ENVIRONMENTAL AND SOCIAL STRATEGY[1]

Peru LNG Project

PERU

Project Name:	Peru LNG Project (the "Project")
Project Number:	PE-L1016
Country:	Peru
Sponsors:	Hunt Oil Company (Hunt), SK Corporation (SK) and Repsol YPF (Repsol)
Company:	Peru LNG S.R.L. (Peru LNG)
Project Cost:	Approximately US$3.8 billion
Financing Plan	Equity: US$1.7 billion Senior Debt: US$2.15 billion
IDB Participation:	IDB A-loan up to US$400 million IDB B-loan up to US$400million
Status:	Due-Diligence

I. PROJECT

1.1 The Peru LNG S.R.L. project ("Peru LNG" or "Project") is a key strategic element in Peru's overall energy plan to exploit its extensive gas reserves in the Camisea gas fields by exporting them to other countries. The Project consists of the development, construction and operation of a liquefied natural gas (LNG) plant, a related marine loading terminal and a natural gas pipeline. The Project will liquefy natural gas purchased from Blocks 56 and 88, operated by a separate consortium of private companies, and export the resulting LNG, most likely to markets in Mexico but possibly to Chile and the United States for re-gasification.

1.2 The LNG plant will be located at Pampa Melchorita on the Pacific coast of Peru, 169 km south of Lima and consist of one nameplate 4.4 million ton per annum train and related loading facilities. Natural gas feedstock for the Plant will be transported through a single pipeline system consisting of two sections: (i) a 211-km section of the existing Transportadora de Gas del Peru ("TGP") gas pipeline

[1] This Environmental and Social Strategy (ESS) is being made available to the public in accordance with the Bank's Policy on Disclosure of Information. The ESS has been prepared based primarily upon information provided by the project sponsors and does not represent either the Bank's approval of the project or verification of the ESS's completeness or accuracy. The Bank, as part of its due diligence on the feasibility of the project, will assess the environmental and social aspects. This assessment will be presented in the project Environmental and Social Management Report, prepared by the Bank, and will be made available to public prior to consideration of the project by the Bank's Board of Executive Directors.

running from the Malvinas separation plant near the gas fields though the rainforest and (ii) the PLNG Pipeline which will be built by Peru LNG and will run from the end of the rainforest portion of the TGP line to the Plant. The first section will not require additional construction because it was initially designed and built with surplus capacity to avoid returning to this sensitive region for any foreseeable expansion. Construction of the LNG plant is scheduled to begin in 2006; construction of the second section of the LNG pipeline is scheduled to begin in 2007. The LNG supply date is estimated to be the first quarter of 2010. Additional information on the Project description can be found on in Annex I-1 and the company's web site at: http://www.perulng.com/.

1.3 The Project is a capital-intensive project requiring a substantial level of investment. The project sponsors, Hunt Oil Company (USA), SK Corporation (South Korea) and Repsol YPF S.A. (Spain) will provide approximately US$1.7 billion in equity and are seeking to raise over US$2.15 billion of long-term senior secured debt. The Inter-American Development Bank is considering US$400 million in direct loans to help finance a portion of the capital expenditure program. The blocks 56 and 88 are being developed by an Upstream Consortium (Pluspetrol Peru Corporation S.A. (Pluspetrol), Hunt, SK, Tecpetrol Del Perú S.A.C. (Tecpetrol), Sonatrach Peru Corporation S.A.C. (Sonatrach) and Repsol). The output of the LNG Plant will be sold to Repsol Comercializadora de Gas S.A. ("Repsol CG") The Project will attract large amounts of foreign direct investment to Peru. With a total cost of approximately $3.8 billion including financing costs, the project represents the largest foreign direct investment ever made in the country. The Project is expected to generate roughly US$800 million of hard currency export revenues annually, increasing the country's total exports by an estimated 1.5%. In addition, the Project is expected to contribute to GDP growth and make Peru a net hydrocarbons exporter in the medium term. As a result of the Project, the Peruvian government will receive an estimated $200 million per year on average in incremental royalties and $150 million per year in additional income taxes over the first 20 years. The Project will also create a significant number of jobs during both construction and operation (approximately 35,000 direct and indirect jobs during construction and 2,750 during the life of the project). The entire project is expected to yield $4.8 billion in net present value terms in cumulative economic benefits.

1.4 Peru LNG will positively impact the energy matrix in the Latin American region with gas most likely being shipped to Mexico, which has been identified as a primary market for the LNG. This new gas supply source will reduce Mexican demand for U.S. natural gas and potentially lower prices for U.S. consumers. Pursuant to an 18 year sale and purchase agreement, Repsol Comercializadora de Gas S.A. ("Repsol CG") has purchased the output of the LNG Plant and in addition to Mexican markets, will also have delivery flexibility to other markets such as Chile and the United States.

1.5 This financing request matches the Bank's mandate to support infrastructure projects requiring long-term financing and presenting a high developmental impact on the country. The project has important financing requirements, and

Peru continues to have limited access to such financing without the presence of bilateral and multilateral agencies for political risk mitigation. The Bank expects to have a catalytic impact in attracting international commercial banks and institutional investors to complete the financial plan. The Bank's participation in this project will ensure the proper development and implementation of environmental and social measures to limit and/or mitigate negative impacts of the Project. The Bank's participation will result in the application of its recently revised environmental and social policies, which are generally more stringent and demanding than federal or local legislation and through which benefits will accrue to both the energy sector and the Peruvian population. The Bank's experience in working with the Government of Peru in strengthening its regulatory and social agencies will also help ensure sustainable development goals of the project are met.

1.6 The Ministry of Energy and Mines (MEM) is in charge of designating the competent authority for the regulation of natural gas distribution, including the process for the granting of concessions, the rules for fixing maximum prices to consumers, and safety and environmental regulations. OSINERG is the government agency established in December 1996 to enforce the adherence of electricity and hydrocarbon companies to the legal and technical requirements relating to the protection and conservation of the environment. It also enforces compliance by concessionaires with the obligations in their respective concessions.

1.7 The principal Governmental of Peru (GOP) regulatory entities related to the environmental and social aspects of the Project include: (i) Ministry of Energy and Mines (*Ministerio de Energía y Minas* - MEM), and MEM Directorate of Environmental Affairs for Energy (*Dirección General de Asuntos Ambientales Energia* - DGAAE) is responsible for evaluating and approving the Environmental and Social Impact Assessment (ESIA), and regulating the assessments of environmental and social impacts derived from energy sector activities: and (ii) the Supervising Body for Investment in Energy, OSINERG (*Organismo Supervisor de la Inversión en Energía*), as the entity responsible for monitoring the legal and technical aspects of hydrocarbon activities in Peru, as well as, compliance with legal and technical regulations governing the protection and conservation of the environment while developing hydrocarbon activities. Other entities with a role include: National Institute of Culture (*Instituto Nacional de Cultura* – INC) is responsible for the preservation of cultural heritage, including archeological sites; Ministry of Health through its General Directorate of Environmental Health (*Dirección General de Salud Ambiental* - DIGESA), that enforces preventative and controlling measures related to human health; General Coastguard and Port Directorate (*Dirección General de Capitanías y Guardacostas* – DICAPI) is the national marine authority that regulates, authorizes, and supervises activities in national navigable waters; Ministry of Health through its General Directorate of Environmental Health (*Dirección General de Salud Ambiental* - DIGESA), that enforces the necessary measures to minimize and control environmental health risks, INDEPA (*Insituto de*

Desarrollo de Pueblos Andinos, Amazonicos y Afroperuanos) is responsible of native community (indigenous peoples) matters; INRENA (*Instituto Nacional de Recursos Naturales*) responsible for safeguarding renewable resources and conservation; and *Defensoría del Pueblo*, whose mission is to protect fundamental and constitutional rights of the individual and the community. In November 2002, based upon the institutional framework required for the IDB public sector loan for the institutional strengthening of the GOP for the Camisea Project, GOP created the *GTCI - Grupo Técnico de Coordinación Interinstitucional de Camisea* as the inter-institutional coordination agency for the Camisea Project. The specific objectives of the GTCI are to: coordinate the supervision, monitoring and enforcement of environmental and social requirements for the Camisea Project that are performed by the different institutions that comprise the GTCI; and contribute to promote the integrated actions of the GTCI governmental institutions in the areas of influence of the Project. GTCI is also the executing agency for the IDB institutional strengthening public sector loan. The GOP also, with input from the IDB, established the Camisea Ombudsman (*Defensoria de Camisea*) to assist in resolving complaints related to the Camisea Project.

II. ENVIRONMENTAL AND SOCIAL STRATEGY

A. Peru LNG Project

2.1. The Peru LNG Project involves the construction and operation of a liquefaction plant and an LNG export facility on the Peruvian coast, which includes a marine terminal, breakwater and temporary rock quarry. A 34" natural gas pipeline commencing from pump-station 3 (km 211) of the existing Camisea pipeline and utilizing the existing 32" Camisea natural gas pipeline portion in the jungle. Km 211 is located outside the rainforest and areas inhabited by indigenous populations, as defined in the IDB Indigenous Peoples Policy. See Annex I-1 for additional details on project description.

2.2. An Environmental and Social Impact Assessment (ESIA) for each of the Peru LNG components has been developed, as a requirement of both Peruvian legislation and the IDB[2].

2.3. The ESIA for the Peru LNG Plant component, including the breakwater and terminal, was submitted to the MEM in mid-2003 and approved in June 2004. An amendment to the ESIA related mainly[3] to building a dedicated access to the Project to avoid impacts in the South Pan-American Highway was submitted in

[2] IDB Environment and Safeguard Policy refers to EIA (Environmental Impact Assessment).

[3] The access to the plant was modified to avoid traffic interruptions on the Pan-American South Highway during both construction and operation stages, through the construction of acceleration and deceleration lanes and two underpasses to facilitate the entrance and exit of vehicles to and from the plant; the construction of a rock load-out jetty on the north side of trestle has been included in the Project to facilitate the construction of the breakwater. It may also subsequently be used as a utility dock and berth for small vessels. The vertical flare has been replaced by a ground flare and other more efficient equipment changes within the footprint of the plant have also been included

May 2006 and is expected to receive approval in September 2006. See http://www.perulng.com/env_plant.asp for details on the EIA (including the Environmental Mitigation and Monitoring Plan), GOP observations and company responses, ESIA Amendment, and site selection information. Peru LNG is in the process of obtaining the necessary associated permits and licenses. The selected site is void of any inhabitants and contains no protected species or sensitive ecosystems

- The ESIA for the rock quarry, which is to be used as a source of materials to build the breakwater, was submitted in July 2005 and approval was granted in June 2006. See http://www.perulng.com/env_quarry.asp for details on the ESIA (including the Environmental Mitigation and Monitoring Plan) and GOP observations and company responses. The extremely remote site is void of any inhabitants and contains no protected species or sensitive ecosystems.

- The ESIA for the natural gas pipeline was submitted to the MEM in April 2006. Responses to MEM observations were submitted in June 2006. See http://www.perulng.com/env_pipeline.asp for details on the ESIA. As mentioned, the Project will use the existing 211 km of TGP natural gas pipeline portion in the rainforest, which was over-sized and constructed to handle the additional capacity to deliver the natural gas to support the Project, in order to avoid the need to return to the sensitive environment of the rainforest. The new pipeline will begin in the Andes and follow a route parallel to the existing TGP pipeline to the greatest degree possible, deviating only where engineering, topographical, environmental or archaeological conditions limit the ability to build in the common corridor.

2.4. The Project has conducted different site selection studies and alternative analyses in an effort to avoid or minimize potential environmental and social impacts.

- The proposed location for the LNG Plant at Pampa Melchorita site was selected as a result of a thorough alternative site analysis performed along the Peruvian coastline between Pisco and Lima. Seventeen potential locations were evaluated on criteria that considered engineering feasibility, environmental sensitivities and potential social impacts (e.g., greatest isolation from environmentally sensitive areas and indigenous populations, greatest distance from hazardous geological faults, minimum distance to 15 meters sea depth, land with protective elevation of at least 20 meters, and minimum land area of no more than 100 hectares. The Pampa Melchorita location was deemed to have been the least sensitive and most remotely located and therefore was chosen as the site of the liquefaction facility. The 521 ha site is void of any inhabitants and contains no protected species or sensitive ecosystems.

- A comprehensive evaluation of the pipeline route was performed in order to minimize the environmental and social impacts. Several alternative routes were evaluated for the extension of the pipeline based on engineering and logistic feasibility, environmental and social integrity, and economic viability.

The shortest route that traveled directly between PS3 (KP 211) and Pampa Melchorita was evaluated as an alternative ROW, but due to the extensive amount of infrastructure and new road building required to make this a viable option, the footprint was actually reduced by following the existing pipeline route to the greatest degree possible. The selected route crosses areas of the Andes that were more geotechnical stable and avoiding steep gradients wherever possible and also avoiding multiple crossings through the Pisco Valley, an area that caused several difficulties for the original Camisea pipeline construction team in terms of multiple river crossings and dissection of agricultural plots in order to minimize any agricultural impact. In doing so, the Pisco river will be crossed only once during Peru LNG as compared to seven times during the original Camisea construction. Engaging an environmental, social, and archaeological team on the ground with the survey crew during the planning phase helped avoid potential difficulties and avoid sensitive areas.

- Six different quarry sites located between Chincha and Ica, each with potentially viable rock for the purpose of building the breakwater facility, were evaluated based on environmental and social aspects and the most environmentally friendly location was selected to the south, inland from the Pampa Melchorita LNG location. As rock must be transported from the beach of Pampa Melchorita, an additional investment to construct a reinforced trestle and load out jetty facility in lieu of an existing port facility was required.

2.5. The Project's design includes a series of environmental, social, and health and safety management plans and procedures that are being developed by Peru LNG to prevent and mitigate potential negative impacts. See specific project EIA documentation referenced above for details on the proposed Environmental Mitigation and Monitoring Plans.

2.6. The Peru LNG environmental policy embodies the company's commitments to, among others: fully comply with environmental legislation and regulations, to promote innovative thinking in the development and implementation of new ideas relating to environmental integrity; to carefully and responsibly use natural resources, to involve stakeholders in a timely and open fashion, with effective information disclosure; and by incorporating environmental integrity, social equity and economic viability into all of their operations.

2.7. Building on the experience of the Camisea project, the Peru LNG Project has adopted a proactive stakeholders' involvement policy since the early stages of project development, in accordance with its Community Relations Policy, which commits to carry out its operations in keeping with high standards of personal integrity and ethical behavior and provide an open communication channel for meaningful and clear exchange of information with local communities and governments. Public consultation has been an integral component to the development of the ESIAs and began in the early stages of the project (scoping phase) and has continued throughout the environmental and social assessment process. Public hearings by the GOP are also being performed as part of the ESIA

review and approval process. In addition, meaningful and effective communication and participation channels are being designed for the life of the Project. See Annex I-2 for summary of public consultation that has been performed.

2.8. The preliminary assessment indicates that the key direct, indirect and cumulative environmental and social impacts[4] related to the construction of the LNG Plant will be associated primarily with permanent changes to the morphology of the site, both onshore and offshore. The land will be leveled and the cliff face will be sloped and terraced to accommodate the construction of the sleeperway and vehicle access to the beach. The construction of the breakwater and pier structures run the risk of altering sediment transport, which may potentially lead to gradual changes in beach morphology north and south of the trestle. However, this probability is minimized given that the pier has been designed using an open structure, which will significantly minimize current and sediment transport disruption. In addition, the breakwater runs parallel to the coast, which also presents minimum potential to affect sediment transport.[5] In relation to the quarry, there will be potential environmental impacts from dust generation during transportation of rock by truck to the plant site, as well as during blasting operations. Limited water use from the Cañete River for dust control may also have an impact on the surrounding communities, although significant impacts are unlikely to occur given the sizeable flow of the river. During the pipeline construction, soil erosion and subsequent sedimentation of waterways near the ROW are the key potential environmental impacts of the pipeline construction. The likelihood of archeological artifacts along the ROW, landowner grievance management, and effects of neighboring communities are the key potential social impacts. The potential key social impacts of the LNG Plant construction include impacts to local artesanal fishermen who will lose access to a segment of the beach and may temporarily impact revenues, and potential inmigration of people to the otherwise uninhabited immediately surrounding area attracted by the belief the project will bring employment opportunities.

2.9. During the operational phase of the Project, there appears to be limited potential environmental and social impacts, the few that exist relate to operational hazards. While there is a very low probability of release of LNG during normal industry operations due to the safety systems that are in place, it still presents a hazard that must be properly managed. LNG is natural gas that will be cooled to minus 260 degrees Fahrenheit, the temperature at which methane condenses to a liquid. LNG is odorless, colorless, non-combustible, non-corrosive and non-toxic. Therefore, LNG will not pollute land or water resources. If LNG is released on water, it evaporates with no residual trace.[6] LNG is stored at ambient pressure, so a tank rupture will not cause an explosion. LNG vapors (primarily methane) are

[4] See Annex I-3 for additional details on potential key environmental and social impacts.

[5] Mathematical modeling associated with the EIA implied that there will be no effects further downstream of the currents.

[6] When released into the water the LNG forms simultaneously a spreading and evaporating pool. The spreading pool can also sustain a fire if an ignition source exists.

harder to ignite than other types of flammable liquid fuels. Above approximately -110°C LNG vapor is lighter than air. If LNG spills on the ground or on water and the resulting flammable mixture of vapor and air does not encounter an ignition source, it will warm, rise and dissipate into the atmosphere. Because of these properties, the potential hazards associated with LNG include an ignition source near LNG vapors and the risk of contact with a cryogenic (extremely cold) substance, such as any direct exposure of skin or equipment. Like any gas aside from oxygen, LNG vapor can be an asphyxiate. This is also true of vapors of other liquid fuels stored or used in confined places without oxygen. Other potential project hazards include fires or spills of imported materials used on the site (fuels, oils, etc.), and in the case of the PLNG terminal risks, accidents occurring with the ship tankers during transportation or loading operations. The double hull features of the LNG tankers, however, provide significantly enhanced safety as they provide a built in form of secondary containment. It should be noted that the ship tankers will be discharging ballast water 200km from the shoreline, a significantly greater than the 5km stated in Peruvian regulation. The safety record of LNG operations is excellent. Due to appropriate and modern equipment, facility design, safety and emergency systems, operational procedures and personnel training, there has been no off-site property injury or damage in 30 years.[7] There are also potential natural hazards associated with the geologically active conditions of the project area, as the Peruvian coastline is known to be a seismically active area, typically prone to earthquakes and tsunamis. These risks have been assessed and all structures have been designed to withstand these phenomena. In addition, as part of the site selection criteria, the Pampa Melchorita location was found to be relatively low risk of seismic movements, and its perch of 140 meters above sea level serves as a natural defense to tsunamis.

2.10. There are no transboundary issues associated with the Project. The Project will not significantly convert or degrade critical natural habitats or damage critical cultural sites. Natural habitats will be affected, but project activities should not significantly convert or degrade these habitats. The Peru LNG Project has no potential direct, indirect or cumulative negative impacts on the indigenous peoples, given the location of the Peru LNG Project: There is no presence of voluntarily isolated indigenous peoples and therefore no physical, social, cultural, or economic interaction with indigenous peoples or indigenous areas; the Project will not provide access to, nor will use natural resources of, indigenous areas or areas that are of cultural or economic value to indigenous peoples; and the Project will not use indigenous peoples manpower. Similarly, the Peru LNG Project does not present a potential for mainstreaming indigenous peoples interest or exploring potential benefits for the indigenous peoples.

2.11. Although not part of the Project under consideration, there are associated facilities related to the operation of Peru LNG Project that will not be financed by the Bank and are operated by other companies. These include (see Annex I-1 for additional details): (i) facilities and operations in Blocks 56 and 88, where the natural gas

[7] Center for Energy Economics - CEE, October 2003.

and associated natural gas liquids will be extracted; (ii) the existing cryogenic processing plant in Las Malvinas, where gas and liquids are separated, which will be expanded within the existing fence line; (iii) the existing Camisea natural gas pipeline from Las Malvinas to pump station 3 and the existing natural gas liquids pipeline from Las Malvinas to the fractionation plant and marine terminal near Pisco; and (iv) the existing Pisco fractionation plant, which is used to process the liquids into marketable form, including diesel, naphtha, propane, butane and condensate. This facility will also be expanded within the existing fence line.

2.12. In relation to the Project associated facilities, the ESIA for the exploration and development of the production fields in Block 56, including the expansion of the processing cryogenic plant at Las Malvinas, was approved by MEM in July 2005 (see http://www.minem.gob.pe/dgaae/index.asp for ESIA). The ESIA for the expansion of the fractionation plant is scheduled to be submitted in the fourth quarter 2006.

2.13. At this time, the Bank identifies the potential key environmental and social impacts identified by the Bank at this time related to the Peru LNG associated facilities include: (i) social impacts on indigenous and other local communities due to the development of Block 56 and Block 88, including indigenous peoples living in voluntary isolation within the Nahua-Kugakapori TerritorialReserve, which overlaps Cashiari wells 1 and 3 in Block 88; (ii) incremental impacts on biodiversity due to the development of Block 56; (iii) potential impacts due to ruptures in the Camisea natural gas liquids pipeline; (iv) incremental impacts due to increased boat and helicopter traffic used to transport and distribute construction materials needed for Block 56 and Las Malvinas facilities; (v) increased emissions and discharges due to expansion of Las Malvinas facility; and (vi) incremental impacts from increased ship traffic in Paracas Bay related to expansion of the fractionation plant and subsequent increase of exports through the marine terminal. Based upon the available information, the use of extended reach drilling (ERD) is not a viable option for the project given the technical limitations of the geological formation and the resultant increased risk of a well blowout. Additional environmental constraints to using ERD exist and include the need for a larger footprint to accommodate the larger drilling facilities and access requirements; increased amount of water from a single source as a result of longer drilling times; increased volumes of residual discharges; and the most critical of all, the need to use oil-based drilling mud[8] to maintain the well pressure at increased depths, thus generating increased amounts of drill-cuttings and a significant risk of environmental contamination.

2.14. There is a potential for cumulative impacts due to the Peru LNG, the associated facilities, and the Camisea project (both upstream and downstream).

2.15. The most significant potential environmental and social risks identified at this stage related to the Peru LNG Project are: (i) Peru LNG not adequately mitigating

[8] As opposed to water base drilling mud that can be easily treated and disposed with minimal risk to the environment.

the direct, indirect and cumulative environmental and social impacts associated with the Peru LNG Project, in particular along the pipeline ROW; (ii) potential conflicts and expectations from local communities along the pipeline ROW, and the failure to adequately resolve or control these aspects; (iii) potential inadequate commitment, resources or capacity for Peru LNG or its subcontractors to properly address all relevant environmental and social issues related to the Project; (iv) the relevant GOP regulatory entities do not have the capacity or resources to fulfill their responsibilities and commitments. The following factors contribute indirectly to the potential environmental and social risk of the Peru LNG Project: (i) lack of adequate mitigation of environmental and social impacts at non-operated associated facilities of the Peru LNG Project, which are not being developed by Peru LNG and thus have no control or influence on performance or the outcome (ii) reputation risk to the IDB, in particular from international NGOs whom are strongly against both Camisea and Peru LNG projects and any IDB involvement; (iii) failure of TGP, Pluspetrol or the GOP to continue to fulfill their environmental and social obligations related the Camisea Project; (iv) inappropriate development of additional mineral holdings in the Lower Urubamba (i.e. other gas blocks); and (v) insufficient negotiations or inappropriate actions toward indigenous communities in the Lower and Upper Urubamba area or communities in the sierra. These potential risks will be fully evaluated during the IDB's environmental and social due diligence, and appropriate risk mitigants will be established and implemented, as necessary (see Section 2.C for details, including examples of risk mitigants).

B. Camisea Status

2.16. The Camisea project began operating in August of 2004, and technical completion was obtained on October 17, 2005. The Bank continues to monitor closely the various conditions, programs and commitments associated with the Camisea project. The IDB has expended a great deal of time and resources on evaluating the social and environmental aspects of this project, including since 2001 over 25 technical specialists and the IDB has performed over 30 site visits (missions). The opinions and views of the IDB are based upon a thorough and objective review and analysis of the extensive amount of actual data and site-specific observations collected on the project by many technical specialists from different entities. While there are extensive benefits associated with the project that will continue for many years and despite the extensive work by various project stakeholders and the resultant achievements, there are still some valid issues to be addressed and the IDB is committed to work with project stakeholders to resolve these issues. At this stage of the project's operational phase, TGP and Pluspetrol have complied with the environmental conditions established, with the principal exception of some requirements that are being presently addressed via corrective actions, including issues resulting from five spills from the natural gas liquids pipeline that occurred in the first one and a half years following start up. At the same time, the GOP has made significant progress in terms of institutional strengthening, which resulted from commitments and the execution of the various loan components of the IDB loan to the GOP. Annex IV provides a summary of the Camisea Project

(Annex II-1), benefits that have resulted from the project (Annex II-2), the principal issues that need resolution by TGP, Pluspetrol and the GOP related to the Camisea project (Annex II-3). Additional detailed information on the status and performance of the Camisea Project is available at: http://www.iadb.org/ext/pic/camisea/camisea.cfm; http://www.camisea.com.pe/; http://tgp.com.pe; and http://camisea-gtci.gob.pe.

2.17. The IDB's support for the Camisea project represented a special approach toward private sector financing projects of this nature. The approach allowed the IDB to respond adequately to legitimate environmental concerns and challenges, enhance distribution of of the economic benefits of the project, protect social integrity and help ensure long-term, sustainable development. By taking an integrated and innovative approach to problem solving, the IDB has been able to leverage its relatively small financial contribution to achieve a greater good for Peru. The extensive and intense IDB involvement in the Camisea Project since late 2001 has provided the Bank with valuable lessons learned and experiences on multiple aspects and areas.

2.18. The following are some key lessons learned that the IDB believes are relevant to Peru LNG: re-confirmation of the value of establishing and fully implementing detailed environmental, social, health and safety, and contingency plans; re-confirmation of the importance of pre-construction planning for pipeline erosion control, worker health and safety, and landowner compensation: challenges in creating credible and effective communication and supervisory systems to serve the needs of various stakeholders for extremely complex projects with extensive detail; a general lack of trust among stakeholders when unexpected events occur; the importance of building collaborative relationships between key stakeholders including private companies, government, lenders and civil society; civil society can provide a very valuable role if they are willing to engage, take the time to understand the project details, and provide constructive ideas and generate solutions; challenges in designing and efficient and effective mechanism to distribute project royalties to local communities; challenges in creating effective systems to respond to public grievances; importance of mainstreaming environmental and social aspects into sector planning and addressing issues of mixed responsibilities, both between public and private entities, and among the different public entities and private companies; value of governmental institutional capacity to fulfill its responsibilities and obligations in terms of project approval and subsequent supervision and monitoring and to have efficient mechanisms to ensure compliance by private sector with their regulatory requirements; the importance of ensuring adequate resources to implement an effective institutional communication strategy and the role of such a strategy in addressing reputation risks; and importance of differentiating between an impact or risk mitigate that is necessary for a project to be considered viable or feasible and actions taken to enhance positive impacts and/or create benefits.

C. Environmental and Social Due-Diligence Strategy for the Peru LNG Project

2.19. The Bank is proposing a comprehensive Environmental and Social Strategy (ESS) for the Project's environmental and social due diligence in order to confirm the environmental and social impacts and risks are adequately mitigated and monitoring measures will be established and implemented. The proposed ESS is based upon the experience and lessons from the Camisea project and an understanding of the potential environmental and social impacts that may occur as a result of the Peru LNG Project, and is intended to go beyond the traditional environmental and social due-diligence followed by the Bank.

2.20. The Bank will apply to the Project the new Environmental and Safeguard Compliance Policy, the new Indigenous Peoples Policy, the Involuntary Resettlement Policy, and the Disclosure of Information Policy. The Project Team proposes a classification of "A", as defined in the Bank's new Environmental and Safeguard Compliance Policy. An EIA will be required for the Project (LNG Plant, Pipeline, and Quarry). While the Project Company has already implemented various information disclosure and public consultation activities, the Bank will assess as part of its due-diligence whether additional actions are required. The Bank has proposed the Project Company consider establishing an expert panel. In terms of pollution prevention and abatement, the Project Team is proposing compliance with the World Bank Pollution Prevention and Abatement Handbook (1998) Petroleum Refining Guideline and International Finance Corporation Guideline on General Health and Safety. The Project Team will collaborate with the Project Company and participating lending institutions[9] to adopt a single environmental assessment process and unified documentation, consultation and disclosure requirements consistent with the requirements of the different lending institutions.

2.21. The ESS is based upon the following principles for the IDB's environmental and social management of the Peru LNG Project:

a. Build upon successful amount of work, extensive experience, and knowledge, of IDB and their lessons learned from the Camisea project.

b. Help establish effective environmental, social, health and safety requirements to ensure that all relevant impact and risks are eliminated, minimized or adequately mitigated, thus creating an environmentally and socially sustainable project.

c. Participate directly and proactively in the Project and take an integrated and innovative approach to help define solutions to problems and issues.

[9] At this time, these will likely include U.S. Export Import Bank, SACE (Italian export credit agency), and EGCD (U.K. export credit agency). In this regard, meeting/discussions have already occurred with these potential lenders.

d. Address issues as early as feasible in project design and implementation to improve project quality and prevent unnecessary impacts, delays and additional costs.

e. Facilitate the involvement and participation of all key stakeholders, including in particular the various private sector companies, Government agencies, local and indigenous communities, civil society and other interested parties.

f. Assist in helping to establish actions to address potential key issues that are not the responsibility of the Project, such as those related to Peru LNG's associated facilities and the long-term sustainable development of energy resources in Lower Urubamba, including such development that benefit the the indigenous peoples development.

g. Assist in establishing actions to create positive benefits associated to areas related to the Project and its associated facilities, including those for the indigenous peoples.

h. Continue to support the GOP to assist in fulfilling its responsibilities and commitments, including those outlined in the IDB Institutional Strengthening loan to the GOP in relation with the Camisea Project.

2.22. In order to implement the proposed ESS, the Bank proposes to establish an environmental and social working team that will consist of both, as applicable and appropriate, internal Bank staff and external expert consultants and advisors. This includes consideration as to how the IDB can maintain its relationship that has been established with various GOP entities as part of the IDB public sector loan associated with the Camisea project.

2.23. The proposed ESS will consist of the following principal components:

a. Assessment of compliance status of the Peru LNG Project with the applicable Peruvian environmental, social, health and safety, and labor legal requirements (e.g., laws, regulations, standards, permits, authorizations, applicable international treaties/conventions, etc.), in particular the Peruvian EIA requirements; project-specific legal requirements (e.g., concession contract, etc.); Project-specific legal requirements, applicable IDB Bank environmental and social policies (including specifically the new Environmental and Safeguard Compliance Policy, new Indigenous Peoples Policy, Disclosure of Information Policy and Involuntary Resettlement Policy), and any applicable Multilateral Environmental Agreements (e.g., MARPOL).

b. Evaluation to confirm that the Project's direct, indirect and cumulative negative environmental and social impacts have been properly identified and evaluated, in particular any impact on: archeological sites; vulnerable watersheds (including the impact on the Cañete and Chincha rivers and the potential reduction of water supply to neighboring communities); land natural

habitats; unique landscapes; impacts on marine and coastal ecosystems (natural habitats), especially associated to the increase marine transport and of dredging activities, and adequacy of modeling of impacts on coastal dynamics, impacts to the fishermen, including those during the construction phase of the breakwater and other components of the marine facilities; greenhouse gas emissions from the LNG plant;, impacts of the desalinization plant; and cumulative negative environmental and social impacts of the Peru LNG associated facilities, as well as the Camisea project (both upstream and downstream) on sensitive habitats, rainforest and indigenous communities, among others.

c. Confirmation that environmental and social management plans and procedures and monitoring programs will be established and implemented for the Project in order to adequately prevent, mitigate or control the significant environmental and social impacts and address the environmental and associated social risks. In particular, this will include: compensation procedures and process for the pipeline right-of-way; dust control at the quarry; measures to properly deal with construction workers and the potential associated impacts in local communities; waste water disposal from the LNG Plant; waste management, including proper disposal of mercury contaminated filters from the LNG plant; measures to reduce the potential for land invasion around the plant.

d. Confirmation that health and safety plans and procedures will be established and implemented by Peru LNG to adequately address potential worker health and safety risks, in particular related to pipeline construction and operation of the LNG Plant.

e. Confirmation that contingency plans and procedures will be established and implemented by Peru LNG to adequately address potential Project-related environmental events (i.e., accidental releases, explosions, fires, etc.). Special emphasis will be placed emergency procedures for the LNG plant and loading facility.

f. Evaluation of project-related information disclosure and public consultation activities that have been performed and the proposed future actions to provide adequate ongoing information disclosure and public consultation with the local population, in compliance with IDB policies. This will include confirmation of adequate stakeholder engagement, including information disclosure and public consultation activities, during both construction and operation of the Project. In addition, the Bank will evaluate possible options for supervision to help serve civil society needs and grievance mechanisms in particular related to pipeline construction.

g. Establishment and implementation of a communication strategy by the IDB to assist in providing timely and accurate information on the environmental and social aspects of the Project and the associated facilities.

h. Establishment of the appropriate Bank monitoring and actions to allow for the ongoing assessment of the implementation of the environmental, social, and health and safety actions and requirements.

i. Establishment of the appropriate environmental, social and health and safety terms and conditions for the relevant Project legal documents.

2.24. In addition, the proposed ESS will assess potential environmental risks, including those mentioned in paragraph 2.14, and as necessary, identify the appropriate risk mitigants. This will include:

a. Identification and assessment of the potential existing and future financial/credit risks and liabilities associated with the environmental, social, or health and safety aspects of the Project and establishment of the appropriate risk mitigation measures.

b. Assessment of potential environmental and social impacts and risks related to the Project associated facilities, including proposed measures to mitigate these impacts and risks, and risk mitigants. This will include the public consultation and stakeholder engagement actions, in particular given the socio-cultural characteristics of the affected population and indigenous populations, in light of applicable standards and good practice.

2.25. In terms of managing the potential environmental and social risk, while the Bank's ESDD will confirm the extent and magnitude of such risks and determine appropriate measures, the following summarizes some of the key existing risk measures:

- In terms of mitigating risks related to Peru LNG, this will include, as a minimum, the identification of necessary measures for the adequate mitigation and monitoring of all environmental and social impacts due to the Project, establishment of the respective environmental and social risk mitigants including all Project-specific environmental and social requirements and the associated terms and conditions for the Project legal agreements, and identification of the Bank's supervision plan to assess Project compliance and performance with the established requirements.

- In relation to mitigating risks due to all associated facilities, except Block 56, the IDB already has established contractual agreements related to the environmental and social aspects. For TGP (i.e., Camisea pipelines), the IDB has an executed loan agreement with extensive environmental and social requirements, obligations, and mechanisms to help ensure compliance. In addition to the loan agreement with TGP, the IDB executed a letter agreement with the consortium of the Upstream Component (i.e., Block 88, Las Malvinas, and fractionation plant and marine terminal) that commits the Upstream consortium to comply with the various environmental and social requirements. A failure by the consortium of the Upstream Component to comply with this agreement could result in a default under the IDB and TGP

loan agreement. The Bank continues to closely monitor both TGP and Pluspetrol operations, including quarterly supervision visits by external independent environmental and social consultants.

- In terms of Block 56, the following measures will assist in understanding and mitigating potential risks: the Bank's Environmental and Social Due-diligence for Peru LNG will thoroughly review the adequacy of the Block 56 EIA and associated management plans; Block 56 is being developed by Pluspetrol, the same operator of Block 88 (Camisea project), and the Bank has developed extensive knowledge of Pluspetrol's capacity and performance associated with their Camisea operations; and the GOP was significantly better prepared in terms of review and approval of Block 56 activities.

- In terms of the GOP, the continued IDB support to GOP, both directly and via participation in Camisea and Peru LNG, will assist the GOP in fulfilling its responsibilities, enhancing project benefits to local communities, and addressing broader non-Project related environmental and social issues in this area of Peru. Through the Bank's support via the Institutional Strengthening loan to the GOP, significant enhancement in GOP entities responsible for the monitoring, oversight and control compliance has been achieved. In particular, OSINERG, the hydrocarbon regulatory body, has established a well staffed management unit for natural gas with specialized inspectors; the MEM has created the DGAAE thereby recognizing the special social and environmental aspects of the sector, and through the New Environmental Projection Regulations for Hydrocarbon Activities, enacted through an executive decree, has brought the business standards and practices in this industry up to international standards; monitoring agencies, such as INRENA and DIGESA have developed specific guides and plans for monitoring and supervision of the project's area of influence and have been conducting systematic monitoring and publishing results in the web. A strategic environmental assessment for the Lower Urubamba is presently being performed by the Government of Peru.

2.26. As part of the Bank's environmental and social due-diligence, the Bank will prepare an Environmental and Social management Report (ESIR) for consideration by the Bank's Committee on Environmental and Social Impact (CESI). The ESIR will provide a synthesis of the relevant environmental and social documents related to the Project and its associated facilities, focusing on the environmental and social management aspects to be applied during the execution of the Project. The ESIR will state the Bank recommendations in terms of environmental and social requirements.

ANNEX I-1[10]

SUMMARY DESCRIPTION OF PERU LNG PROJECT AND ASSOCIATED FACILITIES

The Peru Liquid Natural Gas (LNG) project (the "LNG Project") involves the construction and operation of (a) a 4.4 million-metric-tons-per-year LNG export facility (the "LNG Facility"), including a (b) Liqufaction plant (the "Plant"), and (c) a marine loading facility which includes the construction of a berth to load the LNG into tankers, the construction of a *breakwater* (the "marine terminal"), (d) the temporary development and exploitation of a quarry (the "Quarry") to provide the large rocks needed for the construction of the *breakwater*, and (e) a new 408-km long pipeline running from the Andean section of the existing Camisea pipeline to the LNG Facility (the "Pipeline"[11]). For additional information on the project see: http://www.perulng.com/project.asp . There are also associated facilities, which are not operated or controlled by the Project Company but are related to the project ("associated facilities").

The LNG Plant will be located at Pampa Melchorita on the Pacific coast of Peru near San Vicente de Cañete, 169 km south of Lima. The natural gas for the Project will be supplied from the Camisea gas fields, located 431 km east of Lima, through two separate Gas Sales Agreements (GSAs) with Block 56 and Block 88.

The LNG Facility

The LNG facility is located at *Pampa Melchorita*, which was selected following an extensive siting study performed along the Peruvian coastline between Pisco and Lima, and included a total of seventeen potential sites. *Pampa Melchorita*, is located approximately 169 kilometers south of Lima, between the regions of Cañete (population 174,000) in the Department of Lima and Chincha (population 177 000) in the Department of Ica. These are a mixture of rural and small-town urban areas, where the majority of the populations could be considered low income with limited access to public services (e.g. water, sanitation, etc.). The main economic activities are agriculture and fishing.

The LNG facility will be located on a 521-hectare site of arid coastal land along the South Pan American Highway, and it comprises a strip of uninhabited desert land at the top of a sea cliff about 140 meters above sea level, and a narrow beach at the bottom of the cliff, from which the pier and marine facilities are expected to be built. Nearby

[10] The summary presented in this Annex is based information developed by the relevant project companies.

[11] To accommodate the increased gas throughput for the Plant, the existing Camisea pipeline will be expanded through the installation of an additional pipeline beginning at pump-station number three (PS3) in the Andes mountains. A new pipeline for the entire route was not required because the section upstream of PS3, which is in the Peruvian jungle, was built with extra design capacity to prevent the need for additional construction activities within the jungle as the project grew. The new pipeline will follow a parallel route to the existing pipeline for much of the route, deviating only where engineering, physical, or environmental conditions restrict such a route. See Figure A.1.

populated areas include settlements in Pampa Clarita, 13 km north and the district of San Vicente de Cañete, which is an additional 11 km further north. To the south are Chincha and several small villages.

This site is typical of the Peruvian coastal desert plains, made up of large sand dunes over alluvial fans. The nearest main river to the site is the Cañete River located 15 km to the northwest. The climate is very dry, where xerophytes and other dessert vegetation sparsely cover much of the land in the area. Fauna surveys conducted did not encounter endangered or protected species, including marine mammals, and reported only the presence of small mammals (rodents), birds, and reptiles common to the Peruvian coast.

LNG Plant

The LNG plant will consist of one nominally rated 4.4 million ton per annum liquefaction train and related loading facilities (the "Plant"); a 408 km, 34-inch pipeline extension will connect the Plant to the existing Transportadora de Gas del Peru (TGP) pipeline at KP 211 in the Andes just outside the western edge of the rainforest.

The Plant's technology involves the use of Air Products and Chemicals, Inc.'s (APCI) Propane Pre-cooled Mixed Composition Refrigerant (PPMCR) Liquefaction process. The Plant will contain the following process units: Feed Gas Receiver, Liquid Separation, Gas Metering and Pressure Reduction, Acid Gas Removal (Carbon Dioxide), Gas Dehydration, Carbon Adsorption, Refrigeration, Liquefaction, LNG Storage, and Refrigerant Storage.

The major plant process units at the Project site will be located at an elevation of 135 meters above sea level (masl). The Plant will be capable of producing, on average, 218 TBtu per year of LNG available for shipping. This assumes a daily feedgas volume of 620 mmcfd from Blocks 56 and 88, a production capacity of approximately 540 690 kg/hr, gas shrinkage rate of 8.2%, and average availability of 96% throughout the life of the Project. Additionally, the loading terminal is designed with berth reliability of over 99%.

The Project gas processing and liquefaction system will be simpler than those observed in most LNG projects. The Plant will be using the following units:

Gas processing:

- Acid gas removal unit: following pressure regulation at the gas inlet facilities, an acid gas unit, based on aMDEA (activated methyldiethanolamine in a 50/50 amine aqueous solution) is used to remove CO_2 from the sour feed-gas. The acid gas removal unit will be licensed from BASF, using a well-proven technology.
- Dry gas: molecular sieves are used to dry the gas.
- Mercury removal: a single, activated carbon filter is used for mercury removal.

- No fractionation will be necessary at the plant as all liquids (C_2+) will be removed at the upstream Malvinas separation plant, with a propane content specification in the downstream gas below 0.02 mol %.
- No initial front-end compression facilities in the LNG plant will be needed due to the high delivery pressure to the site, however space has been made available for the addition of compression if required.

Utilities: PLNG will install major utility systems to ensure the Plant's autonomy from the municipal utility and ensure reliable deliverability. These systems include power generation, nitrogen recovery from air, air compression, seawater desalination and water polishing.

Liquefaction system: liquefaction is achieved via cooling to –160^{o}C, using the following components:

- Cooling via fin fan air coolers (therefore no water needed for the cooling system).
- A main cryogenic heat exchanger provided by Air Products and Chemicals, Inc. (APCI).
- Two refrigeration circuits, employing propane and multi-refrigerant (mixture of propane, ethylene, methane and nitrogen) compression systems (provided by Nuovo Pignone). The compressors will use the GE 7121 EA gas fired turbines at 80 MW each and assisted by 17 MW starter/helper motors.

Storage facilities: two storage tanks of 130,000 m^3 each.

Marine loading facility

The LNG plant is designed to include marine loading facilities. These facilities include a 1.3 km long trestle, breakwater using BCR blocks for armoring; access navigational channel for LNG Tankers; LNG Tanker berth and LNG loading arms, tug berths and a utility dock, in addition to lighting and navigational aids.

Trestle - The trestle consists of a steel superstructure supported by driven steel pipe piles and a cast-in-place concrete abutment. The trestle supports piping, auxiliary mechanical and electrical systems, and an access roadway.

Breakwater - A breakwater is required to limit wave-induced tanker motions and mooring line tensions, providing protection from long-period Pacific swells, primarily from the southwest. The proposed breakwater is 800 m long, located in approximately 14 m of water, approximately parallel to the coastline and to the sea bottom contours. A crest elevation of 11.0 m above Mean Lower Water Springs (MLWS) allows the 100-year design wave to overtop with very little damage. A BCR (Bloc Cubic Rainuré) or interlocking block breakwater design is selected for use and is planned to be an "island" located seaward from the loading dock with no causeway or other type of connection to the land. The BCR breakwater will have a core consisting of quarry run rock material ranging from small size rock up to 2 ton size with filter rock and prefabricated concrete BCR blocks of 3 to 6 tons on exposed layers of the breakwater to act as armor against

severe waves. The smallest size rock in the core will be approximately 0.5 ton in size. No silts, sand or small gravel material will be incorporated into the breakwater; the total volume in-place will be approximately 1,200,000 m^3.

Rock Load-Out Jetty – An 85 meter access bridge off the main trestle connected to a 135 meter long rock load out jetty is planned to be constructed approximately 840 meters away and parallel to the shoreline. This structure will allow for the loading of rock into vessels for the construction of the breakwater.

Access Navigational Channel for LNG Tankers - An LNG Tanker access channel will be dredged approximately one to two meters deep, 250 m width and 800 m in length to provide the required water depth at the berth of 15 m at MLWS. The approach channel to the berth area will require a water depth of 18 ms at MLWS to accommodate the tanker turning operations for long period swell under keel clearance. LNG Tankers may approach the berth from either the north or south depending on environmental conditions. The LNG tanker will approach at a 55° angle to the berth into the ship channel and turn parallel to the berth with the help of tugboats. The tugs will assist with turning the LNG tanker for departure at the same angle away from the berth. The approach and departure channels (navigational channel) will be dredged approximately 3 m, 300 m width and approximately 2,500 m in length to a depth of 18 m.

LNG Tanker Berth and Loading Dock - The LNG berth structures consist of a 30-meter by 30 meter loading platform, four breasting dolphins and six mooring dolphins. These berth structures consist of open grid steel decks on steel beams supported by steel pipe piles driven through steel jackets. The loading dock and upper mezzanine section provides sufficient area for the loading arms and safety systems, operator's station, power supplies, control systems, emergency systems and access for a mobile crane or other equipment for maintenance purposes. A closed concrete deck area with curbs and a containment sump is provided the dock. A separate closed concrete mezzanine level open stainless steel duct connecting to a stainless steel containment sump on the southernmost breasting dolphin provides additional spill containment and vapor dispersion protection for the mezzanine level under the loading arms

Loading Arms - LNG loading is accomplished by using four 16-inch specialty LNG Loading Arms of the pipe and swivel design. Three arms will be used for LNG loading and one for vapor return to the Boil-Off Gas (BOG) Compressors. One of the three Loading Arms will also be suitable for a vapor return service, if needed. The Loading Arms will be supplied with Power Emergency Release Couplings (PERC's) for remote release should the tanker need to quickly disembark during LNG loading operations. The PERC's have mechanically linked double block valves that close before the release can be engaged to reduce LNG spillage to less than 0.02 m^3. The design loading rate from the Plant to the tanker is 11 250 m^3/hr using the three LNG Loading Arms. The pumps are sized to load 165 000 m^3 of LNG within 18 hours into an LNG Tanker. The arms will have the ability to allow for all of the combinations of tanker movement associated with changes in draft condition, tidal changes and wave conditions at the loading dock.

Tug Berths - Tug berths are permanent berth facilities are provided to maintain three tugs on location on a full-time basis. After completion of the BCR breakwater, the Rock Load-out Facility will be modified to be used as a berth for the tugs. The location of the berths at the Rock Load-out Facility has been chosen to provide maximum shielding for the tugs from both sea and swell.

Utility Dock - A small utility dock is provided on the south side of the trestle approximately 90 m from the loading platform. The utility dock is used to temporarily berth a tug for refueling, to support an operator room and jetty substation building, seawater intake equipment, to provide a deck area for vehicle parking, and to provide a working area for a mobile crane to support routine maintenance and tug supply operations. The utility dock will have facilities for tug refueling and spill containment. Waste from the tugs will be removed in barrels or by vacuum truck for processing by the plant waste handling systems. Access to the tug from the utility dock is provided via a gangway between the trestle deck and the berth. The location of the utility dock relative to the breakwater allows a tug or service vessel protection and has been chosen to provide high berth availability.

Quarry

The proposed net quarry area is of approximately 50 hectare (500 m x 1 000 m) and located in the Department of Lima. The quarry area is located at an elevation of 1,130 m.

The total volume of rock required for the construction of the breakwater will be an estimated 2.7 million tonnes (metric tons), which will require the quarrying up to a total of 6 million tonnes. To develop the quarry it will be necessary to build an access road off of the South Pan American Highway with a total length of approximately 21.5 km. The quarry will use open pit mining procedures, since this is the only feasible way to obtain and handle rock with the required characteristics. Conventional surface mining methods will be used including drilling, blasting, loading and transport. The quarry operation will include the approximately 21.5 km access road, accumulation and selection area (6 ha), dumps area (17 ha), and temporary facilities for the mining contractor (4 ha).

The following temporary support facilities will be necessary within the quarry concession: Dining Room; Workshop or Machinery Yard; Offices; Generators; Warehouses; Service Station; Chemical Water Closets; Lighting Services. The relative proximity of the quarry to the populated areas in Cañete and Chincha (25km and 40km respectively) will make it possible to have most lodging facilities for the personnel in those locations; with limited camp requirements at the quarry. All temporary facilities will be removed and the area abandoned as per Peruvian regulatory requirements.

The access road to the quarry will start on the South Pan American Highway at Km 168, going northeast to the extraction area. To access the LNG facility the road will cross the South Pan American Highway through an underground passage to avoid traffic risks. The road will have a length of approximately 21.5 km, a minimum width of 9 meters. For safety purposes, the road will be widened by 2 m on each side to allow for emergency stops or for rest zones at every 1,000 m and in areas with steep gradients.

Pipeline

A new pipeline for the entire route from the Camisea production fields to the LNG facility will not be required. The Project will require the construction of approximately 408 km of 34" pipeline, which will to join the Andean section of TgP's existing pipeline in the Chiquintirca area of Ayacucho at Compression Station Number 2 (CS2). Natural gas will be transported through the rainforest via the existing 211 km of 32" TgP gas pipeline, which was built with extra design capacity to prevent the need for additional construction activities within the jungle in anticipation of a future export project. The new 408 km long pipeline expansion will be constructed and operated by PERU LNG and will run parallel to the existing Camisea (TgP) pipeline.

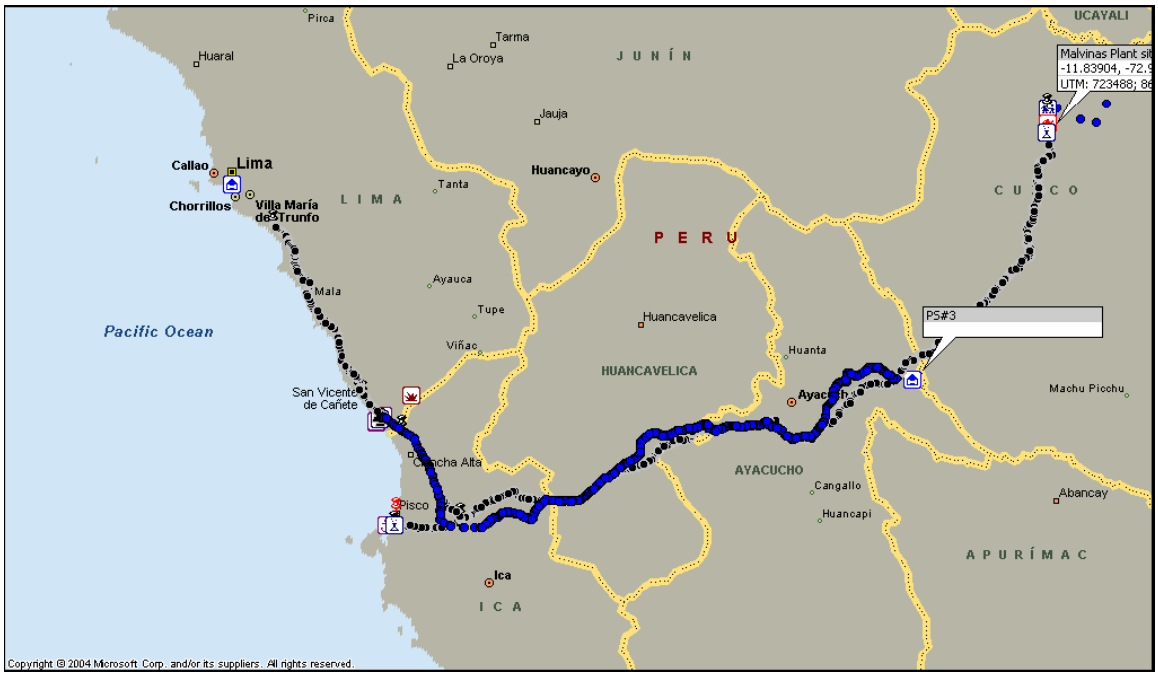
The pipeline will be designed to transport 677 mmscfd (million standard cubic feet per day) of natural gas at a pressure of 147 bar (2160 psi) with no need for any initial compression at CS 2, as this throughput will be attained by increasing gas production volumes and compression capacity at the PTS at Las Malvinas Plant. Additional Natural gas compression will be provided by TgP following installation of the pipeline and liquefaction plant to attain the final total transport capacity as overall gas demand increases.

The pipeline will be buried for the majority of the 408 km length and will include surface installations such as mainline block valves (LBV) at approximately 30 km spacing, scraper trap facilities and a pressure reduction station (PRS) that facilitate the safe and efficient transportation of gas to the liquefaction plant. The project will comply with international standards for the design and installation of the gas pipeline, including but not limited to the ASME B 31.8 – "Gas Transmission and Distribution Piping Systems"; and API 1104 "Standard for Welding Pipelines and Related Facilities", ISO 5579-1985 "Non Destructive Testing – Radiographic Examination of Metallic Materials by X and Gamma Rays".

The Right of Way (ROW) for the PLNG pipeline project will follow a route parallel to the TgP pipeline for half of its route, deviating where improved routing is accessible and when engineering, physical, environmental or archaeological conditions restrict the ability to remain in the TgP corridor. The pipeline intersects 13 districts, 5 provinces, and 2 departments in the Andean region and the departments of Ica (Pisco and Chincha) and Lima (Cañete) on the coast. The population along the ROW in the Andes is approximately 22 384 inhabitants in 4471 residences, which includes 36 peasant communities. The two coastal population centers of Ica and Cañete have populations of 177 000 and 174 000, respectively. The new pipeline ROW will not cross or be close to native or indigenous populations or territories, and no resettlement is expected. Preliminary results from an archaeological survey still under preparation indicate the presence approximately 293 sites of archeological value, of which 99 have been avoided by making adjustments to the route and 136 recovered in accordance with the national legislation and the procedures established by the National Institute of Archeology.

The pipeline route generally traverses the following three habitat types typical of the Andean region: 1) Inter-Andean valleys, characterized by a large number of giant cacti on barren plains, deciduous dry forests, thickets of resinous shrubs, rare evergreen foliage forests and thorny scrub; 2) Upper-Andean vegetation characterized by isolated *Polylepis* (*queñuales*) forests, *puna* grasslands, and aquatic vegetation; and 3) Thorny scrub, predominantly *Lupinus* brushwood, cacti and leafless bushes. Highly sensitive vegetative formations include the columnar cacti, the dry deciduous woodland, the *Polylepis* woodlands, and to a lesser extent, the wetlands (*bofedales*). The coastal section of the pipeline route is dominated by arid desert land, typical of the Peruvian coast. There is a variety of animal life in the Andes region; rodents typically are the most abundant mammal species. Carnivores, marsupials and camelids like the *vicuña* are also present, none of which were reported as endangered or protected species, although the vicuña is considered by the International Union for Conservation of Nature (IUCN) as a vulnerable species.

LNG Pipeline route (blue), shown with existing Camisea pipeline (black dotted)



Associated Facilities

Although not part of the Project under consideration, there are associated facilities related to the operation of Peru LNG Project that will not be financed by the Bank and are operated by other companies. These include (see Annex I-1 for additional details): (i) facilities in Blocks 56 and 88, where the natural gas and associated natural gas liquids will be extracted; (ii) the existing cryogenic processing plant in Las Malvinas, where gas and liquids are separated; (iii) the existing Camisea natural gas pipeline from Las Malvinas to pump station 3 and the existing natural gas liquids pipeline from Las Malvinas to the fractionation plant and marine terminal near Pisco; and (iv) the existing

Pisco fractionation plant, which is used to process the liquids into marketable form, including diesel, naphtha, propane, butane and condensate. Gas for the LNG Project will be provided by production from Block 56 and Block 88, which are operated by Pluspetrol. It is important to emphasize that to accommodate the increased inputs from Block 56, both plants at Malvinas and Pisco will require slight expansion but both of these expansions will be within the existing facility footprints.

Both Block 56 and 88 are primarily gas liquid development projects, with the byproduct being natural gas, which as to date been injected back into the formation. Future plans for domestic gas-burning infrastructure development in Peru will make use of this resource, yet even conservative calculations show significant excess volumes of gas that will remain unused. This excess production presents the opportunity for the LNG project that will allow Peru to become net hydrocarbon exporting nation in the medium term.

Since the facilities associated with the LNG Project and with the required expansion of the existing Camisea facilities have specific technical characteristics, individual peculiarities and are located across a diverse ecological and social settings that offer distinct sensitivities and challenges, each associated facility will be briefly describe below.

Block 56

The Block 56 Project is located in the Department of Cusco, and has a total area of 58,166.56 ha which forms a parallelogram ENE-WSW, with the Urubamba River as the major axis. Within Block 56 there are two oil/gas fields, Pagoreni and Mipaya, which were identified and explored by Shell during the late 1980s. Block 56 is adjacent to the existing Camisea project production area of Block 88, and therefore has similar characteristic. The banks of this river are inhabited by the Machiguenga population, which are organized in communities and hold legal land titles to about 82.5% of the Block. Of the remaining land, 12.5% corresponds to an area known as Shintorini (most part of this area comprise lands reserved for the Government and only a fraction is occupied by colonist farms), and water bodies, mainly the Urubamba River, cover 5%. It is important to point out that unlike Block 88, none of the Block 56 is located within the Nahua Kugapakori Territorial Reserve, which was created in 1990 to protect the voluntarily isolated indigenous people of the Nanti and Yori tribes

The area of the gas reserves, including Block 56 and the Malvinas gas plant, is located in the rainforest of the Lower Urubamba valley and is recognized as one of the most important global biodiversity “hotspots” because of its biological richness, high number of endemic species and the presence of threatened species. During the ESIA baseline study, a total of 2,784 species were recorded. Worth mentioning are the presence of 22 large mammals included in a conservation category; ten of the bird species registered are considered vulnerable or under undetermined status by the Peruvian national regulations.

The Block 56 Project is divided into four subprojects (1) the seismic survey; (2) the drilling of 12 directional wells from 3 platforms (Pagoreni A, B and C); (3) the laying of the flowline from the platforms to the Gas Plant located at Malvinas; and (4) the

expansion of the Malvinas Gas Plant to receive and process the gas and condensates from the Pagoreni wells. The same Base Camp occupied for the Camisea Project will be used for the expansion (Fundo La Peruanita), and a total of 52 mobile camps and an equivalent number of helipads will be constructed. Similar to the Camisea project, most of the transport of personnel and construction material will be done by helicopters and by boat along the Urubamba River, in order to reduce potential ground transportation impacts through remote areas of the Amazon Rainforest.

Block 88

Block 88 (Camisea Upstream Component) involves the exploration and production of natural gas and natural gas liquids from the reserves of the San Martín and Cashiriari fields, which are located in Block 88 north of Cusco. The Upstream Component consists of the following elements described below:

- The construction and operation of four well clusters for gas extraction and re-injection at pre-existing well platforms (San Martín (SM) 1, San Martín 3, Cashiriari (CS) 1 and Cashiriari 3), drilled using directional drilling and water-based drilling mud. Currently only SM1 and SM3 are in operation. Activities will be expanded to CS 1 and CS 3 and the additional gas associated with this primarily liquids development will be sold to PLNG to satisfy its demand rather than reinjected into the formation.
- Approximately 58 kilometers of buried flowlines between the well pads and the gas processing plant at Las Malvinas to transport the natural gas and natural gas liquids.
- Gas separation and condensation facilities at Las Malvinas where the gas is processed by physical separation and cooling (turbo-cooling), with initial production of approximately 400 mmscfd and 21 000 barrels/day of gas liquids with the possibility of future expansions as demand increases.
- A natural gas liquids fractionation plant and a marine terminal located at San Andreas, 12km south of Pisco. The fractionation plant produces propane, butane, diesel, and naphtha products. The marine terminal is used to transport products from the fractionation plant via four sub-sea pipelines to a ship loading platform (approximately 3,200 meters offshore). Two of the four pipes that transport propane and butane are “Pipe in Pipe” (PIP) construction, which is essentially an insulated double-walled 20-inch diameter pipe enclosed within an external 24-inch pipe. Additionally, one 24-inch pipe transports naphtha, and one 10-inch pipe is installed for the transport of diesel to the loading terminal. The marine terminal operates with a ship loading capacity of about 3,000 to 78,500 m^3 of refrigerated propane and butane, naphtha and diesel for the national and international markets.

TGP pipeline (Camisea Downstream Component)

The Camisea Natural Gas and Natural Gas Liquids Transportation Project (Downstream Component) consists of a 730-kilometer natural gas pipeline and a parallel 560-kilometer natural gas liquids pipeline. Both pipelines start at Malvinas, Department of Cusco, in the Urubamba Basin, traversing the Peruvian Amazon Rainforest and the Andes

Highlands (with maximum height at 4,800 meters above sea level). The natural gas pipeline ends in the city of Lurín, located 30 km south of Lima. The natural gas liquids pipeline ends at the fractionation plant located south of Pisco next to the Paracas Bay.

The natural gas pipeline consists of 210 km of 32-inch diameter pipe, 310 km of 24-inch diameter pipe and 210 km of 18-inch diameter pipe and traverses some 200 km of rainforest, 300 km of mountain highlands and 230 km of coastal plain. The system includes four above-grade scrapper facilities, one pressure control station, 21 mainline valves and a reception terminal at Lurín. Compression to move the gas from Malvinas to Lurín is supplied at Malvinas. The initial design capacity of the natural gas pipeline is 205 mmscfd (approximately 5.8 $10^6 m^3/d$) to meet the demands of the Lima market with future expansion planned to increase the capacity to a guaranteed minimum of 450 mmscfd (approximately 12.7 $10^6 m^3/day$) or greater if anticipated future markets develop. Due to the sensitive nature of the rainforest section, TGP invested an additional US$40 million to increase the pipeline diameter to 32 inches, to allow for future increases in capacity without additional pipeline construction in the jungle area.

The natural gas liquids pipeline is comprised of 455 km of 14-inch diameter pipe and 105 km of 10.75-inch diameter pipe and traverses some 200 km of rain forest, 300 km of mountain highlands and 60 km of coastal plain. The system includes four pump stations, three pressure reduction stations and 19 mainline valves. The stations include two pumps and two generators each, fuel gas and other associated systems. Engines are all gas driven with gas supplied from the parallel gas line. The pipeline design capacity is 70 000 (barrels per day) of natural gas liquids with pump stations designed for an initial capacity of 50 000 bpd.

Both pipelines are buried along the entire route usually to a depth of approximately 0.6 to 0.9 meters below ground surface, and to deeper depths at special sections to reduce the possible physical risks due to land use activities. The pipelines are steel, covered during manufacturing with a polyethylene coating to provide protection against external corrosion and include a cathodic protection system. There are four pumping stations and two pressure reduction stations for the gas liquids pipeline and one additional pressure reduction station and pressure control station that will service both pipelines. Scrappers are for internal cleaning and inspection of the pipelines. Block valves are used to control the flow through the pipelines.

Expansion of the existing Fractionation Plant in Pisco

The Fractionation Plant operated by Pluspetrol in Pisco will be expanded (approximately 40%) to accommodate the additional natural gas liquids produced by Block 56. This component is not an input to the LNG Project, but the source for the gas for the LNG Project is the same and the liquids will be produced simultaneously. The expansion of the plant is not scheduled yet, but it is planned that the expansion will be within the existing plant facility, and thus no additional land will be required.

The fractionation plant is located in San Andres, 12 km south of Pisco, in the District of Paracas. The area of the plant is known as Playa Lobería, in the Paracas Bay, about 7 km

north of the Paracas National Reserve, and within the buffer zone established in 1995. The plant occupies an area of approximately 44.7 hectares (including the marine terminal facility), within the 244 hectare fenced property. The area is open space that has been used to dispose of shellfish (shells) and other wastes. The Paracas Bay is a highly biologically diverse, sensitive ecosystem on which a number of species depend. The bay is an important bird refuge, many of which are threatened or considered as vulnerable. The Paracas National Reserve is frequented by sea lions, sea otters, and marine turtles that use the marine environment to feed, reproduce, and as a refuge. The Bay of Paracas is also recognized for it's rich diversity of shellfish. The Chilean northern scallop, conch/murex, crabs and ribbed mussel species are harvested every year. Scallop mariculture is conducted primarily in the Bay of Independence along the Pacific Coast of the Reserve, and is an important product to the local economy. Other fish of commercial importance are sardines, anchovy, flathead mullet, smelt, Southeast Pacific grunt, jack, and bonito. In addition to commercial fishing, artisanal and subsistence fishing are important activities in the bay.

The existing plant is designed to receive initially about 112 m^3 of gas liquids per day, with possible expansion in size to about 350 m^3 per day when all production wells are online. The plant primarily produces propane and butane, but it also has the capacity to produce natural gasoline, diesel, and jet fuel products with a primary distillation unit. The plant has refrigeration units to store propane and butane at atmospheric pressure, and conventional atmospheric tanks to store products from the primary distillation unit.

ANNEX I-2[12]

SUMMARY OF PUBLIC CONSULATION AND STAKEHOLDER INVOLVEMENT RELATED TO PERU LNG AND ASSOCIATED FACILITIES

Peru LNG Project

Building on the experience and lessons learnt from Camisea, the LNG Project adopted a proactive stakeholders' involvement policy since the early stages of project development. In accordance with its Community Relations Policy[13], it is committed to carry out its operations keeping with high standards of personal integrity and ethical behavior, and providing an open communications channel for a meaningful and clear exchange between communities, leaders, and governments.

The communication strategy designed by the Project follows Peruvian regulations, including the Regulations of Citizens Consultation and Participation in the Approval Procedure of Environmental Impact Assessments in the Energy and Mines Sector (Ministerial Resolution No.596-2002-EM/DM[14]), the Community Relations Guideline prepared by the Ministry of Energy and Mines of Peru in 2001, and the guidelines provided by the International Financial Corporation (IFC) and the World Bank in the document Doing Better Business Through Effective Public Consultation and Disclosure, A Good Practice Manual (IFC, 1998).

To comply with Peruvian requirements, public consultations were an integral components of the Environmental Impact Assessment (EIA) and begun at the earliest stages of the process (scoping phase) and continued throughout the environmental assessment process. Public hearings were conducted prior to the EIA approval. In addition, in compliance with international guidelines, meaningful and effective communication and participation channels were designed and will be available throughout the life of the Project.

LNG Facility: Plant and Marine Loading Facility (excluding the Quarry)

The Consultation process for the LNG Facility started in May 2002, with a series of reunions and technical meetings held with local communities, local, regional and national NGO and government officials. After the initial activities of stakeholders analysis, two rounds of consultations were held in Lima, Chincha, and Cañete. The first one at the early stages of the EIA preparation comprised eight meetings from June to November 2002, and aimed at an early identification of the key issues that should be included in the terms of reference for the EIA study and environmental and social mitigation and management

[12] The summary presented in this Annex is based information developed by the relevant project companies.

[13] PERU LNG Community Relations Policy can be assessed at (http://www.perulng.com/community%20relations%20policy_peru%20lng.pdf).

[14] A revised and enhanced Regulation of Citizens Consultation and Participation in the Approval Procedure of Environmental Impact Assessments in the Energy and Mines Sector was approved and became effective on 30 December 2004 (Ministerial Resolution 535-2004-MEM-DM).

plans. Approximately 200 people attended these meetings. The second round consisting of four meetings were held in the same areas and attended by an equivalent number of people, whom further discussed the results of the EIA and how the comments and suggestions from the first round were incorporated into project design. The recurrent topics were the potential impact of the breakwater on the artisan fishing activities, the potential contamination from the LNG tankers, the access to the shore, the type of compensation that fishermen would receive due to the access restriction, the number of job positions to which they could potentially obtain and the requirements to obtain one of those positions. Additionally, two public hearings were held in October 2003, in Chincha and Cañete, and were attended by approximately 140 people. These public hearings were preceded by technical meetings in August and September, and gathered close to 170 participants.

Following the approval of the LNG Facility EIA in June 2004, the LNG Project companies have continued to meet with stakeholders to address the issues raised during the EIA review and approval process (such as ensuring access to the beach to the fishermen, mitigating impacts to fishery during construction of the breakwater, among others). Between June 2004 and October 2005, thirteen meetings were held in Lima, Chincha, Cañete, Grocio Prado and Pisco. More than 1000 people have attended such meetings. The stakeholder involvement has continued throughout the submission of the EIA Amendment until its approval in late 2006, which includes the joint establishment of monthly meetings with the local Fishermen Association to update information pertaining to environmental impacts, compensation planning and community investment programs. Ongoing consultation at the Cañete and Chincha regional offices has received 7505 visitors between August 2005 and July 2006. The LNG Project Companies have developed a Community Relations Plan to be implemented during the construction and operations phase of the LNG Facility.

Quarry

The information and consultation process for the quarry component, including disclosure of the EIA once it was submitted to the Ministry of Energy and Mines, was initiated prior to the EIA development in late 2004 and continued throughout the EIA review and approval process. Approximately 400 people attended nine informational workshops, rural participatory workshops, participatory evaluation workshops and statistical social sampling with focal groups held in San Vicente de Cañete, Grocio Prado, Jahuay, and Topará until September 2005. The principal issues raised by the communities were the need for local development and employment and the potential contamination of air and underground water.

Two Public Hearings for the Quarry were held in Grocio Prado and Cañete, in September 2005, where close to 120 people attended. Recommendations documented at the workshops are being incorporated into Project design. For instance, a hydrogeologic study of groundwater in Topara agriculture valley was also been developed for the purposes of project design, but this information was also shared with local communities, who found it very beneficial.

Additionally, the LNG Project Companies have developed a Community Relations Plan which will be also implemented during the operations phase of the quarry.

Pipeline

Consistent with LNG Project Community Relations Policy, the participation and consultation program for the pipeline component was developed in compliance with Peruvian regulations, good practices, and international guidelines. During the first round of consultation 43 informational meetings were held in the highlands and coastal areas (in 14 districts of Huancavelica and Ayacucho in the highlands, Chincha, Cañete, Pisco, and Ica in the coast, and Lima) between February, and October 2005 and were attended by close to 3,650 participants from local communities, NGOs, and government agencies. During the environmental assessment process 55 participatory evaluation meetings were held in the highlands and the coast from April to July 2005, to which approximately 5,600 peoples participated. Specific meetings with local and international NGOs were also held in April in Lima and Ayacucho. Fifty eight local and international NGOs were invited and 32 participated.

Additional specific meetings and interviews with focal groups were held in June 2005 – 11 focal groups in the coastal area and 8 focal groups in the highlands area. Furthermore, meetings were held with NGOs and other stakeholders in July 2005 to discuss the findings of the wet season baseline data as well as the preparation of the biodiversity action plan for the pipeline.

Since the preparation of the EIA, the LNG Project has held a total of 86 meetings in the rural communities potentially affected in the highlands, the most sensitive area of the pipeline route. Once the EIA was submitted to the MEM, the consultation process will proceed with the public hearings to be scheduled by the MEM. Once the EIA is approved, a long-term Community Relations Plan developed by the LNG Project Companies will be implemented during construction and operation of the pipeline.

Associated Facilities

Block 56

The EIA for the exploitation and exploration of the gas fields in Block 56 including the expansion of the Cryogenic Plant at Las Malvinas was approved in July 2005, after a process of discussion with affected communities. Between the of November 3 and 13, 2004, the project company held discussions with a total of 18 native indigenous communities and 3 rural settlements located within the direct and indirect project influence area. Additionally, two workshops were held in January 2005 in the Communities of Shivankoreni and Camisea, which are the communities more likely to be affected. Approximately 40 people participated on these workshops.

Three Public Hearings were held prior to the approval of the EIA for Block 56: In Quillabamba, on May 4, 2005; in Cusco, on May 6, 2005, and in Shivankoreni, an indigenous community inside Block 56, on May 9, 2005. More than 130 persons

participated in each of the hearings. The Hearings had been originally scheduled for January, but communities requested that they be delayed to enable for a longer period for the EIA review. An additional delay was requested to discuss issues associated with the TGP pipeline failure of December 2004.

Expansion of the Fractionation Plant

The EIA for the expansion of the Fractionation Plant is under development and is tentatively scheduled to be submitted in the Summer 2006. Nevertheless, as part of the EIA process, stakeholder involvement and consultation has been implemented since early 2005.

ANNEX I-3[15]

SUMMARY OF KEY ENVIRONMENTAL AND SOCIAL IMPACTS/RISKS RELEATED TO PERU LNG AND ASSOCIATED FACILITIES

Peru LNG Project

The Peru LNG Project is a complex large infrastructure project with many components, which require careful individual evaluation and management, while keeping an understanding of the overall results of the impacts of the several components altogether. Therefore, to place the LNG Project into the context of the whole process from extraction to export, a description of the key environmental, social, and health and safety aspects of the associated facilities is also provided.

Most of the direct and indirect environmental, social and health and safety potential negative impacts are common to the various components of the Peru LNG, as a large infrastructure project. A summary of the key environmental and social issues associated with the Project and the associated facilities is presented below.

LNG Facility: Plant and Marine Facility (including the Quarry)

The most notable negative environmental impacts associated with the LNG Facility are those associated with permanent changes to the morphology of the Plant site, both onshore and offshore. On shore, during construction the land will be leveled, resulting in a loss of the dunes, and to reduce slope instability issues, the cliff face will be sloped. However, the area is uninhabited, thus the impact is not likely to be significant. Onshore, associated with the marine loading facility, there is the potential for changes to the coastline morphology as a result of altered sediment transport caused by the breakwater and the trestles of the pier to the loading area.. However, even though the breakwater[16] may affect sediment transport, since it is parallel to the shore, this is expected to be minimal and localized. The pier has been designed with an open structure to minimize sediment disruption, and modeling has confirmed that there will be no effects further downstream of the currents.

From the social point of view, during the construction of the breakwater and other components of the marine facilities, artisan fishing activities may be affected as access will be limited and fish may leave the area due to construction disturbances, but this should be limited to the construction work areas and temporary. Additionally, social impacts associated with fishermen compensation and employment expectations could also be envisioned. Furthermore, there may be impacts to the marine ecosystem (including fisheries) due to dredging activities during construction and operation, as a result of sediment re-suspension and potential release of contaminants. Also there may be impacts associated to the disposal site of the dredged sediments.

[15] The summary presented in this Annex is based information developed by the relevant project companies.
[16] The breakwater has been designed to reduce or eliminate the wave action during the LNG loading.

Other key potential impacts associated with the marine loading facility is the development and operation of the quarry that will provide the rocks for its construction. The most critical impact, was avoided by the construction of the dedicated access road that underpasses the South Pan American Highway, thus reducing the safety risks of crossing and disrupting traffic flow in this main coastal highway. Other impacts from the quarry operation are typical of such activities and can be mitigated by standard environmental plans and procedures. Such impacts include dust and combustion gas generation, noise impacts, increased traffic, and disturbance of local populations. The dust impact has the potential to be of moderate significance during the operation of the access road as a result of movement of the dump trucks carrying rock material from the quarry. To mitigate and control the generation of particulate matter the Project proposes to water the access road using tank trucks with a capacity ranging between 8,000 and 9,000 gallons, using the water to be supplied from Cañete River. This level of water consumption could produce a reduction in the water supplies of the surrounding area, although significant impacts are unlikely to occur given the sizeable flow of the river., The Project may explore other options including alternative technologies for dust control or water could be obtained from properly permitted remediated wastewater or seawater, if required.

The health and safety impacts of the Peru LNG facility are typical of large infratructure industrial facilities and can be mitigated with standard health and safety plans and procedures, with the exception of impacts and risks from the construction of the marine loading facility, which potentially presents higher risks of accidents and drowning during construction and operations, and thus requires specific health and safety procedures.

The most critical long-term indirect impact of the Peru LNG plant is the change in the land-use of the surrounding area, both of the LNG facility and the quarry, with an increased development of industrial activities and employment offer that could attract migrants from the highlands.

The Peru LNG EIA presents a detailed identification of impacts and the proposed mitigation. In addition to the incorporation of impact mitigation into project design, specific Environmental Management Plans (EMP) have been developed, which contain measures aimed at preventing, correcting or mitigating the environmental and social impacts generated by each of the components of the LNG plant (plant, breakwater and quarry). The EMPs also include environmental impact monitoring and surveillance programs to ensure that the requirements in the EMPs are implemented and remain effective during the execution of the Project.

Pipeline

Most of the potential impacts of the Peru LNG pipeline have been mitigated through changes in design, such as alterations of the pipeline route to avoid sensitive habitats or archaeological sites. However, the major design mitigation measure is related to the Camisea project, which enables the Peru LNG pipeline to avoid construction in the jungle by using the initial 211 km (the jungle portion) of the TGP pipeline. As noted before, this construction was avoided because the need for expansion was considered in the design of

the TGP pipeline, and although building the pipeline in the first stage with over capacity was a considerable capital investment, the benefits of avoiding future additional jungle construction outweighed the costs. Primary environmental, social and health and safety impacts of the pipeline project are associated with its construction. During operation, the principal environmental impact is the maintenance of the pipeline right of way (ROW) and the risk of accidents.

During construction, potential key environmental issues include the effects of clearing the vegetation and soils along the ROW and proper restoration upon completion of construction. These include limited loss of habitats, soil erosion, land instability, and sedimentation of surface water during construction, and proper restoration, re-vegetation and maintenance of the ROW. These issues have the potential to create significant long-term impacts over areas beyond the ROW if not managed adequately.

The key potential social issues during construction include indemnification and compensation for land, installation of worker camps, local employment, grievance management and resolution, information transfer and consultation with communities, and managing employment expectations. Additionally, the *vicuña* encountered along the pipeline ROW and an important source of revenues for the communities is considered by the International Union for Conservation of Nature (IUCN) as a vulnerable species. These could suffer some disturbance from construction of the pipeline, primarily a disruption in their access to water and in their reproductive period between the months of February and April. However, previous mitigation measures developed for the construction of the TGP pipeline proved to be effective and can be replicated.

As a result of the preliminary findings of the archeological survey, 293 archeological sites identified and 99 were avoided by making adjustments to the ROW route, 136 sites require further evaluation to establish their real boundaries. PLNG plans to do additional route modifications in the coming months to avoid several of the remaining identified archeological sites.

In addition, a series of archaeological management plans have been developed including an (a) Archaeological and Cultural Prevention Program, (b) Archaeological Evaluation Program, (c) Archaeological Rescue Program, and (d) Archaeological Contingencies Plan for chance finds. All project impacts will be mitigated through a series of specific environmental, social and health and safety plans and procedures for the construction phase and the operation.

Health and safety impacts and risk are more relevant during construction of the pipeline and less relevant during operation, except in an event of accident. However, the more critical area of health and safety risks is the jungle area where Peru LNG pipeline will not require construction. In the highlands, the typical health and safety impacts and risks can be mitigated with the implementation of appropriate health and safety management plans and procedures.

The key indirect, cumulative and long–term impact of the Peru LNG pipeline are related to lack of appropriate restoration of the ROW and cumulative impacts with the TGP

pipeline in terms of erosion and disruption of *bofedales,* negative impacts on the *vicuñas,* impacting the already limited economic activities the highlands, thus with an negative effect on the economic and social development of the affected communities.

Associated Facilities

Block 56

During construction, the key environmental impacts from the Block 56 project (including the seismic surveys, the construction and operation of the drilling platforms, construction and operation of new flowlines to the Malvinas plant, and the expansion of the operations at the Malvinas plant) are land clearing[17] (for helipads, platforms, etc), construction of the flowline ROW, temporary access roads, drilling platforms, and earth-works. These activities can lead to erosion, sedimentation, and damage to water quality, permanent disruption of ecological processes (and associated damage to protected or vulnerable species and biodiversity), loss of cultural or economic resources, and impacts due to improper waste management. Many of these potential impacts will be temporary and the areas restored following the completion of construction activities; but if managed inappropriately these impacts can have long-term effects and can worsen over time.

Other key potential environmental impacts generate from the increased activity in the area from boat and helicopter traffic and from workers. Additionally, the project will involve the use of many professional and skilled workers from outside the region, which could affect the local communities and natural habitats in the area if not adequately managed. For example, the increased number of people from outside the area presents an increased risk to local communities and indigenous communities who have lower resistance to certain diseases. At the Malvinas plant the increased processing will mean an increase in the current effluents, wastes, and discharges, and these additions will be managed within the existing operational management plans and procedures, including the environmental management system.

The implementation area of the Project is located within a zone that exhibits one of the greatest concentrations of native communities in the Peruvian Amazon region. Block 56 encompasses the titled lands of seven native communities (Camisea, Kirigueti, Nueva Vida, Nuevo Mundo, Puerto Huallana, Segakiato, and Shivankoreni) and lands mostly reserved for the State (called Shintorini) that include the Rural Settlement Tupac Amaru (AARR). Over half the area of Block 56 belongs to the communities of Kirigueti (32.96%) and Shivankoreni (23.58%), while the lands of Shintorini count for 12.50% (with the AARR occupying less than 4%).

There are over 2500 indigenous people living in the operation area and a few colonist families in the zone. Those potentially most affected, the native communities and settlements of colonists located in the proximities close to the zone of operations, are the native communities of Nuevo Mundo, Nueva Vida, Kirigueti, Shivankoreni, Camisea and Segakiato, and the Shintorini colonist settlement. In particular, three indigenous

[17] It is important to note that the mobile camps did not require deforestation, as they are constructed under the trees with minimum vegetation clearance.

communities and one rural settlement community will be the most significantly impacted: Shivankoreni and Camisea, located within the Block's limits (Pagoreni well will be developed approximately 2km from the main community center of Shivankoreni). Those affected to a lesser degree include the native communities or groups of settlers that live along the Urubamba, downriver to Nuevo Mundo and Nueva Vida, towards Sepahua and Atalaya (Nueva Luz, Sensa, Miaría, Bufeo Pozo, Santa Rosa, etc.), and upriver from Chokoriari-Ticumpinía (Kuway, Timpía and Kitaparay), and very marginally the community of Puerto Huallana (located far away and with less than 1% of its territory within Block 56) on the Picha River.

The expansion of Malvinas Plant to accommodate the inputs from Block 56 will have a more direct impact on Chokoriari (located in the Urubamba River, in the opposed bank from the Malvinas Plant) and the rural settlement Tupac Amaru, located upstream from the Urubamba River but adjacent to the Gas Plant property. It will impact very indirectly the Cashiriari Community, which is adjacent to Malvinas to the east of this zone, but separated from it by a natural land elevation. Additionally, since the locality of Sepahua is the most populated center with the highest political-administrative hierarchy and good river communications with the communities in the project area, it will continue to receive the residual impacts of works and projects located upstream.

The most effective mitigation measures are those included in the project design to avoid the impact. Examples of design changes that have been introduced to mitigate potential impacts are reduced working widths in the ROW, minimization of river crossings and, similarly to the Camisea project, the concept of using river and air transport to significantly alleviate the need for access roads into the Lower Urubamba region, and the use of directional drilling (drilling of several wells from the same surface location, by moving drilling rigs and ancillary systems a few meters in order to drill the wells programmed for that location).

One of the most significant potential social impacts of Block 56 development is the health risks associated to the exposure of local indigenous communities to outside diseases. Block 56 will adopt the same rigorous medical controls and vaccination programs adopted by the Camisea project (mandatory personnel vaccination programs and careful monitoring) and will continue to support the GOP efforts to monitor the effectiveness of the mitigation measures and improve health services to the affected communities.

Block 56 environmental, social and health and safety plans will build on the experiences of the Camisea Project, and will benefit from the implementation of Pluspetrol's revised environmental management system and health and safety management system.

During the seismic survey activities, Peru LNG hired the consulting firm Social Capital Group (SCG) to conducting field monitoring. The reports of SCG indicated that the management plans were largely adequate, effectively implemented and that the impacts were mitigated appropriately. Similar monitoring will continue during both the construction and operation of the Block 56 facilities.

Health and safety impacts of Block 56 are not critical. Pluspetrol's good track record during construction and operation of Block 88 indicate that health and safety impacts and risks should not be an issue with Block 56.

In terms of indirect and long–term environmental and social impacts, Block 56 is part of the Peruvian oil and gas development in the Lower Urubamba (refered to as Camisea, Block 88, other existing blocks operated by Repsol and by Petrobras, and additional blocks in the future, yet to be identified), which together present potential cumulative regional impacts (mainly river transportation, potential health and cultural impacts on indigenous communities, water and air contamination from the gas fields, Malvinas Plant and any other industrial facility and pipelines from other blocks, among others) that if not addressed timely and adequately, can permanently and negatively affect the biodiversity and natural resources in the area and the indigenous communities, their culture and livelihood. A proposed framework for an appropriate cooperation between the GOP and the private companies, the necessary mitigation measures and initiatives to promote the implementation of the Sustainable Development Plan for the Lower Urubamba (developed under the IDB Institutional Strengthening Loan part of the Camisea Project) is to be presented as a result of the Strategic Environmental Assessment of the Lower Urubamba under development by the GOP.

Expansion of the Fractionation Facilities

Given that the 40% Pisco Fractionation Plant expansion will be limited to the existing property boundaries, the primary environmental, social and health and safety impacts during construction are not envisaged to be significant. During operations, associated with the plant expansion will be an increase in shipping traffic in an already busy maritime area. In addition, there will be some additional road traffic from trucks and tankers. Significant incremental social health and safety negative impacts are not expected.

ANNEX II-1

CAMISEA PROJECT: FACT SHEET

The Camisea Project in Peru is enabling that country to become one of the few in Latin America able to meet its own internal energy needs. It is making natural gas available to industrial and residential customers, providing significant revenues to the federal and regional government, improving Peru's trade balance, and helping to improve air quality. The project is projected to add a percentage point to Peru's growth rate every year of its 30-year life, which will help reduce poverty, increase tax revenue and export earnings.

The Camisea Project is located in areas extremely rich in biological diversity and traditional human cultures that could be put at risk if the project were not properly planned, constructed and operated. In Camisea, the IDB is taking a proactive approach in financing private sector projects by helping to address potential environmental and social problems to ensure that the project meets sustainable development goals. At the same time, the IDB is working to leverage the opportunity to benefit the local population and protect the environment as well as address issues in the project area that go beyond Camisea itself. In this regard, the IDB's financing for the project includes programs to strengthen Peru's ability to oversee and regulate not only Camisea, but also other important issues, on an ongoing basis. The project also includes environmental and social risk mitigation as well as revenue sharing provisions aimed at supporting development of local communities. Through its integrated and innovative approach to problem solving, the IDB is leveraging its relatively small financial contribution to Camisea to achieve a greater good for Peru.

The Project at a Glance

Camisea consists of three separate but interrelated projects with a total cost of approximately $1.7 billion. The upstream component consists of exploration and exploitation of gas deposits in the Camisea field, processing facilities at Las Malvinas located 431 kilometers east of Lima, and a fractionation plant and marine terminal for natural gas liquids on the Pacific coast south of Pisco, all under the responsibility of a multinational consortium led by the private firm Pluspetrol. The downstream component includes 714 kilometers of a natural gas pipeline from Las Malvinas to Pisco and from Pisco to Lima, and a separate 540-kilometer natural gas liquids pipeline from Las Malvinas to Pisco. Both pipelines are the responsibility of the private firm Transportadora de Gas del Peru. The distribution component, being carried out by the private firm Tractebel, will provide natural gas to industry and households in Lima and Callao. The project has presented significant challenges, including pipeline construction in the jungle and over the Andes, gas development in lands belonging to indigenous peoples, and constructing the marine terminal close to a marine national park

IDB Involvement

The IDB has participated in Camisea to ensure adherence to the principles of sustainable development, which includes strong environmental and social safeguards and specific actions to create benefits for local populations and the environment. The Bank has provided two loans for the project: a $75 million loan to Transportadora de Gas del Peru

(TGP) to help finance a portion of downstream component; and a $5 million loan to the Government of Peru to strengthen its capacity and coordination to supervise, monitor, and inspect the project's environmental and social aspects and to carry out actions to create sustainable and balanced development in the project's area of influence.

The IDB became involved in the Camisea Project in late 2001 before any construction activities had gotten underway. The Bank committed, and continues to commit, significant resources to help ensure the environmental and social sustainability of the project, including the assignment of a large team of technical experts--both Bank staff and external consultants and advisors—in the areas of environmental management, social protection, health and safety, labor, engineering, and law and finance[18]. The IDB's participation was instrumental in terms of project financial structuring and mobilization of financing.

The IDB's role has gone far beyond the successful project structuring, mobilization of financing, and mitigating the impact of the downstream portion of Camisea, which is the only part of the project that it is financing. The IDB is bringing its expertise and sustainability criteria to bear on all three project components, and has identified and required various improvements in project design, plans, procedures, and standards. The IDB helped establish a series of mechanisms to supervise the implementation of Camisea's environmental and social protection measures in order to provide credible and transparent information. The Bank's supervision and monitoring system, with the assistance of independent external consultants, started in 2002 during construction and well in advance of the IDB formal approval of financing, and included full-time specialists in the field during construction and at least quarterly during operations; with such supervision reports available to the public. IDB's continued participation helps ensure the project's ongoing environmental and social sustainability of protection measures. The IDB participation has also focused on developing opportunities to enhance benefits and addressing broader environmental and social issues in the project area. The IDB role has allowed for enhanced opportunities for public consultation and participation and assisted in enhancing the capacities of project stakeholders.

Stakeholder Involvement

The IDB has helped to strengthen stakeholder participation in the Camisea Project. These are in addition to the numerous activities being carried out by the various project companies and governmental agencies involved.[19] The Bank held 13 public meetings in the project area and one in Washington during the Bank's due-diligence. The IDB continues to hold semi-annual public meetings on the project. Extensive project

[18] This has included over 25 technical specialists and the IDB has performed over 30 missions (site visits) to Peru to help establish and maintain a financially viable and environmentally and socially sustainable project.

[19] The consultation and participation process for the Project as a whole has engaged thousands of stakeholders in what is considered as the most extensive public consultation process known for a proposed industrial project in Peru. Over 400 consultations took place with the Government of Peru, local and international non-governmental organizations (NGO's) and most importantly with the locally affected communities in the direct and indirect influence of the project. Several dozen individual meetings were held with the GOP, local, national and international NGO's, private, and public organizations in Peru and internationally.

information on Camisea is available to the public (e.g., see sources of additional information). This includes detailed environmental, social and health and safety management plans and systems for the companies involved, and various independent, governmental or community supervision/monitoring reports on the status and compliance of the project with its environmental and social commitments and requirements. Stakeholder participation in the project has clearly helped to increase knowledge and capabilities of civil society, private sector companies, the Government of Peru, and the financial community.

Social and Environmental Safeguards

Environmental, social, and health and safety management for the Camisea Project will be carried out for the entire life of the project: from the concept and design stages, through the construction of the facilities, and throughout the operational period of the project. Specific project design concepts and criteria to minimize potential impacts or risks were implemented (e.g., using existing areas already impacted or affected, using "offshore" approaches for the well sites and pipeline construction, and minimizing pipeline right-of-way). In addition, over 30 detailed plans, which contain various specific procedures and standards/criteria, have been developed to manage the risks and impacts of each component of the Camisea Project during both construction and operation, which include increased environmental and social safeguards. These plans have undergone extensive reviews and enhancements at different stages of the project by civil society, technical experts, Peruvian officials and IDB staff. Extensive project-specific environmental and social technical and financial requirements have been incorporated in the loan agreement between IDB and TGP. Failure to meet these conditions could lead to specific consequences, such as financial remedies, declaring the loan to be due and payable, or enforcement of all or any part of the security. The IDB also executed a letter of agreement with the consortium of the upstream component that requires compliance with various environmental and social requirements. Failure to comply with this agreement could result in a default under the IDB and TGP loan agreement. The extensive environmental and social risk management system established has not only allowed for the proper assessment and mitigation of risks, but also in helping prevent negative environmental and social impacts.

The GOP, working with the IDB, established a Letter of Commitment in which the GOP formalizes its responsibilities for addressing environmental and social issues and opportunities associated with the Camisea Project and more broader those in the project area. This includes increased protection for the Nahua-Kugapakori indigenous area, which is the first and only time in Peru such enhanced legal protection has occurred; government actions on right-of-way migration control; land titling along the pipeline's area of influence (outside of right-of-way) for more than 5,300 families/lots and over 20,000 properties have been registered; property of 20 of 28 native communities of the are have been registered, two have titles; actions to promote environmental sustainable developmental strategic planning for the Lower Urubamba area; actions to address health issues in the Lower Urubamba area, especially associated with indigenous populations; actions to enhance the GOP's environmental and social legislation and guidance related to future oil and gas development; and specific contractual requirements for oil and gas

fields in the area of Camisea Project. Financial and technical support to implement actions needed to fulfill these commitments is provided as part of the IDB loan to the GOP. The GOP also established a specific entity to coordinate among the various governmental agencies involved in the project.

Supervision

Given the high profile of the project, it is essential that the stakeholders be able to participate in the process of supervision and monitoring to ensure fulfillment of the various environmental and social requirements. Supervision is being carried out by three sets of participants: independent environmental and social consultants reporting to the IDB, GOP agencies, and local community and civil society groups. The IDB independent supervision of the project involved technical specialists in the field full-time during construction and intensive quarterly reviews and site visits during operations. In addition, the IDB has carried out over 30 missions to Peru related to the Camisea Project. The GOP, with financial assistance from the IDB, carried out programs to improve the institutional capacity of various Peruvian government institutions directly involved in the inspection, supervision and monitoring of the Camisea Project. In particular, OSINERG, the governmental entity responsible for supervising the project, was significantly strengthened with over 21 inspectors assigned during construction and 12 for operation. The project also involved the creation of the Camisea Project Ombudsman and enhancements to the "Defensoria del Pueblo" to better respond to concerns and complaints by the locally affected population. Results from the various monitoring and supervision programs are made available to project stakeholders, which include local populations and non-governmental organizations. The IDB has also collaborated with Peruvian civil society to design a supervision and support system to serve the specific the needs of civil society. Various environmental and social monitoring plans with specific criteria to evaluate performance have been established and subsequently reviewed by an expert working group that included experts identified by Peruvian nongovernmental organizations, civil society, and the IDB and its external expert consultants.

Creating Benefits

The IDB has leveraged its role in the Camisea Project from one of mitigating negative environmental and social impacts to developing and implementing programs that will improve the environmental and social conditions in the area of the Camisea Project and Peru as a whole. These actions have been developed in conjunction with the project's consortium companies and the Government of Peru, and with assistance from the IDB loan to the GOP. Examples include creation of new protected areas in the rainforest area totaling approximately 925,000 hectares, including Otishi National Park, Ashaninka and Machiguenga Communal Reserves, and Megatoni Sanctuary and their respective management plans and financial resources to implement; implementation of various public and private sector initiatives to improve Paracas Bay which is an important resource that has suffered from years of contamination and impacts from other sources, including a strategic plan and creation of specific organization, designation of significant resources (e.g., over $24 million) to properly manage the national marine park, monitoring programs and implement remedial projects. In addition, the GOP together with the IDB has used resources from the IDB financed Program for Land Titling

program to complement TGP's land titling program along the right-of-way, resulting in benefits to present residents and helping to reduce the potential for migration into these areas.

Given that 50 percent of the project royalties go to the Department of Cuzco, the GOP and IDB have worked to improve systems that will promote sustainable investments. For example, regional sustainable development plans were developed in a participatory manor for the departments of Cuzco, Ayucucho and Huancavelica, and the province of La Convencion. These plans identify potential specific projects, and training has been provided to local governmental personnel. The IDB also actively promoted the need for an additional mechanism to return project benefits to local communities. The Peruvian Congress authorized the creation of a mechanism (FOCAM) to provide 13.16 percent of the royalties from block 88, and also block 56, project areas, which are some of the poorest areas in Peru, such as the Departments of Huancavelica, Ayuacucho and Ucayali. As of January 2006, approximately $23 million has been assigned. FOCAM represents a potential of approximately $19 million/year from block 88 and approximately $45 million once both blocks 88 and 56 are in operations.

Results

Project construction is complete and operations commenced in August 2004. During the 20 months of project operation, it has established solid financial performance and strong cash flow generation. The IDB's participation provided a catalytic role that helped lead to Peru's largest local capital market bond issuance for a single obligor ($350 million). The project has resulted in numerous concrete benefits, including 2005 hydrocarbon exports greater than the estimated project average of approximately $500 million per year reduction in the Peruvian hydrocarbon deficit. In addition, the project is estimated to result in a 30 percent reduction in marginal cost of energy generation resulting in $3.3 billion (net present value) over the concession period in direct benefits to electricity end-users and improving competitiveness of Peruvian industry. As of December 2005, royalty payments to Peru by the upstream project were approximately $264 million, of which approximately $132 million goes directly to the Department of Cuzco (i.e., 50 percent). The substitution of expensive fuels for natural gas with industrial users has started (e.g., 87 customers as of March 2006) which improves competitiveness of Peruvian industry and increases output by $5.4B. Conversion of vehicle engines from gasoline fuel to natural gas has also started, and could add $30 Million (net present value, NPV) in savings. Natural gas is being already supplied to 2,600 residential and commercial customers, generating another $91M (NPV) in savings. Approximately $23 million, as of January 2006, is directly assigned to support local and regional governments in the project area via the social and economic development fund for Camisea (FOCAM).

The potentially major negative environmental and social impacts associated with construction activities did not happen, in particular the concerns raised prior to project initiation. Erosion control and revegetation have been successfully carried out along the pipeline pathway despite difficult terrain, with over $20 million being spent, and lower than expected observed failure rates during operation phase. Dredging and underground pipeline installation in Paracas Bay associated with the marine terminal has been carried out with minimal impact and has involved real-time monitoring system and decision-

making. Programs to compensate local communities have been effective, with approximately 2,650 persons compensated for impacts associated with the pipeline construction and 25 communities with the upstream component; with effectively no material claims. There has been ample opportunity for stakeholder input.

Through the participation of project stakeholders, an environmental and social management system of the entire project has been implemented to help ensure that all risks and impacts are adequately mitigated. Environmental and social benefits have been created as well as initiatives to deal with medium and long-term issues. There are various supervisory systems to provide credible and transparent information on project environmental and social performance. There is enhanced capacity among the project companies, GOP, and local civil society with respect to dealing with environmental and social issues.

Five spills have occurred from December 2004 through March 2006 in the natural gas liquids pipeline; four resulted in releases beyond the right-of-way and one small leak affected only a few square meters. All of the spills were located in the first 220 km of the pipeline, which includes the rainforest and ascent into the Andes; no spills have occurred in the immediately parallel natural gas pipeline, which has a larger diameter and a thicker wall (14-inch diameter versus 32-inch). The IDB, the GOP and the companies have taken these spills very seriously, and a series of actions have been put into place. The immediate action was to properly respond to the spill and address and resolve environmental and social impacts. The next is to assess the cause of the spills and then evaluate the overall pipeline integrity, and take appropriate measures to help reduce the likelihood of future spills. Investigations and reviews to date have not identified a systemic problem. In at least three cases, excessive forces exerted on the pipeline due to lateral earth movements contributed to the failures. Investigations continue on two spills as well as a series of investigations (e.g., pipeline integrity testing and studies) and risk mitigation actions by TGP (2006 budget of approximately $23 million), the GOP and the IDB. The results of these investigations will be made public. While the actual environmental and social impacts associated with the spills were of relatively of small magnitude, especially in comparison to other petroleum transportation spills, they are still considered serious and have created significant concern among the local communities and Peruvian civil society in general.

As Camisea moves into the future, the IDB has identified some issues that require special attention. Of special importance is resolution of the spill-related issues and continued enhancements of environmental and social operational management systems. The IDB continues to work with the GOP in relation to their various commitments and with civil society to better satisfy their needs in terms of understanding the projects performance. Future activities in the Nahua-Kugapakori reserve need to take into consideration the experiences learned. The IDB continues to work with relevant stakeholders to address these and other issues as they arise, and take actions to enhance environmental and social benefits.

Lessons Learned

The IDB's experience with the Camisea Project also provides important lessons that will benefit the Bank, and hopefully others, when financing future large infrastructure projects of this nature. Lessons include the importance of pre-construction planning for erosion control associated with pipeline construction and for works in sensitive environments and indigenous reserves, in particular to improve acceptance by stakeholders; challenges involved with creating credible and effective supervisory systems to serve the needs of various stakeholders for extremely complex projects with extensive information and general lack of trust among stakeholders; importance of worker health and safety training during the early stages of pipeline construction; and the need for an effective communication strategy on environmental and social issues. It also has demonstrated the importance of mainstreaming environmental and social aspects into sectoral planing and addressing issues of mixed responsibilities, both between public and private entities, and among the different public entities and private companies.

The IDB's support for Camisea is an integrated and innovative approach toward private sector financing of mega-projects in which the Bank is leveraging its relatively small financial contribution to Camisea to achieve a greater good for Peru.

Additional Information

Further information on Camisea, is available at http://www.camisea.com.pe/ ; http://www.iadb.org/exr/pic/camisea/camisea.cfm ; and http://www.camisea-gtci.gob.pe/

ANNEX II-2

CAMISEA PROJECT: BENEFITS TO LOCAL COMMUNITIES

The Camisea Project provides directs benefits to Peru in terms provision of natural gas, increasing energy independence, and providing significant economic benefits. The IDB participated in Camisea to ensure adherence to the principles of sustainable development, which include strong environmental and social safeguards. The Bank's participation has also led to specific actions and initiatives that will create enhanced benefits for local populations and the environment. A summary of some of the significant benefits to local communities associated with the project as summarized below.

There are two principal means of returning project benefits to local communities, each associated with the allocation of royalty payments from the Upstream project component. According to the License Agreement established in 1999 between PeruPetro and a consortium of companies lead by Pluspetrol Peru Corporation for the exploration and development of gas in Block 88 (typically called the upstream component of the Camisea Gas Project), the private sector consortium is obligated to pay royalties to the Government of Peru equivalent to 37.24 percent of the upstream component gross revenues. This License Agreement establishes that 50 percent of the royalties are assigned to the municipalities and regional government of the Department of Cuzco, for use for department, provinces and districts of Cuzco. As of December 2005, the Upstream Project has made royalty payments of approximately $264 million, and thus $132 million have been assigned to Cuzco.

As part of the IDB involvement, the IDB in 2002 and 2003 strongly encouraged the Government of Peru to improve the sharing of Camisea Project benefits with the local population in the direct and indirect area of influence of the Camisea Project. In this context, the Government of Peru, working with the IDB and Peruvian civil society, designed a potential mechanism known as the Camisea Fund. The proposed fund would have used 3.5 percent of the royalties from the Upstream Component (Block 88) to finance specific environmental, social and economic development projects in the area of the Camisea Project and would be managed by an independent entity.

However, in December 2004, the Peruvian congress passed a law, referred to as FOCAM, which while returning project royalties to the project area did not meet all the objectives established in the draft Camisea Fund. On the positive side, FOCAM provides for revenue sharing of a portion of the royalties from not only the Upstream Block 88, but also future royalties from Block 56 (presently envisioned to provide natural gas to a proposed liquefied natural gas project, for export). Specifically, FOCAM requires that 13.25 percent of the total royalties from both Block 88 and 56, be directly distributed to local and regional governments in the area of influence of the Camisea project. Thus FOCAM will provide substantially more resources to local governments than had been proposed in the original Camisea Fund (e.g., approximately $17 million/year from block 88 and approximately $40 million once both blocks 88 and 56 are in operation). However, FOCAM does not provide for an independent entity to administer the fund,

resources are available only to local governments and not other private or community organizations, and does not allow for financing productive projects or federal environmental protected areas created associated with the Camisea Project (note: financing of these protected areas was subsequently incorporated into the federal budget).

Specific data on the transfers authorized and accredited under FOCAM (and gas royalties) to regional and local Governments can be accessed at the MEF's website for economic transparency http://transparencia-economica.mef.gob.pe/. In the 14 months since the law came into effect (April 2005 to June 2006), the Central Government has deposited roughly $33.5 million in the FOCAM account. While no specific projects have yet been implemented, a significant number of projects are at various stages in the process for approval as part of the National Public Investment System (known as SNIP).

Both Cuzco and FOCAM resources are being facilitated by a series of actions including:

- Development of regional sustainable development plans, in a participatory manner, for the departments of Cuzco, Ayucucho and Huancavelica, and the province of La Convencion. These plans identify potential specific projects, and training has been provided to local governmental personnel.
- Training programs to local governments on public sector investments and the Peruvian budget and appropriation regulations.

Besides the use of project royalties, there are other significant direct benefits to local communities associated with the project, based on the IDB's involvement. These include:

- Access to natural gas to residential customers and improved air quality through fuel replacement with natural gas (in Lima area).
- Implementation of various vaccination programs for different local indigenous communities in the lower Urubamba (over 2300 persons) and development of enhanced governmental health protection plan for indigenous communities in Lower Urubamba
- Creation of increased protection for the Nahua-Kugapakori indigenous area (indigenous peoples living in voluntary isolation), which is the first and only time in Peru such enhanced legal protection has occurred, and subsequent development of protection plan.
- Creation of new protected areas in the rainforest area totaling approximately 925,000 hectares, including Otishi National Park, Ashaninka and Machiguenga Communal Reserves, and Megatoni Sanctuary and their respective management plans and financial resources to implement the plans.
- Implementation of various public and private sector initiatives to improve Paracas Bay, an important resource that has suffered from years of contamination and impacts from other sources. This includes development of a strategic plan and creation of specific organization, designation of significant resources (e.g., over $24 million) to properly manage the national marine park, monitoring programs and implementation of remedial projects.

- Land titling program for properties along the pipeline right-of-way (over 16,000 properties).

In characterizing each of these benefits (those just listed as well as those associated with FOCAM), it is important to differentiate between the mitigation of potential impact or risk, which is necessary for a project to be considered viable or feasible, and actions taken to enhance positive impacts and/or create benefits. When evaluating project performance, risk/impact mitigation must achieve a minimally acceptable level, whereas any additional benefit is positive by definition (and the IDB of course seeks to maximize such benefits).

The Camisea Project is also providing benefits to local communities through its overall impact on the economy. The overall cumulative economic impact, at approximately $14.2 billion (NPV) is equivalent to 18% of Peru's 2005 GDP. This includes:

- 30% reduction in marginal cost of energy generation resulting in $3.3 billion (NPV) in direct benefits to electricity end-users;
- Substitution of expensive fuels for natural gas by industrial users will generate $640 million (NPV) in savings
- Gas supplied to 2,595 residential & commercial customers, generating another $150 million (NPV) in savings
- Conversion of vehicle engines from gasoline fuel to CNG representing $30 million (NPV) in savings (3 CNG stations in Lima)
- Approximately $500M/year reduction in hydrocarbon trade deficit representing approximately $3.2 billion (NPV)

The project is changing Peruvian energy matrix and improving the country's energy independence, allowing for the substitution of natural gas for expensive fuels among industrial users.and the use of natural gas by residential and commercial users. It is also allowing for the conversion of vehicle engines from gasoline fuel to natural gas.

An important indirect benefit, though one not easily quantifiable, is the enhanced institutional capacity of local civil society organizations in terms of participation in large infrastructure projects. Similarly, while challenges still remain, the GOP's institutional capacity to develop environmentally and socially sustainable oil and gas projects in Peru has unquestionably progressed relative to the point at which the IDB's involvement in the project began.

ANNEX II-3

CAMISEA PROJECT: PRINCIPAL PENDING ISSUES

In relation to the IDB financing of the downstream component of the Camisea project, under the responsibility of Transportadora de Gas del Peru (TGP), the IDB established a series of conditions to establish the environmental and social sustainability of the overall Camisea project. These requirements were related to both the downstream component and also the upstream component of the Camisea project, which is under the responsibility of a multinational consortium led by Pluspetrol. Associated with the financing of the Camisea project and in conjunction with the Government of Peru (GOP), the IDB developed and approved a program (loan) for Institutional Strengthening and Environmental and Social Management Support for the Camisea Gas Project. This loan is providing resources to (i) enhance the GOP's monitoring of environmental and social aspects of the Camisea project, (ii) help address some potential medium to long-term negative effects as a result of the project's implementation that were not controllable by, nor the responsibility of, the companies alone, but rather would require GOP action, and (iii) promote sustainable development. In addition, the GOP issued a Letter of Commitment (LoC) that addresses numerous commitments to deal with direct, indirect and cumulative environmental and social impacts and risks associated with the Camisea project.

The Bank has consistently closely monitored the various conditions, programs and commitments associated with the Camisea project. At this stage of the operational phase of the Camisea project (operations started in August 2004), TGP and Pluspetrol have basically complied with the conditions established, with the exception of some requirements that are being presently addressed via corrective actions. The principal areas being addressed by TGP corrective plans include: resolving issues from the spills/releases from the natural gas liquids pipeline, both in terms of pipeline integrity and environmental and social impacts; resolving re-vegetation issues in the pipeline ROW; full implementation of the biodiversity monitoring program; updating the contingency plan; full implementation of the access control plan; full and continued implementation of the operational mitigation and monitoring plans; and adequate staffing and resources under the environmental, health and management system. The principal areas being addressed by Pluspetrol corrective plans include: resolution of problems with wastewater discharges from the Las Malvinas facility; implementation of the biodiversity monitoring plan, and updating plans and procedures for works in the nahua-kukapakori reserve for indigenous people.

In addition, there is the need to further assess claims made related to reduction in fish populations and health impacts on indigenous populations in the Urubamba area. While these claims are not substantiated by actual data or the results of the various monitoring and supervision programs, the IDB continues to take these seriously and work with the relevant project stakeholders to review these claims and to constructively attempt to clarify and resolve them, such as by additional data collection or better communication of available data. Another key issue in the near future will be ensuring the proper actions are implemented associated with the future development of the Cashiari wells, which are

located in the Nahua-Kugapakori reserve for indigenous populations living in voluntary isolation, taking into account lessons learned from previous work in the reserve.

Related to the IDB loan to the GOP, significant advances have been achieved in terms of commitments and execution of the various loan components. In addition, the GOP has been successful in meeting the majority of the commitments established in the LOC. Nevertheless, there are still commitments and issues that are pending resolution by the GOP associated with the Camisea project. One principal pending issues is resolving the pending commitments and issues associated with the environmental and social aspects in the Lower Urubamba area, including the implementation of the protection measures for the Nahua-Kugapakori reserve, need for a multi-stakeholder planning system to ensure environmental and social sustainable development of gas resources in the Lower Urubamba**,** and continuing to work with indigenous communities/associations and civil society to address their concerns and issues. Another key pending issue relates to resolving deficiencies related to the institutional capacity of eligible governments in terms of ensuring timely, effective and efficient use of royalty resources, both via Department of Cuzco and with the FOCAM. While there is a tremendous amount of resources available, eligible governments have not been effective in accessing these funds mainly due to lack of capacity to prepare and execute eligible projects following Peruvian budget and appropriation regulations. Other key pending issues include: ensuring adequate transition of commitments and knowledge to the new government; maintaining the momentum in terms of actions associated with initiatives for Paracas Bay; and ensuring ongoing adequate budget allocations for their various commitments (including those in the IDB public sector loan), in particular the management of the protected areas associated with the Camisea Project, as well as recurrent costs associated with the implementation of different monitoring, protection, supervision, and health plans under the responsibility of INRENA, MINSA, INDEPA; and

The IDB also believes that better mechanisms are needed to help demonstrate and communicate the actual environmental and social performance of the project This is important given difficulties in the Camisea due to the tremendous amount of highly technical data and information and inherently strong distrust and lack of confidence among Peruvian civil society and many international NGOs with the Peruvian government and the private sector.