Other area rivers including the Yaguchio occasionally flood.

2.33. A screening of the Project area of influence conducted through IDB's Decision Support System has not revealed the presence of officially declared protected areas (defined as Critical Natural Habitats per OP-703 Directive B.09), or other areas of unprotected, high conservation value (critical or natural habitats); however there is a Key Biodiversity Area 15 km to the west of the site called "Cienegas de Guayaquil." There is also a critical terrestrial ecosystem named "Tumbes Deciduos Riparian Shrubland," 20 km to the south. Both of these areas are outside of the Project direct and indirect areas of influence.

2.34. There is very little native vegetation, except secondary growth within disused farms and along this river. Much of the area surrounding the site is under cultivation, with banana and sugar the main crops; other crops include cocoa and pineapple, as well as cassava, plantain, corn, and rice, which provide food for local residents. The EIA found that in the Project area reptiles and amphibians (herpetofauna) are under high pressure as a result of extreme habitat modification due to the presence of crops and potential agrochemical contamination in soils and bodies of water. Results of groundwater sampling have confirmed the presence of agrochemical contamination in groundwater indicative of agricultural sources. The study recorded two endemic species: *Engystomops guayaco* and *Epipedobates machalilla.* According to the International Union for Conservation of Nature (IUCN) Red List conservation status, one species in the Vulnerable category *Alopoglossus festae* and one Near Threatened species *Epipedobates machalilla* are also recorded within the area. At the request of the IDB, additional biodiversity assessment was required focused on herpetofauna in areas surrounding the Project and the transmission line.

2.35. The results of this supplemental biodiversity assessment were reported in the revised EIA. Additional monitoring of herpetofauna (specifically *Alopoglossus festae* and *Epipedobates machalilla)* was conducted in October 2014. Transect observation and litter traps were used at five sampling points. Transects were

located in the project area of influence including the transmission line. The two species of interest were not found. Nonetheless it is possible that they could still be present and the Company has developed management and monitoring plans in case either are found on the site (see 4.15).

2.36. There are small land owners and rural facilities (schools, churches, etc.) within a few miles of the plant site. Rural facilities are rather limited within the few miles from the plant site; intermediate and high school centers, and two local universities provide educational services. Opposite the plant is Public School #13 Petronila Ana Ponce, which is the only educational center in the Project area. Regarding public health care services, a primary health clinic managed by the *Instituto Ecuatoriano de Seguridad Social* and the Basic Federico Bolaños Moreira Hospital for hospitalization provide health services locally. Three Catholic churches, Agua Santa, El Progreso and El Ceibo, the latter closest to the plant site, provide local religious services.

2.37. The nearest major population center is the City of Milagro which, according to the 2010 census, has a population is 133,508 people (50.07% men and 49.93% women), The city is within the larger canton of the same name. The Milagro Canton is one of the main agro-industrial, commercial, and economic development centers in the Province of Guayas. The main economic activities in the area are agriculture, livestock, hunting, fishing, forestry, manufacturing, construction, commerce, and teaching. The occupations of the area are a mix of typical city white collar activities (office workers, public service workers), as well as agricultural workers, machine operators, and unskilled workers. Coverage for basic services such as electricity, sewer and phone is generally good in the city with a decline in the more rural areas, except for cellular phone service which has 89% coverage in the canton. The EIA was expanded to provide a more robust socio-economic baseline for the Project's area of influence, including aspects related to: income and poverty; demography and social composition; population density; social and political organization; health and education; economic activity/employment.

I. Alternative Analysis

2.38. The alternative analysis in the EIA included a review of several locations, as well as an analysis of what is often referred to the "no project alternative," which in this case focused on an assessment of the need or demand for the proposed project. The analysis tries to answer the following questions: a) Can the need or demand be satisfied without the implementation of the project? and b) can the proposed project or infrastructure be avoided?

2.39. Specific criteria included in the alternative analysis related to site selection included:

- Nearby urban area of Guayaquil and port facilities.
- Good road infrastructure.
- Flat area with reasonably priced land.
- Low environmental and social sensitivity.
- Nearby labor markets in Milagros and Guayaquil.
- Community acceptance of the project.
- Good water supply.
- Proximity to energy sources (substation)

2.40. The EIA presents the case that the estimated demand for steel products in Ecuador is going to increase and the Plant is necessary to keep up. The demand is currently in the range of 750,000 - 800,000 t/y; and, that will grow in the coming years at a constant rate. The installed capacity of Adelca is 310,000 t/a, with a percentage of capacity utilization of 85 %. The other two players in the market Novacero and Andec have an installed capacity of 135,000 t/a (75% utilization) and 250,000 t/a (64% utilization), respectively. The scrap metal processing in Adelca is in the range of 225,000 t/y; while Novacero and Andec processed scrap in a range between 80,000 and 100,000 t/y. The Latin American Institute of Iron and Steel (ILAFA) reported that the production of steel in Ecuador in 2010 reached 337,000 t/y.; and, the behavior of this production has been growing since 2000 reaching a rate of 481% in the course of the decade. Despite these

considerations, the installed capacity for production of steel products; as well as their utilization rate, would not be enough, not even to meet the estimated the current demand.

3. ENVIRONMENTAL AND SOCIAL COMPLIANCE STATUS AND PROJECT STANDARDS

A. Environmental Assessment and Permitting Requirements

Local Appraisal and Permitting Process

3.1. **Environmental Impact Assessment (EIA) for the Plant**: The Ecuadorian permitting process requires that the Company first submit a summary of the project and projected impacts as well as proposed terms of reference (TOR) for the EIA to the environmental authority (*Ministerio del Ambiente*). Once the TOR is approved, the assessment preparation begins. An Initial draft EIA was prepared, but revised at the request of the IDB to meet certain Bank-specific requirements. The requested EIA enhancements included additional baseline data related to the local community around the site and an expansion of the "social area of influence;" additional baseline data and analysis on potential water and air impacts, among others; and expansion of the Environmental Management Plan, ("PMA" in Spanish) developed in the EIA. This PMA is a framework plan that will be developed further into a full Environmental and Social Management Plan (ESMP) with detailed procedures and is a requirement of the IDB and included in the Environmental and Social Action Plan (ESAP) discussed in 5.19. These enhancements have been incorporated and are included in the EIA that has been posted on the IDB website at: http://www.iadb.org/en/projects/project-description-title,1303.html?id=EC-L1144. A draft version of the revised EIA was submitted to the government for comment, at the same time public consultation was started. The government has now approved the revised EIA and issued the permits for the construction of the plant.

3.2. **EIA for the Transmission Line (TL):** The electrical substation and TL are associated facilities of the project. The substation was included within the Project EIA. The TL is subject to a separate assessment process that produced an Environmental Impact Statement (EIS) independent of the Project EIA. The TL EIS was produced by the company Glironia Consulting & Services Cia. Ltda., in August 2014. It is posted on the IDB website at: http://www.iadb.org/en/projects/project-description-title,1303.html?id=EC-L1144 .

Consultation

3.3. Public disclosure and consultation for both the Plant (the Project) as well as the Transmission line were carried out by Adelca, and included multiple interactions with the national government, public institutions at local level and community associations. The interaction with stakeholders has included meetings with government, site visits, information provided by radio, local TV and internet. Adelca has provided evidence of communication between the Company and residents and property owners in the area of influence. A formal public meeting was held on November 20, 2014 on the revised EIA including the transmission line, with approximately 200 community members, police, fire department and municipal government officials attending. The majority of the comments received concerned hiring locally, improvement of services, and being responsible with the environment specially water quality and the community. Nobody expressed opposition to the project. The ESSD confirmed that Adelca's approach to information disclosure and public participation will continue to enhance the apparently good relationship between Adelca and the landowners and communities around the project throughout the Project life.

B. Consistency with IDB Environmental Safeguard Requirements

3.4. The key IDB Safeguard Policies and Directives that apply to this project are Directives B.4 (Other Risks), B.5 (Environmental Assessment), B.6 (Consultations); B.9 (Natural Habitats and Cultural Sites), B.10 (Hazardous Materials), and B.11 (Pollution Prevention and Abatement) IDB's Environment and Compliance Safeguards Policy, OP-703; Information Disclosure Policy (OP-102); the Disaster Risk Management Policy (OP-704) and the Policy on Gender Equality in Development (OP-270). The Involuntary Resettlement Policy, OP-710 applies especially in terms of land acquisition and economic displacement both for the project site as well as the transmission line. The indigenous people's policy (OP-765) does not apply. Although raised as a potential issue prior to the ESDD, it was determined that Directive B.8 of OP-703 on trans-boundary impacts does not apply;

3.5. Based on the conclusions of the ESDD, the Project is consistent with the IDB requirements and where areas of potential non-compliance have been identified, specific measures have been developed between the Bank and Adelca. Specific examples, such as the need for a pre-construction ESMP, are discussed in Section 4. A summary of the Project's status in terms of the key IDB requirements is presented in Attachment A.

3.6. Based on the findings of the ESDD regarding the Project and Associated Facility impacts, as well as the risks presented by the current additional corporate activities, such as the Aloág plant and the ship breaking operations, the team proposes a classification of "A" under OP-703.

C. Other Requirements

3.7. Ecuador is party to the Basel Convention which controls the trans-boundary movements of hazardous wastes and their disposal and also contains approaches to reducing hazardous waste generation. This is mostly applicable to the ship breaking activities where hazardous waste can be generated. Although some of the scrap metal sourced for the Company's operations comes from other countries, this scrap is not hazardous unless unintended materials mix with the scrap or were not removed prior to transport. The International Finance Corporation (IFC) Environmental Health and Safety (EHS) *General Guidelines as well as the EHS Guidelines for Integrated Steel Mills* apply to the project; and where no IDB specific policy applies, the relevant IFC performance Standard will apply.

D. Project Standards

3.8. The Project requirements discussed in Section 5 have been established to ensure the Project is, and remains consistent with the IDB requirements. The specific standards applicable to the Project, especially numerical standards for effluents, emissions and other parameters have been agreed and will be incorporated into the Environmental and Social Monitoring Plan required under the Environmental and Social Action Plan (ESAP) discussed in Section 5.19. The numerical standards for air emission, waste water effluent, noise and other general industrial parameters are based on the requirements of the IFC and World Bank, in particular, the IFC *General EHS guidelines* (2007) and the *EHS Guidelines for Integrated Steel Mills (2007).*

4. ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS AND MITIGATION

4.1. The potential impacts and risks for this proposed financing are primarily associated with the construction and operation of the new Plant as well as the associated Transmission Line; however, as a corporate loan, there could be potential impacts or risks as a result of activities at the corporate level, especially those at the original plant or the shipbreaking operations, and also those of the third party scrap suppliers. This is especially relevant as the other sites are related to the Project plant in that they may supply scrap or billets to the site. Potential impacts and risks are discussed below from both the new plant (Section A); the corporate activities (Section B) and the Transmission Line (Section C).

A. Plant Impacts and Risks

4.2. A revised EIA was prepared for the Project which contains a detailed assessment of the environmental and social impacts from the new Plant, both during construction and operation. The key environmental and social impacts and risks are discussed below along with their corresponding mitigation or management requirement to be included as an element of the ESMP discussed in Section 5 or as a specific activity within the ESAP discussed in Section 5.20.

Resettlement Land Compensation and Loss of Livelihood

4.3. The land for the Project was purchased through private agreements with 11 existing landholders. The majority of the land (45 out of 66 hectares) was purchased from one owner of a banana plantation; the rest were eight individual owners of smaller parcels. The revised EIA included information on land-valuation, structures, crops, and access to water. The estimated costs were calculated using current market information. The compensation included support for acquisition of new land for families with subsistence crops, when needed. Income restoration strategies were developed for the small plot owners using information in the baseline studies. The strategy for income restoration of workers affected by the largest land purchase includes offering new employment opportunities with the Project. The land acquisition

strategy involved participation of the small plot owners for the establishment of a land purchase and compensation procedure, which supported the analysis and definition of alternatives for future Adelca's social programming.

4.4. The conclusion of the EIA was that land acquisition complies with the required IDB standards and that during the construction and operation, the monitoring of livelihood restoration will be required as part of the Project Stakeholder Engagement Plan. At the present time Adelca has negotiated private agreements with two previous owners to lease the land to them so that they can continue to farm while the land is not needed, which also provides the benefit to Adelca of discouraging potential squatters or invaders.

4.5. The assessment of former workers, working for the banana plantation at the larger parcel, confirmed that the termination of the contracts in all cases, accomplished with Ecuadorian labor legislation. The impact on their livelihoods due to land purchase and the effects on family economies were documented by Adelca, and will require further monitoring. The impacts among the eight smaller owners differed. According to the information gathered, five have been able to invest and restore their livelihoods, and three vulnerable families who are in process of livelihood restoration, will require monitoring as part of the ESMP.

4.6. The conclusion is that land acquisition complies with the required standards and that during the construction and operation, the monitoring of livelihood restoration will require activities as part of the Project Stakeholder Engagement Plan. At the present time Adelca has negotiated private agreements with two previous owners to lease the land to them so that they can continue to farm while the land is not needed, which also provides the benefit to Adelca of discouraging potential squatters or invaders.

General Construction Impacts

4.7. The principal construction environmental impacts will be traffic on public roads, noise generation, removal of vegetation and topsoil, erosion and sedimentation during earth movement, atmospheric contamination due to particle material (dust) and vehicle combustion gasses, possible oil and fuel spills, and soil contamination if there is inadequate waste management. Erosion and run-off to surface water is possibly the most important of these impacts given the proximity of surface water to the site, and will require that detailed mitigation measures be required by the construction contractor and any subcontractors that carry out work with those kinds of impacts. The risk assessment conducted in the EIA identified that this risk is highest near the Los Monos River. Specific procedures for erosion control during construction will be included in the ESMP.

4.8. It is estimated that for the most part the potential construction impacts are temporary, limited to localized areas, reversible, and once the works are done, and can be mitigated by adopting environmental management and health and industrial safety standards. Issues such as traffic and dust, discussed below, could have more significant impacts, especially on the local community and will require specific management procedures and monitoring; this will be included in the construction ESMP.

4.9. At the time of the ESDD the formal construction activities had not yet begun, however pre-construction activities had, including clearing, grubbing, and land levelling. These works include the use of heavy machinery and other tools, large trucks moving to and from the site, chemicals and other dangerous materials use and storage. In addition, there was an armed private security firm onsite. Although there were procedures in place at the site these early construction activities could lead to a variety of risks and impacts both on the site and to the surrounding community. Adelca was requested to implement urgently a comprehensive Construction ESMP that would initially identify and address these pre-construction activities, and then would be expanded to cover the full construction before it starts. Adelca has now prepared the ESMP for pre-construction and will implement the full plan once the full construction begins.

Risks Related to Third Party Activities

4.10. A number of contractors are involved with the Project, especially during the construction phase. These include Sider Engineering (supplier of the equipment and responsible also for the installation works), Etinar SA, (responsible for the execution of all civil works associated to the new Milagro Plant), SEG, official

'Fiscalizador' of the civil works, covering the role of monitoring and supervision. While these companies are well known companies with good track records for large construction projects, and there were procedures in place including a Code of Practice and review procedure for screening guards, there are risks that they will not necessarily apply the standards required by the Bank. In fact, during the ESDD, it was observed that there were some risks with the pre-construction activities that led the lenders to request that Adelca implement specific procedures and plans to address them. These included changes to traffic management, heavy machinery training and the use and training or security personnel. The requested procedure changes have been implemented, including the requirement for security personnel to follow the "Voluntary Principles on Security and Human Rights,"[1] which contain specific guidance on the use of firearms and general guidance on how to avoid conflict with communities. During operation the primary risks from third parties is from the scrap suppliers, as discussed in Section 4.38.

Wastewater, Water Availability and Water Quality

4.11. The water used in the plant, primarily for cooling, will be used in a closed loop system. Nonetheless the Plant will require wastewater treatment as discussed in which will discharge into the los Monos River. The key potential impacts are changes in the River water quality due to poor treatment or overloading, and the principle contaminants would be oils, solvents and heavy metals.

4.12. The ESDD reviewed the potential issue of heavy metal runoff from scrap storage areas on the site especially in heavy rain. It was determined that the risk of run-off reaching soils, surface water or groundwater is unlikely given the design which has an impervious base and which collects the run-off in a series of collection channels. Oils and grease will be removed by an API separator. The potential issue is that if heavy metals (such as cadmium, chromium, copper, lead, mercury, nickel, zinc) are present, they will enter the water collection system and be sent to the wastewater treatment system, which currently does not have a specific metal treatment process. These metals could then be discharged into the river along with the treated effluent. A characterization of the likely heavy metal load of the storm water is currently being evaluated, along with potential treatment options. These options include: pre-treatment with a chemical precipitation and filtration; a resin ion-exchanger; and adsorption using granulated iron hydroxide. The ESAP will include completion of this analysis and subsequent design changes, if necessary.

4.13. A concern raised prior to the ESDD was the water demand for the project and its potential impact on other water users in the area. Adelca plans to use one or two groundwater abstraction wells to meet this demand. The EIA included an analysis of the water resource availability using local hydrologic data as well as information from surrounding farms, to ensure the Project would not affect the water resource overall and in particular other water users in the area. The conclusion was that water availability is not an issue for this area, and in fact the use of water by the plant will be a reduction in the volumes used when they land was under agricultural use. Results of groundwater sampling in the EIA indicate the presence of pesticides in several wells above Ecuadorian limits for potable use. This is a risk that will require monitoring during construction and operations and if the concentrations increase, alternative water sources may need to be evaluated. This monitoring is included within the ESMP and Monitoring Plan.

4.14. Construction, in particular land clearing and earth movement, can lead to erosion which in turn can affect water quality in the river. During the ESDD it was observed that there were poor erosion control methods being used and the Company was requested to include erosion control measures in the pre-construction and construction ESMP's developed for the Project. The pre-construction ESMP has been implemented and the construction ESMP is included in the ESAP to be completed prior to construction activities.

Biodiversity Impacts

[1]Established in 2000, the Voluntary Principles on Security and Human Rights are a set of principles designed to guide companies in maintaining the safety and security of their operations within an operating framework that encourages respect for human rights. Although they were originally established for the extractives industry, they have become the international best practice standard. More information can be found at: http://www.voluntaryprinciples.org/

4.15. The Plant and its facilities will be located on land that has been previously degraded, mostly through agricultural activities. Nonetheless, as discussed in 2.34, two endemic species of amphibians may be present on the site. According to the EIA, they are widely found throughout the area and if they are on the site would be limited to the area where there is a small stream. To address this, Adelca has prepared a "*Monitoring Program Terrestrial Wildlife Plan*," (Biodiversity Monitoring Plan) that describes the amphibian conservation and recovery method for construction; this plan will be incorporated into the construction ESMP and the Monitoring Plan. The monitoring plan will include measures to monitor the amphibians as well as other flora and fauna throughout the operations phase as well as construction. In addition, a part of the site including the stream is to be left as green space and not converted.

Land Use Change

4.16. The Project represents a change of use from productive agriculture to industrial. Given that the site area is only 66 ha this is unlikely to represent a significant change, but it could lead to the opening up of the area to additional industrial activities or new activities, especially if upgrades are made to roads or other area infrastructure. The EIA confirmed that this impact is unlikely to occur in the short or medium term as there are no firm plans for future developments and changes to the area will be slow to develop. The potential indirect and cumulative impacts of such developments on land tenure and use was also considered and is discussed in 4.49

4.17. The Municipality of Milagro is undertaking an assessment for defining a new Plan de Ordenamiento Territorial which is evaluating the redefinition of certain areas within the municipality currently defined as rural land use, for industrial land use. This approach is related to the Adelca´s plan development in that it is expected to be an incentive for the relocation of industries from the city of Guayaquil. The change of land use could be affecting some rural activities, if the planning does not support the transition for rural families.

Contamination from scrap storage and handling

4.18. The new plant will have a scrap yard where the scrap is received, sorted and shredded in preparation for the casting process. The scrap received will have been sorted by the scrap collectors and the hazardous materials removed, but at the plant the process contains specific procedures for sorting out non-steel materials, including radioactive materials. Scrap metal can, if not sorted properly before shipping, contain various hazardous materials and can be a source of contamination to soil and groundwater if not stored and handled correctly, and can also effect air quality. The scrap yard will be sealed to avoid leaching, especially during rain, and there will be procedures which will be aligned with Ecuador's National Program for Metallic Decontamination. As with the existing Adelca plant in Alóag, the process will follow procedures created under the corporate management systems that are certified under ISO 9001, 14001 and OHSAS 18001. The conclusions from the ESDD were that some of these systems need to be reviewed and enhanced and this is included in the ESAP.

Waste Generation and Management

4.19. Waste will be generated during construction and operation. The vast majority of the waste during construction will be mainly concrete blocks, waste cement, iron scraps, organic vegetation waste from land clearing, and other general construction waste. It is expected however that the volume is not significant. The hazardous waste that could be generated are used oils or remnants of lubricants and greases product of the maintenance of heavy machinery, remains of paintings, rags and other materials contaminated with mineral oils. The ESMP will include specific procedures to handle and store these properly both during construction and operation to avoid spills or leaks prior to disposal, which will be through licensed contractors.

4.20. During operation, as discussed in Section 2.20, slag will be shipped to a cement plant and will not need disposal. There will be other waste such as general waste from production and waste from machinery and building maintenance and some of these, such as dust from the furnace process, can be hazardous or requiring special disposal. In the scrap sorting (see above) there is a process for detecting radioactive waste which may be included inadvertently, which would also require special disposal. As discussed below, the

current waste management practices of Adelca will be enhanced to address these issues and these new procedures applied at the new plant site, including specific waste management plans within the ESMP.

Labor, Health and Safety, Accidents, Spills and Other Unforeseen Events

4.21. Noise will be a key health and safety issue at the plant, as with similar industrial facilities. The main sources and levels of noise will include the casting process and the electric arc furnace, the electric substation, the oxygen plant, general work generated noise from the scrap yard and at the warehouse, and noise from trucks and other vehicles moving to, from and around the site. The key management approach for industrial noise will be the use of PPE. Industrial accidents are also a risk, especially during construction (use of heavy machinery, excavating, chemical exposure, etc.) and during operation for some of the more industrial activities like hot work (oxygen welding), activities near the furnace, use of heavy machinery or moving parts, working at heights, etc; these will be managed through a process of training, detailed procedures, and oversight. There will also be onsite medical treatment. The procedures will be incorporated into the ESMP, following an overall review of corporate health and safety measures required as part of the ESAP.

4.22. As with any industrial processes, there will be the potential risks on site from accidents and poor working practices. The EIA included an assessment of these risks, in particular increased traffic and vehicle accidents, fires in the scrap area, explosions in the oxygen storage area, leaks and spills of fuels and chemicals, and migration of pollutants due to floods. All the project risks to the environment were ranked in severity and probability, and the prevention measure identified. These prevention measures will be incorporated into the ESMP. Accidents in relation to the community are discussed below in Section 4.31.

4.23. As discussed below in Section 4.42, gender issues have not traditionally been addressed in internal policies. For the Plant, however, Adelca intends to develop specific measures specifically related to increasing the capacity of women in the Company as well as women in the community. These plans will be incorporated into a Gender Management Plan.

Air Emissions and GHG emissions

4.24. Particulate material – dust – will be generated both during construction and operations. During construction this will be mostly from the movement of vehicles and the earth moving activities. These will be mostly localized and short term, but will still need to be control through specific procedures that will be included in the construction ESMP. During operations significant amounts of dust will be generated during activities such as scrap transport, the classification and crushing process and other equipment and machinery. The EIA concludes that these particulates are at high levels at the point of generation but do not disperse far, especially when control measures are used; therefore these emissions are more of a health and safety issue for workers rather than an impact on the surrounding communities or environment. The ESMP will contain procedures for controlling emissions and also specific worker procedures such as the use of PPE.

4.25. The key process emissions during operations will be generated in the casting and rolling operations and will include particulates, CO, heavy metals and, to a lesser extent NOx (nitrogen oxides) and SOx (sulfur oxides). The ESDD concluded that these emissions will be significant but that the impacts will largely be mitigated through the emissions control technology used. The emission will comply with the standards established in the IFC EHS guidelines, in particular the *IFC EHS Guidelines for Integrated Steel Mills*. Control of particle emissions during operations will be carried out using a gas treatment plant (see Section II). Monitoring will be conducted, and its frequency will be established in an Environmental Management Plan, which is currently being drafted.

4.26. The EIA included air dispersion modeling using the United States Environmental Protection Agency (USEPA) model called ISCST3 Prime (Dispersion model Industrial Source Complex), that was developed for particulate material (PM), nitrogen oxides (NOx) and sulfur dioxide SOx. The model predicted that the concentrations of the pollutants modeled will not exceed maximum limits permitted under the established the air quality standards for Ambient Air Quality

4.27. The plant will use electricity taken from the grid through a sub-station, and will need 70 MW of capacity. One of the criteria for selecting the Project site location is the availability and reliability of electricity in that region. A GHG emissions projections for operation of the plant were estimated by the lenders' independent engineer, and conclude that the annual operations emissions, consisting of the sources shown in Table 2. This new plant is all new technology and is much more energy efficient than the current plant at Alóag. For

Table 2: Gross CO_2 Emissions Estimation for the Milagro Project

Emissions from steel production	32,000
Emissions from Purchased Electricity (EAF + rolling mill)	71,888
Emissions from road, rail and air transports	43,004
Emissions from Purchased Fuel (rolling mill)	9,410
TOTAL	**156,302 tCO_2**

comparison, the Aloag plant, in 2011 produced some 233,000 tons of steel and generated 154,449 tons of CO_2 equivalents (tCO_2); this converts to 0.66 tCO_2 per ton. Comparatively, for the new Milagro Plant the production of 400,000 tons of steel will generate 156,302 tCO_2 which corresponds to 0.39 tCO_2 per ton.

Natural Disaster Risks and Climate Change

4.28. The EIA included in its risk assessment an evaluation of natural disaster risk. The primary hazards for this site are seismicity, volcanism, soil stability/geomorphology, floods, and climate change. The most important natural disaster risk is that of flooding. The region is particularly vulnerable to flooding, and a site specific risk assessment determined that the site itself is vulnerable to both occasional flooding (heavy rain events) as well as flooding from river overflows, particularly the los Monos river could overwhelm due to saturated soil and to the strong rainfall events in the headwaters of this watershed and flood the entire project area. The Milagros and Chimbo rivers could flood the Cunca and then re-flood los Monos River. These two types of floods have occurred historically in the years 1997-1998 and 2008. Flooding in the area of the project could threaten to damage or disrupt all activities of the plant. These risks are greatest when events are featured the El Niño phenomenon, with strong, intense rainfall and for extended periods of time.

4.29. Additional hydrological studies were requested for the revised EIA given concerns that the original designs had not considered events of sufficient intensity, nor the potential exacerbation by climate change, especially on the El Niño Phenomenon.[2] These studies estimated that the dimension of the superficial level of the soil, which will be constructed into a berm around the site, needs to be raised up an additional 30 cm above the original dimension, as a preventive measure and to counteract the effects of an event of El Niño. Additional monitoring will be integrated into the overall site monitoring to ensure these levels are sufficient given the uncertainty of the predictive models, especially in assessing the variables of climate change.

4.30. Seismic events are a potentially significant risk given the classification of the area as high risk. The facilities will be designed and constructed to the national seismic standards to minimize the structural risks; these standards are comparable with good international standards such as those of Chile. In addition there will be contingency plans implemented in the ESMP that will include the procedures for how to respond to the incident, evacuation, and post incident activities. The soils and geological structures are generally stable on the project site, but there is one area near the Los Monos river that was found to have some stability issues that will require specific measures, which have been incorporated into the ESMP.

Impacts on the local Community

4.31. The key potential risk to the community is from traffic and accidents from activities like truck and other vehicle movements on the roads. The EIA included a comprehensive traffic study looking at the main roads to be used to access the site from other Adelca facilities as well as by suppliers. The conclusion was that the

[2]El Niño is the warm phase of the El Niño Southern Oscillation (commonly called ENSO) defined as a prolonged warming in the Pacific Ocean sea surface temperatures when compared with the average value that happens at irregular intervals of two to seven years, and lasts nine months to two years, and can result in changes in temperatures and rainfall.

main regional and national roads would not be significantly affected by the increased traffic, but that upgrades would be needed of the two site access roads, Via Barcelona, the main access and an alternate access (for emergencies) Av. Alfredo Adoum. The main impact from use of the roads, in particular via Barcelona is due to the heavy trucks and machinery. Currently there is light traffic on the road that includes some heavy trucks, but also is used by a wide range of users from: cars, light trucks (transport of agricultural products), motorcycles, bicycles, pets, pedestrians, children playing, and even drying of agricultural products and clothing. Traffic already causes the generation of dust, noise, impacts on the landscape, and injury and death of people and animals (both domestic and wildlife), and an increase in traffic would exacerbate this risk. The studies concluded that the road rehabilitation, including improved paving and some widening would reduce some of the existing issues, especially dust and safety, but that specific procedures of truck drivers – both Adelca and contractors – would need to be implemented.

4.32. Adelca has already responded to this risk by preparing a traffic management plan for the pre-construction activities and a more comprehensive plan is being developed for the full construction activities that will form part of the ESMP required in the ESAP. This plan will apply to both Adelca and contractors. A grievance mechanism for community complaints will be required which is also included in the ESAP. Also noted as discussed above, is the use of armed security to guard the site, which can sometimes lead to community issues and tension. Cultural heritage is not anticipated to be an issue, but there is already a "Chance Find" procedure that would be initiated should any sites or artifacts be found during construction.

4.33. Another concern noted during the ESDD, as discussed below is the need to improve Adelca's overall capacity to manage community and other social impacts through the hiring of additional staff specializing in social issues. In addition, because Adelca is required to develop and implement a large number of social plans to mitigate socio-environmental impacts in the direct and indirect areas of the Project influence, there is a risk of delaying implementing key social plans unless adequate social specialists are employed.

B. Impacts and Risks from other Adelca Corporate Activities

4.34. The primary impacts and risks related to the proposed IDB financing are associated with the direct use of proceeds, which is the new mill. Nonetheless, as a corporate loan, there is also the potential for there to be impacts and risks associated with the other operations of Adelca, especially those like ship breaking and the Aloág Plant that have activities that could have environmental or social impacts or liabilities.

4.35. Adelca currently has in place an environmental and social management system that was reviewed during the ESDD (see Section 5.11). The ESDD concluded that generally the Company handles environmental and social issues well, and has many processes and procedures in place to manage the potential impacts and risks. Nonetheless, there were several issues that were identified that could present moderate to significant risks to the Company, especially if left to continue moving forward. A detailed list of these items and recommendations for ways to address them have been presented to Adelca who is working with the lenders and their consultants to prepare a list of next actions, and these will be incorporated into the ESAP for the Project. The main recommendation is that the Company conducts an assessment of past and current operations – both in terms of environmental aspects as well as health and safety – to identify potential past liabilities, current risks, and necessary remedial actions (see 4.39). The key issues are discussed below.

Capacity and Resources

4.36. The ESDD concluded that overall the Adelca operations appear well managed from an Environmental & Social standpoint, and the Company has put substantial effort into the identification, assessment and control of significant environmental and social risks. The conclusion was that Adelca generally has the competence, resources and capabilities to manage the significant E&S aspects of its operations and activities. The Company does however require additional social specialist(s) to design, implement and monitor the corrective actions related to socioeconomic impacts of the current activities as well as those of the new plant. The lack of a grievance mechanism for workers, similar to the plan established at the Alóag plant, and one designed for the communities, is risking the timely consideration of social issues.

4.37. Adelca is in the process of implementing a Company-wide integrated system to manage the significant environmental, social, safety and quality aspects of its operations. That system, which includes ISO 14001 OHSAS 18001 has been implemented for its existing manufacturing center in Alóag, but has not been completely implemented in other operations centers or for the construction project in Milagro. The systems will ultimately be extended to all Adelca operations.

Scrap Suppliers

4.38. There are also risks for the company related to the third-party suppliers of scrap. One issue is the potential for the scrap to contain hazardous materials, including radioactive waste that would then need to be managed by the Plant. There are also risks of vehicle accidents with the scrap suppliers themselves or with the community. There are also potential reputational risks from the activities of the recyclers that are outside of the Company's control. These are managed through the "recyclers club" (see 5.14) but also through the procedures required by scrap suppliers while on Adelca sites. Adelca is supporting additional training of the scrap suppliers to reduce these risks further.

Storm water run-off, effluent treatment and past liabilities

4.39. Storage areas for scrap at many Adelca facilities, including the main plant at Alóag, the shipbreaking facility, the San Alfonso scrap storage, and the smaller scrap yards at the regional facilities have an inconsistent level of containment for the scrap storage. Some of the areas are paved and the storm water collected, but in many areas storage occurs on permeable areas or areas where the runoff can leave the site and reach soils or have access to water. While the amount of run-off during any one event may be minimal, over time, this can potentially accumulate or migrate to surface water or groundwater, and in the case of the shipbreaking operations, the sea. Similarly, poor storage of other materials like oils or chemicals may have led to smaller areas of contamination that are typical for industrial plants, but which can lead to larger impacts and potential liabilities over time. To address this potential issue, the practices will be improved, containment upgraded, and the ESAP includes an activity for a "Phase 1 and Phase 2 Environmental Assessment,"[3] which is an evaluation of the past and current activities at the site and their potential for environmental issues such as soil contamination from past scrap storage, spills or other activities. If necessary remediation of contamination would be undertaken.

4.40. Similarly to the issue identified for the new plant, the water treatment for the existing facilities may not provide adequate removal of heavy metals and this could lead to the plant discharging these metals into the receiving water of the sites. In some cases this is into a river or the sea, and in other cases this is the municipal sewer, but even where there is a municipal sewer, these systems are not designed to treat these kinds of industrial parameters. For this reason the ESAP includes an activity to review the various effluents from Adelca operations and determine if additional treatment, especially for heavy metals, is needed. Adelca has committed to incorporating changes in treatment if necessary.

Health and Safety, Labor, Accidents and Emergencies

4.41. The ESDD concluded that in general the Company is well run and has good general health and safety practices. This was true for all the facilities including the shipbreaking yard which is an activity that has a tradition of high health and safety issues. The ESDD did make several specific recommendations for improvements across the Company, which have been communicated to Adelca and included in the ESAP. One particular area of concern was in the area of traffic and machinery movement on the sites and the high risk for accidents. A specific Site Management and Traffic Control plan has been recommended for all Adelca facilities. Other areas where specific recommendations have been provided include excavations, "hot work" such as welding, and working at heights. While all the Adelca procedures apply to third party contractors, there will still be risks especially from accidents that may be specific to contractors, such as

[3]These are assessments that follow the standards of American Society for Testing and Materials (ASTMI) for environmental assessment. More details can be found at: http://www.astm.org/Standards/E1527.htm

accidents involving scrap collector vehicles, will require specific procedures. The overall recommendation is for improved health and safety management procedures, especially in the area of training.

4.42. Gender Issues within the labor force are not specifically covered by internal procedures or policies other than non-discrimination in hiring. This led to a concern in the ESDD that there may be under-employment at the corporate level of women in the Company. For this reason it was agreed that Adelca would prepare a Gender Management Plan as part of the ESMP, and this requirement has been included in the ESAP. To facilitate this IDB is currently working with Adelca on a gender program that would lead to certification under the "Edge" Certification Scheme.[4] EDGE stands for Economic Dividends for Gender Equality and is an international standard designed to help companies not only create an optimal workplace for women and men, but also benefit from it.

C. Associated Facilities – the transmission line and sub-station

4.43. The TL will be constructed by Adelca under the oversight of the local government company (Celec-Transeletric) who has ultimate regulatory control. The revised EIA included a review of the impacts related to the transmission line (TL), and the most notable impact is from the land acquisition. There is also a small percentage of land that could be affected by the TL, including secondary forest, ornamental plants and some buildings. The majority of land use within the buffer zone of 50 m on either side of the central axis of the TL is agricultural (20 properties with short cycle crops and one nursery growing ornamental trees). Low-growing crops (<5 m tall) will be allowed to be grown in the ROW once construction is completed. The crops - bananas, cocoa, corn and green grass and other crops are all low-growing and therefore will be allowed to remain inside right of way of the TL. Economic compensation will also be paid for the temporary impacts from loss of crops or damage to trees, temporary restrictions during tower construction, and other land use restrictions to these 20 property owners.

4.44. Although the crops will be able to remain within the buffer zone, there will be restrictions on the construction of future residences. According to the information provided currently there are seven residences within the 50 m buffer zone that will be affected and require compensation for the future restrictions on residential construction. There are two properties out of the total affected by the right of way, with restriction of constructions in their remaining area. These two properties are very small and the right of way restrictions will effectively cover the entire property and therefore these two properties will require resettlement and the agreed approach is through cash compensation. This compensation will include payments and assistance to cover the loss of the residences (at full replacement cost) plus the costs to be relocated to other land plots.

4.45. In terms of the towers, their construction will affect nine properties in total, (the tenth tower will be constructed on the plant site and needs no land acquisition). Out of the nine plots required, eight will lose less than 1% of their total landholdings; one will lose 4.5%. This land loss requires compensation payment for economic displacement, especially in the cases of vulnerable population

4.46. This land acquisition will result in both physical and economic displacement. While not significant in number, there are vulnerable populations involved, and compensation and resettlement (for two households) will be required. Adelca has established an approach to the resettlement that contains the various actions necessary to establish and issue the appropriate compensation. Within this Adelca has included budget for compensation and documentation and reporting provisions regarding compensation. This approach was developed into a resettlement framework consistent with IDB resettlement policies that contains the following objectives and principles:

- Definition of the technical alternative for the TL way that avoids impacts among the population.
- Assessment of income sources of people affected.

[4] http://www.edge-cert.org/

- Preliminary assessment of impacts caused by the land acquisition and definition of right of way according to the legislation that applies for the sector.
- Eligibility criteria for compensation involving land use restrictions for agriculture and residences of land affected. It documents percentage of land affected under the TL, towers and substations, and percentage remaining of non-affected land, per property.
- Preliminary assessment of the number of people affected by physical and economic displacement which confirms a small number of physical displaced people caused by TL and associated equipment. The assessment is focused on impacts caused among small properties with vulnerable residents.
- Action Plans for land valuation based on the official cadastral value and on the process to reach an agreement with the competent agency responsible for redefinition of land use and compensation due to the TL construction,
- Definition and description of social rehabilitation programs for income and livelihood restoration which will include the people affected by the TL and which would complement the provisions provided by the agency directly responsible for the implementation of the TL and compensation.
- Budget for activities related to compensation and rehabilitation activities for income restoration
- Grievances solving mechanism for the project that will allow for compensation and impacts related issues.
- Description of communication strategy and activities that will support participation and provision of timely and accurate information about a number of activities including the promotion and development of livelihood and income restoration programs, calendars, to ensure access to most vulnerable.
- Definition of the indicators for the ex-post evaluation.

4.47. In addition it is possible that the two endemic species of amphibians identified in the EIA could be along the TL and affected by the TL construction. For this reason the TL is include in the overall Biodiversity Monitoring Plan discussed in Section 4.15 and no significant impacts are anticipated if the Plan is implemented.

D. Positive Impacts

4.48. The use of scrap in the casting process will have important results during the operation phase, in environmental, social and health terms for the entire country. It will contribute to the reduction of water and soil contamination risks due to the inadequate management of such metallic waste. Another important fact is that the reliability of steel supplies for construction will drastically increase in Ecuador, thus supporting the reduction of capital costs in the construction industry, and reducing dependence on foreign imports to meet national demand. Another positive aspect of this project is that the plant is highly efficient in its use of electricity and water and the low levels of waste generated.

E. Cumulative Impacts

4.49. The cumulative impacts were identified and evaluated in the EIA and these included a mix of both positive and negative impacts. The key issues identified were land tenure and land-use changes, especially during the next five to ten years; potential increases in land values, which could be both positive and negative; population increases due to employment expectations; and increase in coverage of basic services like drinking water, sewage and waste collection but also potential stresses on services like emergency response. Of these, the potential land changes were seen as most significant, especially if the area were to change its primary economic base from agricultural to industrial. That kind of change, however, is unlikely in the short or medium term (5-10 years) as there are no developed plans for additional industrial facilities in the area. There are some initial concepts being discussed, but there are not even at the feasibility stage. The cumulative impacts of the increase in traffic would be severe without the planned mitigations measures, especially the road rehabilitation recommended in the traffic study (see 4.31). Improvement of the main road access will result in a positive cumulative impact on the generation of dust, as well as a reduction in the injury and mortality of people and animals by vehicle accidents and automobiles in the road corridor.

4.50. Water availability impacts were evaluated, but are not considered an issue because of the high availability of water in the region. Water quality, however, is potentially an issue from the high use of agricultural

chemicals in the area, as detected in the water samples. Future developments in the area, whether industrial or agricultural, have the potential to contribute to water quality issues if not managed properly. The new plant will be required to manage its effluents and control accidental spills or leaks and therefore should not have an impact on water quality. The activities of surrounding facilities could affect the plant's water supply which may require the plant to determine alternative water treatments.

F. IDB Additionality

4.51. The IDB's involvement with the environmental and social aspects of the Project began at the stage where the EIA was being prepared and was therefore able to guide that process. As a result, the EIA includes a more robust analysis of key Project impacts such as the social baseline around the Project, groundwater analysis, cumulative impacts, and the impacts presented by the associated facilities of transmission line and substation, and a more comprehensive set of environmental and social management tools.

4.52. On significant impact of IDB's involvement is at the corporate level. Although the financing is for the construction of a new plant, the ESDD looked at the entire corporate activities of Adelca. From that a plan of additional evaluations and improvements has been developed that will improve the environmental and the health and safety performance of all of the Adelca facilities beyond the Project. Of particular note are the Phase 1 and Phase 2 environmental assessments and the review of heavy metals in waste water effluent.

5. MANAGEMENT AND MONITORING OF ESHSL IMPACTS AND RISKS

5.1. The discussion of environmental, social health and safety and labor (ESHSL) management has been divided into a discussion about the new plant, followed by ESHSL management at the corporate level.

A. Environmental and Social Management For the Plant

5.2. The EIA sets out a series of ESHSL management and monitoring plans that are required to address the identified impacts and risks.

Construction

5.3. For the construction activities, the two main parties controlling the activities on the site are Adelca, and the primary construction contractor Etinar. Other contractors will be hired either directly by Adelca or by Etinar. Adelca will have the ultimate responsibility for implementing the appropriate ESHSL management plans and procedures, even if it is through Etinar.

5.4. Some pre-construction activities have begun at the site that includes vegetation clearing and grubbing, grading and piling. For these activities a focused Environmental and Social Management Plan (ESMP) has been required by the IDB to address specific risks related to those activities such as traffic management (especially in the surrounding community), worker health and safety, contractors, waste management, materials storage and handling (especially to control accidental spills of fuel), and security personnel. This ESMP applies to both Adelca and contractor personnel. A full construction ESMP is required prior to the initiation of full construction. This ESMP will include the plans identified in the EIA, as well as specific measures that have been requested by the lenders to augment these plans and procedures. The list of plans includes those listed in the EASP in Attachment B and includes, among others:

- General Management Plan
- Health and Safety Plan
- Worker Grievance Mechanism
- Stakeholder Engagement Plan
- Community Grievance Mechanism
- Archaeological Procedure
- Construction Transportation And Traffic Management Plan
- Biodiversity Monitoring Plan.
- Groundwater Management Plan

- Emergency Response Plan:
- Waste Management Plan.
- Monitoring Plan for Government Resettlement Measures on the transmission line

5.5. Other plans and studies required to address the issues identified related to construction include:

- Environmental and Social Monitoring Plan
- An Agreed and Signed Environmental and Social Monitoring Agreement
- Livelihood Restoration Monitoring Plan – Milagro Plant
- Design of Monitoring Plan for Government Resettlement Measures
- Flood Risk Assessment
- Wastewater Treatment Assessment

5.6. A key requirement for the Project will be the oversight of the implementation of the ESMP by Adelca, especially when third parties such as Etinar are carrying out the works. Adelca intends to have on-site supervision of the construction activities and will be required to incorporate oversight of contractor implementation of the ESMP components into that supervision.

Operations

5.7. The EIA has identified a set of management plans and procedures required to mitigate the identified impacts. These are based on a process of reviewing the impacts, the compliance requirements, and a risk assessment, and they include the following:

- Risk Assessment
- Impact Prevention and Mitigation Plan
- Waste Management Plan
- Biodiversity Conservation Plan
- Communication Plan
- Training and Education Plan
- Community Relations Plan
- Contingency Plan
- Health and Safety at Work Plan
- Monitoring and Reporting Plan
- Abandonment Plan

5.8. For operations a specific ESMP will be required for the plant based on the specific impacts identified for the plant. These include the plans within the Plan de Medio Ambiente (PMA) presented in the EIA as well as others identified during the ESDD, including the following:

- General Management Plan
- Health and Safety Plan
- Worker Grievance Mechanism
- Stakeholder Engagement Plan
- Community Grievance Mechanism
- Biodiversity Monitoring Plan.
- Transportation And Traffic Management Plan
- Wastewater Management Plan
- Natural Disasters Management Plan
- Emergency Response Plan
- GHG Management Plan
- Groundwater Management Plan
- Waste Management Plan.

5.9. Many of the plans that are required will be based on existing plans used by Adelca in its currently operating activities, especially the plant at Aloag. As discussed below, however, some of the existing plans and

procedures require enhancement, and therefore a schedule for developing these operational plans will be included with the Project's Environmental and Social Action Plan (ESAP).

5.10. Ultimately the plans and procedures for the plant will be harmonized with those at the corporate level, so that there is one set of consistent plans and procedures across the company.

B. At the Corporate Level

5.11. At the corporate level Adelca has an established internal structure for managing ESHSL issues, and they have implemented several programs intended to mitigate impacts, manage issue, or promote positive impacts, especially development and growth for the Company's staff. These issues are managed under its definition of "environmental management" which is the remit of its Integral Management Department – DGI, in Spanish – (Industrial Safety, Environment, and Social Responsibility). This department carries out environmental management of the company´s facilities so that its industrial facilities follow the guidelines established by the environmental legislation and the department itself. The Adelca Environmental Unit has the purpose of ensuring the company´s environmental management. To do so, the unit works on the environmental control of the activities carried out by Adelca that have or could have the capacity to significantly alter the environment.

5.12. At the corporate level Adelca has been certified in the internationally recognized standards ISO 9001, ISO 14001, and OHSAS 18001 as well as the S2M[5] (Sustainability, Measurement, and Mediation), which is a private, independent initiative that guarantees implementation of a corporate responsibility and sustainability standard to complement and enable compliance with other globally recognized corporate and social responsibility standards, such as the UN's Global Compact, Global Reporting Initiative Indices, and ISO 26000. The Global Compact[6] is a voluntary UN initiative where companies commit to the UN's "ten universally accepted principles"[7] in the areas of human rights, labor, environment and anti-corruption.

5.13. Regarding labor, in 1980 Adelca established the Professional Association of Adelca Workers and registered it with the government. The objective of the organization is to ensure the economic and social improvement of its members, provide aid in case of emergency or domestic issues, encourage savings, and promote sports and other activities to build camaraderie. There is also a formal corporate code of ethics governing interactions between all staff and contractors, and a Human Resources Policy. There are no formal gender-specific measures, but as a Project requirement Adelca will develop a Gender Management Plan.

5.14. For the third party scrap collectors Adelca has created the "Recyclers Club" which is a program established to provide benefits to the recyclers while creating loyalty to the Company. There are various initiatives including health benefits, training and a fair price guarantee.

5.15. At the Aloág plant the Company has implemented an environmental management plan, as required in their environmental permits and the content of this plan is likely to be very similar to the one created for the new Project plant. This system includes:

- A plan for prevention and mitigation of potential Project impacts for each socio-environmental component (identified in the plan).
- A training plan for Adelca personnel and its contractors, related to environmental protection, occupational health and safety, and contingencies in the case of undesired events. This training plan also includes external training and information campaigns for stakeholders in the communities of the area of direct and indirect influence of the project, and includes the participation of local environmental authorities.

[5] http://www.s2m.com.ec/cms/
[6] http://www.unglobalcompact.org/
[7] The principles can be found at http://www.unglobalcompact.org/AboutTheGC/TheTenPrinciples/index.html and include two related to human rights, four on labor, three on the environment, and one on anti-corruption.

- An occupational health and safety plan for the construction phase as well as to operate the industrial plant, which will establish accepted procedures of occupational health and industrial safety, taking as a basis the Adelca procedures and manuals and the company´s own health and safety policies and general guidelines for daily or emergency situations in order to strengthen the reduction of environmental risks or work accidents.
- A waste management plan to cover all of the Ecuadorian environmental legislation requirements to guarantee correct collection, classification, storage, transportation, and delivery of common and hazardous waste to waste management companies authorized by the environmental authority.
- A community relations plan that establishes the mechanisms that will serve to help the people in the local community to understand the project, and so that Adelca can provide support to the community.
- A closure and abandonment plan to set out precautions and measures to recover the ecological character of the area of influence once the project is abandoned, and to detail the restoration activities.
- A monitoring and follow up plan to specify the types and frequency of the monitoring activities and the way in which the monitoring will be carried out.

5.16. During the ESDD it was observed that in some cases the plans are not fully developed, or have gaps between the standards being applied, and the international practices required by the IDB. For this reason the IDB has recommended that Adelca enhance these plans and this recommendation will be part of the ESAP.

The Transmission Line

5.17. The key issue related to the Transmission Line (TL) is the resettlement and compensation. Adelca has completed a Resettlement Framework (see 4.46) to be implemented before the initiation of the TL construction. This framework defines the schedule of the framework implementation, planned consultations and information provided to those affected; documentation on affected land; and detail of agreements reached with the state agency for the right of way implementation and compensation payments. Adelca will document and report all the activities regarding the displacements, both physical and economic, focused on vulnerable households affected. Adelca will monitor and report on the income restoration of the affected population and assistance provided if required.

5.18. In addition, biodiversity monitoring of the TL will be included within the overall Project Monitoring Plan, especially for potential herpetofauna.

C. The Environmental and Social Action Plan (ESAP)

5.19. A draft Environmental and Social Action Plan (ESAP) has been developed and agreed with Adelca, which is included in Attachment B. The focus of the ESAP is one the environmental and social management plans required to mitigate the impacts identified in the EIA and during the ESDD, but also on several agreed activities designed to help improve Adelca's overall corporate environmental and social performance.

5.20. The required actions and deliverables have been agreed between the Bank and Adelca as well as the timelines; however some of the intermediary timelines are still being finalized, and some items that are nearly completed will be removed from the final version. A completed agreed ESAP is a requirement for Financial Close of the Project.

D. Monitoring and Supervision

5.21. In addition to any locally required monitoring and supervision, the IDB will require monitoring and supervision throughout the life of the loan. Adelca will be required to prepare and submit an Environmental and Social Compliance Report (ESCR) to IDB. During construction and until the time of Technical Completion, these reports will be submitted on a quarterly basis; For the first year of operations following Technical Completion these reports will be submitted on a semi-annual basis; following this first year of operations, unless there are specific issues that the Bank considers warrant more frequent reporting, the reports will be submitted on an annual basis.

5.22. The IDB will conduct regular supervision of the Project including site visits, review of documentation, etc. and will contract an external independent environmental consultant firm to perform more detailed supervision actions during construction and operation. This supervision will be conducted by the IDB with the assistance of an external independent environmental and social consultant according to the following schedule: 1) During construction (until Technical Completion): quarterly; 2) during the first 12 months of operation: semiannually; 3) From 12 months through the life of the loan: annually. All costs of supervision will be covered by the Sponsor.

E. Environmental and Social Safeguard Performance Indicators

5.23. The specific Environmental and Social Safeguard Performance Indicators to be used for the Project will be formalized during the development of the Environmental and Social Compliance Report template. This template will contain the specific data to be collected, the frequency of collection, and most importantly, the benchmarks against which the data will be measured. There will be indicators for construction and operation, and for the new Plant as well as for the overall corporate activities. Given the nature of the issues of this Project, the indicators will likely include those measuring the performance of:

- Construction health and safety (accidents, training, use of personal protection equipment – PPE, etc.)
- Construction traffic safety (e.g. incidents in the community and/or complaints)
- Erosion control and water quality protection during construction
- Resettlement and land compensation (e.g. progress against targets in monitoring plan)
- Wastewater effluent quality during operations (e.g. monitoring results against agreed standards)
- Air emissions quality during operations (monitoring results against agreed standards)
- Completion of ESAP activities and ESMP targets
- Operation health and safety (e.g. accidents, training, use of PPE, etc.)
- Stakeholder engagement (e.g. consultations, complaints/grievances received and reconciled)

5.24. Others may be developed if new issues arise, or if priorities of the Project change over time.

6. REQUIREMENTS TO BE INCLUDED IN THE LEGAL AGREEMENTS

6.1. As a corporate loan, the "Project" includes two levels of focus for the environmental, social health and safety and labor (ESHSL) requirements; (1) the potential impacts and risks during construction and operation of the new plant (the Plant), and (2) the potential corporate risks related to Adelca's current operations. The requirements recommended below include both aspects.

A. Throughout the life of the Loan

6.2. The IDB will require within its Loan Agreement that the Project and each Project party – the Borrower (Acería del Ecuador C.A. "Adelca" and Adelca del Litoral S.A. "Adelca Litoral") and other Project Environmental parties, including construction companies and operators, and any contractors and sub-contractors will, at all times during the life of the Loan Agreement, comply with the following requirements:

1. Applicable Ecuadorian ESHSL regulatory requirements.
2. Requirements associated with ESHSL related permits, authorizations, or licenses that apply to the Project, the Borrower or any party responsible for executing the Project or its mitigation measures.
3. ESHSL requirements of the Project contracts and subsequent modifications.
4. All aspects and components of the Project's ESHSL documents.
5. All aspects and components of the Company's ESHSL management systems including ISO 14001 and OHSAS 18001 and providing adequate resources for their implementation.
6. Relevant IDB policies such as the Environment and Safeguards Compliance Policy (OP-703), the Disaster Risk Management Policy (OP-704) and the Disclosure of Information Policy (OP-102), the Involuntary Resettlement policy (OP-710), and the Gender and Equity in Development Policy (OP-270) and their respective guidelines.

7. Applicable IFC Environment, Health and Safety (EHS) Guidelines such as the IFC *General EHS guidelines* (2007) and the *EHS Guidelines for Integrated Steel Mills (2007)*, as well as the IFC Performance Standards.
8. Consultation with IDB before approving or implementing any and all non-trivial changes to the Project (including its environmental and social management and mitigation plans and any other ESHSL) or their respective timetables that relate to ESHSL aspects of the Project.
9. Provision of notice of noncompliance with any ESHSL requirement of the loan agreement and any significant environmental, social, labor, health and safety accident, impact, event, claim, material complaint or other known risk.
10. Ensure that the Borrower's contractors hired for construction and Project activities comply with the applicable ESHSL requirements of the loan agreement.
11. Implement ongoing information disclosure and consultation activities related to ESHSL aspects of the Project, including disclosure of Environmental and Social Compliance Reports and, as applicable, participatory monitoring.
12. Comply with the requirements indicated in the Environmental, Social Health and Safety Action Plan (ESAP).
13. Project Standards and Guidelines summarized in Section 3.8 and reporting of performance in relation to the key ESHSL performance indicators.
14. Risk management measures pertaining to the Associated Facilities (the transmission line and substation).

B. Prior to Financial Close

6.3. Prior to the date of Financial Close or the initiation of full construction activities (whichever is first), the Sponsor must Present the following documentation:

1. ESAP that sets out the pending plans and activities with their associated milestones, responsibilities, and status
2. Evidence of development and implementation of an ESMP including, but not limited to the specific plans discussed in section 5.
3. Environmental and Social Monitoring Plan
4. An Agreed and Signed Environmental and Social Monitoring Agreement
5. Livelihood Restoration Monitoring Plan – Milagro Plant
6. Design of Monitoring Plan for Government Resettlement Measures
7. Flood Risk Assessment
8. Wastewater Treatment Assessment
9. Evidence of completion of the other activities in the ESAP due prior to Financial Close or other earlier deadline as specified in ESAP.

C. Prior to First Disbursement

6.4. Prior to First Disbursement of the Loan, the following conditions shall be fulfilled:

1. The Sponsor shall present all agreed upon deliverables listed in the ESAP not already presented or scheduled for a later date.
2. The Sponsor shall certify compliance with all ESHSL requirements of the loan agreement.
3. The E&S consultant shall report upon/certify compliance with all ESHSL requirements of the loan agreement.

D. Within 120 days of First Disbursement

6.5. Within 120 days of First Disbursement the Sponsor shall present all agreed upon deliverables listed in the ESAP not already presented or scheduled for a later date.

E. Prior to initiation of Operations

6.6. No later than 60 days prior to the initiation of Operations at the Plan, the Sponsor shall submit to IDB the following:

1. ESMP for Plant operations including, but not limited to the specific plans discussed in section 5.
2. All agreed upon deliverables listed in the ESAP not already presented or scheduled for a later date.

F. Prior to Each Disbursement

6.7. Prior to each disbursement, the following conditions shall be fulfilled:

1. The Sponsor shall present all agreed upon deliverables listed in the ESAP not already presented or scheduled for a later date.
2. The Sponsor shall certify compliance with all ESHSL requirements of the loan agreement.
3. The E&S consultant shall report upon/certify compliance with all ESHSL requirements of the loan agreement.

G. Other Specific Requirements

6.8. Prior to Technical Completion the following conditions shall be fulfilled:

1. The Sponsor shall present all agreed upon deliverables listed in the ESAP not already presented or scheduled for a later date.
2. The Sponsor shall certify compliance with all ESHSL requirements of the loan agreement.
3. The E&S consultant shall report upon/certify compliance with all ESHSL requirements of the loan agreement.
4. Submit to IDB, a final Construction Phase Environmental and Social Compliance Report (ESCR).

H. Reporting, Monitoring and Supervision throughout the life of the Loan

6.9. The Sponsor must prepare and submit an ESCR, in form, content and frequency acceptable to IDB (quarterly until Technical Completion; semi-annually for the first year after Technical Completion; and annually for the remainder of the loan, unless there are specific issues that the Bank considers warrant more frequent reporting, the reports will be submitted on an annual basis.

6.10. The Bank will monitor the Project's environmental, health and safety, social and labor aspects via direct Bank supervision. This supervision will be conducted by the IDB with the assistance of an external independent environmental and social consultant according to the following schedule: 1) During construction (until Technical Completion): quarterly; 2) during the first 12 months of operation: semiannually; 3) From 12 months through the life of the loan: annually. All costs of supervision will be covered by the Sponsor.

6.11. In addition, the Loan Agreement shall also provide for,

1. Rights for additional inspection, supervision, etc. generally at the expense of the Borrower:
   - The Bank's right to contract independent environmental and social consultant(s) to perform more detailed supervision actions as needed through the life of the loan.
   - The Bank's right to contract for the performance of independent ESHSL audit(s), or to conduct ad-hoc supervision, if the Bank deems necessary.
   - The Sponsor's agreement to provide access to all relevant documentation, facilities and personnel and cooperate fully with any inspection or audit by the Bank or its designated consultants.
   - The Sponsor's agreement to cooperate fully with the IDB's Independent Consultation and Investigation Mechanism (ICIM) provided that the ICIM covers its own costs.
2. Other general customary provisions, such as:
   - Standard IDB E&S representations and warranties
   - Negative covenants (changes to plans, resettlement, indigenous peoples)
   - Indemnities and default provisions

Attachment A

Consistency of Project with IDB Safeguard Requirements

Policy / Directive[8]	Applicable aspect	Statement of how requirement is met or not met	Actions Required for Future or Continuous Compliance
OP-703			
B.2	Compliance with country laws and regulations	• EIA and consultation have been completed in accordance with local law • Existing facilities in compliance with permitting and other requirements	• Implementation of EIA requirements • Continued compliance with permit conditions
B.4	Vulnerability to disasters – Earthquakes and floods	• Design standards to international earthquake codes • Flood risk assessment and remedial works completed	Update risk assessment with additional data as more data is available and as models improve
	Sector related risks – industrial and health & safety risks risks	ESMP includes risk management and H&S plans	Implement actions recommended in the ESAP
B.3/B.5	Project has undergone or will undergo an adequate assessment process	EIA completed, including enhancement of EIA to meet IDB standards	Implement EIA mitigation and management plans
B.6	Project has undergone appropriate consultation in preparation phase	Consultation was completed in accordance with IDB requirements	Incorporate findings into long-term Stakeholder engagement Plans
	Project has appropriate Stakeholder Engagement Plan for implementation/operation phases	Stakeholder engagement Plans to be developed as required in the ESAP	Implement Plan
	Project has adequate provisions for Grievance Management	Grievance Mechanism to be included in the ESMP as required in the ESAP	Implement Plan
B.7	Project has adequate internal supervision and reporting requirements	Requirements exist but enhancements to be included in the ESMP as required in the ESAP	Implement Plan
B.9	Conversion of natural habitat	No CNH exists and little NH. One area where endemic species may be found will not be converted and will be monitored in the biodiversity monitoring plan as part of the ESMP	Implement Plan

[8] Only those applicable have been included

Policy / Directive[8]	Applicable aspect	Statement of how requirement is met or not met	Actions Required for Future or Continuous Compliance
B.10/B.11	Project has adequate waste management and pollution control measures	Project has been designed to meet IFC standards and will develop a monitoring plan as part of the ESMP	Implement Plan
OP-710: Resettlement	Project will provide adequate resettlement and compensation	A resettlement framework for the Transmission Line (Associated Facility) based on the approach presented in the was prepared which will be developed further into a plan and implemented prior to construction of the Transmission Line	Implement Framework and Monitor
OP-704: Disaster Risks/climate change vulnerability)	See OP-703 B4 above		
OP-270: Gender	Women are to be included at every level in the organization	For the plant and at the corporate level a Gender Management Plan will explore ways to improve opportunities for women.	Implement Plan
OP-102: Disclosure	Disclosure of ESS, EIAs and ESMR	ESS and EIAs have been disclosed:	ESMR will be disclosed prior to submission to Board

Attachment B

Adelca Environmental and Social Action Plan – February 2015

	TASK[9]	DELIVERABLE/ EVIDENCE OF COMPLETION	COMPLETION DATE / MILESTONE
1	**FOR THE NEW PLANT AT MILAGRO**		
1.1	**PRE-CONSTRUCTION ESMP**. Develop and implement a pre-construction Environmental and Social Management Plan (ESMP) to cover the initial construction activities (currently underway at the site - grubbing, clearing, piling, etc.).	1. Draft plans and procedures submitted to the Lenders for review. 2. Final agreed versions of all plans submitted to Lenders 3. Documentation demonstrating implementation by contractors. (For example, monitoring reports, supervision reports, etc.) 4. Continued demonstration of implementation through the Environmental and Social Compliance Report (ESCR) or until full construction starts	1. COMPLETE
1.2	**CONSTRUCTION ESMP**. Develop an Environmental and Social Management Plan (ESMP) to cover construction activities. This Plan should focus on the key site-specific environmental, social, health and safety and labor (ESHSL) impacts and risks of the Milagro Plant construction activities. The Plan should include details of the procedures, roles and responsibilities, budgets, timing and training associated with each element of the Plan. Sub-plans include[10] (but are not limited to) the following:	1. Final agreed versions of all plans submitted to Lenders 2. Documentation demonstrating implementation by contractors. (For example, monitoring reports, supervision reports, etc.) 3. Continued demonstration of implementation through the ESCR	1. Prior to First Disbursement 2. No later 30 days prior to the start of construction activities and/or date of Financial Close 3. In accordance with the ESCR schedule
	General Management Plan containing the standards processes and procedures to be used during construction and specified in the Golder Report.		
	Health and Safety Plan: A Plan to assess and manage the Project occupational health and safety risks		
	Worker Grievance Mechanism**:** a grievance redress mechanism through which workers can lodge complaints or		

[9]Details of each task's requirements are included in Golder's Environmental and Social Due Diligence Report, 8 Dec. 2014 (The Golder Report)

[10]More details on the contents of the ESMP are contained in the Golder ESDD Report

	TASK[9]	DELIVERABLE/ EVIDENCE OF COMPLETION	COMPLETION DATE / MILESTONE
	queries regarding the Project		
	Community Grievance Mechanism: a grievance redress mechanism through which members of the community can lodge complaints or queries regarding the Project		
	Archaeological Procedure - provisions for managing tangible cultural heritage encountered unexpectedly during project construction or operation through the development and implementation of a *Chance Find Procedure*		
	Construction Transportation And Traffic Management Plan - management Plan to ensure that hazards are addressed associated with on-site and off-site transportation activity, especially in relation to surrounding communities.		
	Biodiversity Monitoring Plan - plan based on the biodiversity assessment that focused on herpetofauna.		
	Groundwater Management Plan: A plan to protect and monitor groundwater quality both for the Plant but also for community users. This includes proper construction of new wells and protection and/or closure of existing wells.		
	Emergency Response Plan: A Plan to manage emergencies during construction ***Waste Management Plan***. A Plan to manage and dispose of all project waste.		
1.3	**OPERATIONS ESMP**. Develop an environmental and social management plan (ESMP) to cover operations. This ESMP should focus on the key environmental, social, health and safety and labor (ESHSL) impacts and risks associated with operational activities in Milagro. The Plan should include details of the procedures, roles and responsibilities, budgets, timing and training associated with each element of the Plan. Specific plans include[11] (but are not limited to) the following:	1. Draft Plan submitted to the Lenders for review. 2. Final agreed versions of Plan submitted to Lenders 3. Documentation demonstrating Plan implementation. (For example, monitoring reports, supervision reports, etc.) 4. Documented evidence that Milagro systems have been incorporated into Adelca's overall Integrated Management System. 5. Evidence of continuous implementation reported in the	1. No later than 60 days prior to the start of commissioning activities / operations 2. At least 30 days prior to the start of commissioning activities / operations 3. Within 60 days of start of operations 4. No later than Technical Completion 5. In accordance with the ESCR schedule
	General management plan: containing the standards processes and procedures to be used during operation		

[11] More details on the contents of the ESMP are contained in the Golder ESDD Report

	TASK[9]	DELIVERABLE/ EVIDENCE OF COMPLETION	COMPLETION DATE / MILESTONE
	Health and Safety Plan: A Plan to assess and manage the Project occupational health and safety risks	ESCR	
	Worker Grievance Mechanism**:** a grievance redress mechanism through which workers can lodge complaints or queries regarding the Project		
	Community Grievance Mechanism - mechanism through which community members can lodge complaints or queries regarding the Project. The Plan should be communicated through the Stakeholder Engagement Plan.		
	Biodiversity Monitoring Plan – the long-term plan should build on the plan implemented during construction and focus on monitoring the long-term impacts on biodiversity and the success of mitigation measures.		
	Transportation And Traffic Management Plan - Management Plan to ensure that hazards are addressed associated with on-site and off-site transportation activity, especially in relation to surrounding communities.		
	Wastewater Management Plan: A Plan to address wastewater issues including stormwater runoff, wastewater treatment, and industrial effluent.		
	Natural Disasters Management Plan: Plan to assess and manage natural disaster risks, which should include the results of the flooding risk assessment.		
	Emergency Response Plan: A plan that includes: description of potential hazards and emergencies; method for reporting / communicating; responsibilities; incident investigation; recovery; support services; training; response resources; etc.		
	GHG Management Plan: Plan to minimize and control GHG emissions		
	Groundwater Management Plan: A plan to protect and monitor groundwater quality both for the Plant but also for community users. This includes proper construction of new wells and protection and/or closure of existing wells. Establish a Project water balance. ***Waste Management Plan***. A Plan to manage and dispose of all project waste.		

	TASK[9]	DELIVERABLE/ EVIDENCE OF COMPLETION	COMPLETION DATE / MILESTONE
1.4	**ENVIRONMENTAL AND SOCIAL MONITORING PLAN.** Integrate all of the monitoring activities of the ESMP and the different E&S plans into one E&S Monitoring Plan (Air, noise, vibration, water quality, health and safety, social issues, biodiversity, etc. Include performance indicators.)	1. Draft Construction Plan submitted to Lenders for review 2. Final Construction Plan submitted to Lenders 3. Draft Operations Plan submitted to Lenders for review 4. Final Agreed Operations Plan submitted to Lenders 5. Evidence of implementation reported in ESCR	1. ASAP 2. Prior to financial close 3. No later than 60 days prior to start of Operations 4. According to ESCR schedule
1.5	**STAKEHOLDER ENGAGEMENT PLAN.** Develop and implement a Stakeholder Engagement Plan. The Stakeholder Engagement Plan must include preparation of detailed action plans on an annual basis for public consultation and meaningful disclosure.	1. Draft Stakeholder Engagement and Action Plan submitted to lenders to review 2. Design Final Stakeholder Engagement and Action Plan 3. Documentation of Implementation of Stakeholder Engagement Plan: Implementation of round of consultation 4. Documentation of Implementation of Stakeholder Engagement Plan: completion of community visits as specified in Plan 5. Documentation of offices set up and hours of operation Documentation of ongoing stakeholder engagement activities In the ESCR reports	1. ASAP (no later than February 28, 2015) 2. No later than the start of construction activities 3. Within 1 month of start of construction activity 4. Within 1 month of start of construction activity 5. No later than 30 days from start of construction phase 6. According to ESCR Schedule
1.6	**LIVELIHOOD RESTORATION MONITORING PLAN - MILAGRO:** Develop a long-term livelihood restoration monitoring plan to mitigate the Project's impacts on livelihoods and opportunities and capacities for recovery at household, community and local economic levels of former workers and former landowners at Milagro site.	1. Draft Plan submitted to lenders to review 2. Final agreed Plan submitted 3. Documentation of implementation included in the ESCR (Monthly monitoring during construction and annually during operation)	1. Prior to financial close 2. No later than 30 days prior to the start of construction activity 3. In accordance with the ESCR schedule
1.7	**RESETTLEMENT FRAMEWORK AND MONITORING PLAN FOR RESETTLEMENT MEASURES – T-LINE:** Develop a resettlement framework and a Resettlement Monitoring Plan for the Transmission Line Project. Although under the ultimate authority of the government agency *Celec-Transelectric*, Adelca will identify and monitor the resettlement measures and actions.	1. Final Resettlement Framework 2. Draft Displacement and Resettlement Monitoring Plan submitted to Lenders. 3. Final agreed Plan submitted 4. Documentation of implementation included in the ESCR (Monthly monitoring during construction and annually during operation)	1. COMPLETE 2. Prior to financial close 3. No later than 30 days prior to the start of construction activity 4. In accordance with the ESCR schedule

	TASK[9]	DELIVERABLE/ EVIDENCE OF COMPLETION	COMPLETION DATE / MILESTONE
1.8	**FLOODING RISK ASSESSMENT:** Complete a review of the flood scenarios for the 50- and 100-year scenarios including extreme phenomenon's (e.g. El Niño) and climate change. Incorporate results into Natural Disasters Management Plan	1. Completed evaluation, including Action Plan submitted to Lenders for review 2. Documentation that Action Plan has been incorporated within Natural Disaster Management Plan (within the ESMR)	1. Financial Close 2. Prior to First Disbursement
1.9	**AIR EMISSIONS:** Conduct additional air emissions dispersion modelling. Review design criteria to ensure that criteria specified in the EHS Guideline for Integrated Steel Mills are respected and Incorporate a long term monitoring Plan along with noise and vibration monitoring.	1. Contaminant dispersion modelling results submitted to Lenders. 2. Final air pollution control system design drawings / other evidence demonstrating that that emissions will comply with EHS Guideline for Integrated Steel Mills 3. Final agreed air emissions monitoring plan, including indicators is incorporated into the ES Monitoring Plan for Operations	1. COMPLETE 2. Prior to Financial Close 3. No later than 30 days prior to the start of Operations
1.10	**GREENHOUSE GAS EMISSIONS**: Develop a GHG emissions estimation for the Milagro project and an overall GHG Management Plan	1. GHG emissions estimate (both construction and operations) submitted	1. Prior to financial close
1.11	**SURFACE WATER:** Incorporate the additional baseline samples and new monitoring points during construction and operations (there should be a total of 4 locations for sampling in the Estero Los Monos). Incorporate a long term monitoring program into the Monitoring Plan.	1. Plan showing location of wells for sampling – construction and operation 2. Surface water monitoring plan is included in the ES Monitoring Plan	1. Prior to financial close 2. Prior to financial close
1.12	**WASTEWATER TREATMENT ASSESSMENT:** Evaluate heavy metal risk in process wastewater, and propose appropriate treatment design.	1. Final Wastewater treatment plant design drawings / other evidence demonstrating that that effluent discharge quality will comply with Lender requirements	1. Prior to financial close
2	**ADELCA AT THE CORPORATE LEVEL**		
2.1	**STORMWATER MANAGEMENT PLAN:** Based on a review of designs and processes prepare a Plan that reduces stormwater runoff and maximizes water captured for treatment. develop and include appropriate monitoring within the E&S Monitoring Plan.	1. Stormwater management system and treatment system design with evidence submitted to the Lenders demonstrating that effluent quality will comply with agreed Guidelines 2. Updated existing environmental Monitoring Plan to incorporate monitoring requirements agreed Guidelines	1. Within 90 days of First Disbursement. 2. Within 120 days of First Disbursement.

	TASK[9]	DELIVERABLE/ EVIDENCE OF COMPLETION	COMPLETION DATE / MILESTONE
2.2	**ENVIRONMENTAL REVIEW:** Complete an environmental review of the existing Adelca operations (scope of work to consist of a Phase 1 Assessment, followed, by as Phase 2 based on the results of the Phase 1 and agreed with the Lenders.	1. Scope of Work Agreed with Lenders 2. Complete Phase 1 and agree Phase 2 program 3. Implement corrective actions as agreed with Lenders.	1. Prior to Financial Closure 2. Within 90 days of First Disbursement. 3. Prior to Technical Completion
2.3	**DISASTER RISK ASSESSMENT:** Undertake a review of corporate disaster and climate change risks, and prepare a business continuity plan.	1. Natural disaster and climate change risk review strategy and Business Continuity Plan submitted to Lenders	1. Within 90 days of First Disbursement
2.4	**GENDER MANAGEMENT PLAN:** Develop a human rights / human resources policy regarding gender practices, equal opportunity and fair treatment.	1. Design requirements for gender sensitive appraisal report. 2. Update Corporate Human Resources Policy with gender practices.	1. Prior to Financial Closure
2.5	**HEALTH AND SAFETY REVIEW:** Complete a health and safety review of the existing Adelca Corporate operations.	1. Agree Scope of Work and with Lenders 2. Evidence of completed study submitted to Lenders 3. Evidence of Implementation of corrective actions.	1. Within 90 days of First Disbursement 2. Within 30 days of final report 3. Prior to Technical Completion
2.6	**HAZARDOUS MATERIALS HANDLING**: Improve existing program used existing Adelca Corporate operations especially for storage	1. Update radioactive program for Adelca facilities. 2. Detail in ESMP for operation the radioactive materials management program	3. Prior to financial close
2.7	**TRANSPORTATION AND TRAFFIC MANAGEMENT PLAN:** Develop a Develop and implement a Transportation and Traffic Management Plan for existing Adelca operations to ensure that hazards associated with on-site and off-site transportation activity are controlled.	1. Design Transportation and Traffic Management Plan for submission to Lenders. 2. Evidence of Plan Implement the included in the ESCR	3. Prior to financial close 4. During operations
2.8	**OCCUPATIONAL HEALTH & SAFETY MANAGEMENT – EXISTING OPERATIONS:** Update the existing health & safety management systems for Aloag and Duran to improve occupational health & safety	1. Updated existing health & safety management system submitted to Lenders	2. Prior to financial close
2.9	**INSPECTION PROGRAM:** Develop a Company-wide contractor compliance monitoring, non-compliance and corrective / preventive action program that includes documented workplace inspections to identify and correct unsafe conditions and behaviors.	1. Contractor Inspection Program, defining responsible parties for implementing it.	2. Within 90 days of First Disbursement
2.10	**ACCIDENT AND INCIDENT MANAGEMENT:** Improve the existing accident and incident management procedure across Adelca Operations	1. Revised Accident and Incident Management Procedure	2. Within 90 days of First Disbursement

	TASK[9]	DELIVERABLE/ EVIDENCE OF COMPLETION	COMPLETION DATE / MILESTONE
2.11	**CONTRACTOR E&S MANAGEMENT:** Develop a comprehensive schedule of E&S terms and conditions and other standards of care for environmental and social responsibility to be included in all contractors.	1. Comprehensive schedule of E&S terms and conditions amended to existing contracts or appended to new contract.	1. Prior to First Disbursement
2.12	**ENVIRONMENTAL & SOCIAL COMPLIANCE REPORT TEMPLATE:** The template to be used for compliance reporting during construction and operations Reporting.	1. Draft ESCR Template Submitted to Lenders 2. Final Agreed ESCR Template Submitted to Lenders	1. Prior to Financial Close 2. Prior to first Disbursement
2.13	**ENVIRONMENTAL & SOCIAL COMPLIANCE REPORT**	1. Submission of report to lenders	1. Quarterly during the construction phase (until Technical Completion) 2. Semi-annually for the first year after Technical Completion 3. Annually for the remainder of the Loan
2.14	**TECHNICAL COMPLETION REPORT.** A report similar to the ESCR that details the compliance with E&S requirements and Conditions Precedent to Technical Completion	1. Submission of report to lenders	1. No later than 30 days prior to Technical Completion
2.15	**COMPANY E&S CERTIFICATE.** Submit Project Compliance "Certificate" representing that the Company is in compliance with all Lender E&S requirements	2. Executed certificate submitted to lenders	1. Prior to first disbursement 2. Prior to each disbursement

KEY TO CELL COLORS
ESMP
SPECIFIC PLANS / STUDIES
ESHMS
REPORTS