

ANNEX J

TERMS OF REFERENCE FOR THE CUMULATIVE IMPACT STUDY

I Objective of the Study

IFC is currently assessing the financing of 2 pulp mills, **Orion** and **CMB**, located in the same area on the Uruguay shore of the Uruguay River. In order to fulfill the requirements of its Environmental Assessment Policy (OP 4.01), IFC, in coordination with the Ministry of Housing, Regional Planning and the Environment of Uruguay, is commissioning a Cumulative Impact Study of these pulp mills and their respective wood sources.

II Project Presentation

ORION PULP MILL. One project is called Orion and comprises the construction of a Greenfield bleached eucalyptus kraft pulp (BEKP) mill with annual capacity of one million tons in Fray Bentos (Uruguay) by Europe's second largest pulp producer, OY Metsa Botnia AB ("Botnia", the "Sponsor") from Finland. Uruguay is one of very few locations in the world where already existing plantations can supply the raw material for a new pulp mill of this scale. This investment would be the largest foreign direct investment in Uruguay's history. It is estimated to create employment for over 5,000 people by 2007 and is calculated to increase the GDP of the Fray Bentos region by 50% and the GDP of Uruguay by 1.5%.

The pulp mill will be built in Fray Bentos, the capital of Rio Negro Department. The city is located some 200 miles North-West of Montevideo and has an estimated population of 23,000. Fray Bentos is an important trade conduit as it is located on the Uruguay River and next to an international bridge that connects Uruguay to Argentina. The mill site was acquired on a willing buyer-willing seller basis, and no involuntary resettlement was required. The site contains no critical forest or other critical habitat.

Botnia will build and operate the mill, to be supplied with wood from its partner Forestal Oriental S.A., which operates its own plantations in the Paysandu area, about 200km northwest of the mill site. Processed pulp will then to be transported by barge to an export terminal located further down the Uruguay River. The mill will produce pulp using a conventional kraft pulping process, with chlorine dioxide used in an elemental-chlorine-free (ECF) bleaching process.

CMB PULP MILL. The other project, Celulosas de M'Bopicuá, (CMB), whose sponsor is Empresa Nacional de Celulosa España ("ENCE"), is a green field eucalyptus pulp mill with a capacity of 480,000 metric tons per annum ("tpa"), scheduled to achieve full production in 2007. CMB will be located in M'Bopicuá in the Rio Negro district in Uruguay, 12 Km north of Fray Bentos. The Project will be undertaken by a wholly-owned subsidiary and leverage infrastructure and operations which ENCE already has in Uruguay as a result of more than a decade of investment in- and import of wood from Uruguayan plantations. The pulp produced by the Project is destined for export, bringing ENCE's position as the world's second-largest eucalyptus pulp producer.

ENCE's presence in Uruguay dates back to 1990, when it started developing eucalyptus plantations in the country. These forestry operations have since grown to span 55,000 hectares of forests and more recently, a river port and wood chipping facility which process and ship timber to ENCE's mills in Spain. The proposed Project is central to ENCE's strategic goal to shift production capacity to competitive locations.

III The Study

In order to complete the due diligence process, both projects sponsors and IFC have agreed to carry out a Cumulative Impact Study (CIS). The study team will make use of available information and documentation provided by the two companies during project appraisal, and will follow *Guidance Note G: Assessment and Management of Cumulative Impact*, June 2001 (attached).

The study team shall scope the CIS and determine the area of influence of the projects as well as the main issues associated with them (including those listed below).

The team shall include a local specialist to provide inputs regarding the local reality in Uruguay and, particularly, in the vicinity of Fray Bentos. Consultations with government authorities (including the Administrative Commission for the Uruguay River - CARU), communities, and other relevant stakeholders shall supplement the inputs provided by the local expert.

The study team shall undertake the assessment using one or more of the methodologies mentioned in Guidance Note G and produce a report consistent with the same guidance note.

The study shall be carried out at two separate but linked levels:

1. The level of the two pulp mills plants : aggregate impact of 2 plants for the same activity, with the same impact zone of influence;
2. The broader level of planned development in both Uruguay and Argentina on a regional perspective

1. For the first level, the study should include:

- A discussion of existing ambient load
- Comparison of both EIA to assess coherence of impact assessment;
- Aggregate impact of both plants on :
 - Air emissions;
 - Uruguay river (aggregated impact effluent discharge, river transport, dredging for plant and export terminal construction.....);
 - Land use (increase of plantations nationally);
 - Natural Habitat and biodiversity;
 - Pressure on existing infrastructures at both national and local community level (roads , municipal infrastructures, use of export terminals and of Uruguay river waterway);
 - Waste Management, including hazardous waste and transport of chemicals;

- Road transportation (of raw material at construction and operation phase);
 - River transportation (of raw material and pulp export);
 - Local economy (employment at plantation areas and at plants, job types, numbers of people employed in those jobs, assessment of job loss as a result of project, assessment of direct and indirect job creation from construction, plant and plantation operations, transport, etc.....)
 - social impacts related to the migration due to construction phase (involves: housing, health, education etc).
- Assess whether there is scope for joint infrastructures such as waste treatment facilities, effluent treatment facilities, export facilities, joint community development actions.....
 - Provide recommendations for corrective actions if needed as well as for joint mechanisms for addressing grievances, for independent monitoring of impact and reporting.

2. At the broader level, the study should discuss the potential impacts of:

- Planned and known development on the shores of the Uruguay River both in Argentina and Uruguay, and within the zone of influence of the two plants
- Development of export terminal in zone of project influence
- Evolution of land uses and effect of large land conversion to plantation (effect on Argentina and Uruguay)

III Applicable Policies and Guidelines

The study has to be carried out using applicable IFC/WBG policies and guidelines and the IFC Guidance Note G: Assessment and Management of Cumulative Impact (Draft of June 2001). The study team shall take into consideration that World Bank Policy on Forests (OP 4.36), November 2002, includes the requirement for forestry plantations to be certified according to specific criteria described in the policy. Forestry certification documents are therefore relevant in the assessment of the cumulative impacts of these projects.

Applicable IFC/WBG Policies and guidelines are listed below:

- World Bank Group Technical Guidelines on Pulp and Paper, PPAH, July 1998
- IFC Technical Guidelines on Hazardous Material Management, December 2001;
- IFC Technical Guidelines on Occupational Health and Safety, June 2003;
- IFC Technical Guidelines on Plantations, July 1998;
- IFC Technical Guidelines on Port and Harbor Facilities, July 1998;
- World Bank Policy on Forests (OP 4.36), November 2002;
- IFC Policy on Forestry (OP 4.36), November 1998;
- IFC Policy on Pest Management (OP 4.09), November 1998;
- IFC Policy on Projects on International Waterways (7.50), November 1998;
- IFC Policy on Natural Habitat (OP 4.04), November 1998;
- IFC Policy on Environmental Assessment (OP 4.01), dated October 1998;
- IFC Policy Statement on Forced Labor and Harmful Child Labor, dated March 1998

IV Project Documentation

The environmental and social documentation to be used for the study is listed below:

For the Orion project:

The Environmental Impact Assessment Summary, comprising the following documents:

- "BotniaExcSumEng.pdf";
- "EIA Exec-Summary.pdf"
- "EIAExcSumIndex.pdf"
- "Index EIA Update.pdf"

The Full Environmental Impact Assessment in Spanish comprising of following files:

- "Botnia S.A. Info Adicional 3", dated October 2004
- Chapters 1-8, eight pdf documents, no dates on individual documents
- Info 4-7, four pdf documents.
- "Informe Ambiental Resumen printed", dated December 2, 2004.
- "Botnia S.A. Informa Adicional 1, anexo 1.pdf", dated September 2, 2004
- "Botnia S.A. infoadi2.pdf", dated September 2, 2004.

Forest Certification documents, including

- Certification de Manejo Forestal COFOSA.pdf

- Certification Manejo Forestal.pdf
- Orion forestry Info for disclosure.doc

The Environmental and Social Action Plan (ESAP), dated April 13, entitled

- "ESAP FINAL ENGLISH"
- "ESAP Final Espanol.doc".

The Public Consultation and Disclosure (PCDP) documents comprising:

- "Sum_action_plan_for_the_year_2005.general_part.doc, dated January 1, 2005.
- History of public consultations, entitled "Comunicacion 2003-2004.ppt".

The Following Files:

- SE Impact Study-Botnia SA Final Edition.doc
- Summary of Project Information.doc
- Category A project Disclosure Sheet.doc

For the ENCE project:

The Environmental Assessment Summary (summary of the entire public file)
- In preparation

The Full Environmental Impact Assessment in Spanish comprising of following files:

- Soluziona EIA

The Full Addendum to the Environmental Impact Assessment in Spanish (in preparation), comprising of following files:

- Enviro Consultores - Plantations Addendum
- Soluziona EIA - Cellulose Plant Addendum

Forest Certification documents, including

- Certification de Manejo Forestal EUFORES
- Certification Manejo Forestal
- CMB forestry Info for disclosure

The Environmental and Social Action Plan (ESAP), entitled

- "ESAP Final Espanol (in preparation)

The Public Consultation and Disclosure (PCDP) documents comprising:

- In preparation

The Following Files:

- SE Impact Study
- Summary of Project Information
- Category A project Disclosure Sheet (in preparation)

V Schedule and duration

The duration of the study will be four to six weeks, starting in July and finalizing the report for disclosure in August

Desk Review = 1 week

Interaction with both project management teams in Uruguay = 2 weeks (including a field visit)

Assessment of cumulative impacts, mitigation and management measures

Report drafting = 1 week

VI Consultant's Proposals

Consultants are requested to present a proposal to fulfill the above terms or reference. Proposals should include the following:

- Statement of capabilities and experience in cumulative impact assessment
- Technical proposal including approach, methodologies and specialists conforming the study team (including at least one local expert) with their respective qualifications.
- Financial proposal including manning schedule and costs.

I Objective of the Study

IFC is currently assessing the financing of two pulp mills, **Orion** and **CMB**, located in the same area on the Uruguay shore of the Uruguay River. In order to fulfill the requirements of its Environmental Assessment Policy (OP 4.01), IFC commissioned the consortium of Pacific Consultants International (PCI) and Malcolm Pirnie, Inc. to undertake a Cumulative Impact Study of these pulp mills and their respective wood sources.

This addendum provides a focus on various points of the original terms of reference (TOR) and adds other items that were deemed necessary for a full understanding of the cumulative effects of the pulp mills.

II Addenda to the Study

Following the presentation of the first draft report of the Cumulative Impact Study (CIS), IFC provided comments on several items for an enhanced draft of the report. In addition IFC found that there four aspects that require additional attention, which are the focus of this Addendum, as follows:

- 1. Air Quality Modeling*
- 2. Water Quality Modeling*
- 3. Social Impact Assessment*
- 4. Public Consultation prior and post submission of the final CIS report.*

1. Air Quality Modeling. PCI/Malcolm Pirnie shall undertake an evaluation of the potential impacts of selected air contaminants on ambient air quality from the Orion and CMB pulp mills. To this end, the consultant shall employ a USEPA approved air dispersion model, recommended for industrial facilities. The specifics associated with this task are as follows:

- Model to be employed: Industrial Source Complex Dispersion Model, version 3 (ISC3).
- Meteorological data base to be employed: 1-year of surface observations from Gualeguaychú, Argentina. The site is located approximately 17.3 miles Northwest of Fray Bentos, near the location of the pulp mills.
- Rural/urban classification: Since the proposed mill sites are to be located in a non-industrial area, rural dispersion coefficients will be selected in the model.
- Elevated terrain: Since the sites are to be located in an area that has a relatively flat topography, terrain elevations will not be included in the model.
- Source to be evaluated: Two sources will be evaluated, the chimney from the Orion mill and the chimney from the CMB mill. Information of stack parameters will be obtained from the EIS documentation prepared by Orion, and the latest information contained in the EIS Addendum prepared by CMB for IFC's project appraisal. Critical building elements related to the mill's recovery operations will also be incorporated into the air dispersion model. Incorporation of building elements into the model will allow for the model to account for potential aerodynamic downwash. PCI should also model the emissions and assess the impacts of additional pulp mill capacity in the region.
- Air contaminants to be evaluated: Particulate matter, sulfur dioxide, oxides of nitrogen, and total reduced sulfur emissions from each mill.
- Standard to be used for defining potential impacts: International standards, including IFC/WBG, European Union, WHO and USEPA.
- Receptor grid to be employed: Rectangular grid centered on the Orion mill. Receptors will be spaced at a distance of 100 to 250 meters out to a distance of 10 to 15 kilometers from the Orion mill. Critical receptor points will be located at Fray Bentos and other sensitive areas, including areas located in Argentina. Consultants will consider including the city of Gualeguaychú (27.84 Km from the source) as a critical receptor and the beaches in Rio Uruguay, and justify the reasons for doing so or not.

- Technical report: A detailed report shall be prepared describing the following:
 - purpose and methodology of the analysis,
 - sources evaluated, parameters selected for inputs into the model (including odors), receptors evaluated (including beach areas and *Gualeguaychú*)
 - results of the modeling exercise considering various scenarios
 - mitigation measures (e.g. various stack heights to mitigate odor problems in sensitive areas).
- Timing: the consultant will gather the necessary information and undertake the air quality impact evaluation as described above, within 2-3 weeks time from the date signing this addendum.

2. **Water Quality Modeling**. PCI/Malcolm Pirnie shall undertake an evaluation of the potential impacts of selected water parameters on the quality of the Uruguay river due to effluent discharges from the Orion and CMB pulp mills. To this end, the consultant shall employ an internationally recognized water dispersion model. The specifics associated with this task are as follows:

- Models to be employed: RMA2 hydrodynamic model and RMA4 water quality model.
- Hydrodynamic data to be employed: Botnia's existing RMA2 hydrodynamic model and input files.
- Water quality data to be employed: Water quality data filed at the Orion and CMB, as well as information from official sources (e.g. CARU) will be used to calibrate the water quality model.
- Model parameters to be employed: The consultants will choose appropriate key site specific or region specific model parameters such as decay rate, SOD, dispersion coefficient, etc. and will justify these choices
- Source to be evaluated: Three sources will be evaluated, the discharge from the CMB mill, the discharge from the Orion mill and the municipal outflow from Fray Bentos (if not included in the background water quality characteristics). Information on the hydrodynamic model and Orion effluent discharges will be obtained from documentation prepared by Botnia; for CMB's discharges from the latest documentation available (contained in the EIS Addendum

- and other documents prepared by CMB for IFC's project appraisal). PCI should also include the scenario of an additional pulp mill of similar characteristics located between the Orion and CMB plants.
- Water constituents to be evaluated: The water quality constituents that the model will evaluate are: Biological Oxygen Demand (BOD5) and Dissolved Oxygen (DO), and other parameters that can be implicitly assessed within the BOD5 and OD context (such as COD and AOX),
 - Modeling water quality: The consultants will undertake the following modeling tasks:
 - Prepare input files
 - Interface the hydrodynamic (RMA2) and water quality model (RMA4)
 - Test RMA4 response by varying key parameters
 - Calibrate RMA4 with field data
 - Evaluate the cumulative effects of the Orion and CMB plants under normal conditions and three additional scenarios: an additional pulp mill in the area (see above), joint treatment of municipal effluents at the Orion wastewater treatment plant, and upstream impacts in the event of flow reversal in Río Uruguay.
 - Undertake sensitivity analysis for variable loadings and key parameters with uncertainties (24 hours).
 - Standard to be used for defining potential impacts: International standards, including IFC/WBG, European Union, WHO and USEPA.
 - Receptor grid to be employed: Riverside receptors downstream from the three sources above, including potential receptors at either side of Rio Uruguay (including beaches in the Argentine side).
 - Additional assessment: The consultant will also evaluate the necessity to undertake a detailed modeling effort to examine potential eutrophication issues and detailed sediment transport/oxygen demand associated with potential facility discharges. If this is deemed essential, the consultant will present an additional proposal to use WASP and SED2D model elements.
 - Technical report: A detailed report shall be prepared describing the following:
 - purpose and methodology of the analysis,

- sources evaluated, parameters selected for inputs into the model, receptors evaluated (including beach areas and other key receptors)
- results of the modeling exercise considering various scenarios
- mitigation measures (e.g. joint treatment of Orion and Fray Bentos discharges, improvements on CMB discharges, etc).
- Timing: the consultant will gather the necessary information and undertake the air quality impact evaluation as described above under 4-5 weeks time from the date signing this addendum.

3. Supplemental Social Impact Assessment. The purpose of this work is to assess the cumulative impacts of the two proposed pulp mill projects on the communities located within the area of influence of the projects' construction and operations.

- Proposed Scope of Work. An assessment of the cumulative social impacts of the two projects will be undertaken within the areas of influence of the projects, including plant sites, transportation routes and raw material sourcing areas.
- Baseline Information. Using available secondary data sources as well as standard representative sampling and rapid assessment methodologies for the collection of primary data, establish a social baseline that includes the following components:
 - Projects Area of Influence. Determine, and justify the determination of, the area of influence of the two proposed pulp mill projects. The area of influence will encompass Frey Bentos, M'Bopicua, Paysandu in Uruguay, Gualaguaychú, Argentina and any neighboring areas in which populations are settled or on which populations are dependent for their livelihoods.
 - Community Profile. Describe the characteristics of each community/settlement located within the projects area of influence including: name and location of community, size, spatial distribution, housing and land ownership patterns, ethnic composition, education levels, socio-economic status, age and sex distribution, social and political organization, local and traditional decision-making structures, identification of key local representatives. Include maps of the project area that clearly delineate the location of each of the communities.

- Livelihood Systems. Describe the patterns of employment and production systems of communities in the project area. How do people (both men and women) in these communities make a living? What are their various sources of income and employment during the year? What are the average wage levels in the area for these activities and the average income levels of these households? To what degree are households dependent on access to communal land or activities related to natural resources such as hunting, fishing, grazing, gathering of forest products etc.?
- *Social Services and Infrastructure. Describe the existing social services and infrastructure available to communities within the project area including access to: health care, education, water supply and sanitation, waste treatment and disposal, housing, electricity, markets, transport and roads, communication, and local banking and credit facilities.*
- *Public Health. Provide baseline information on community health within the project area. Survey information should include: a description of the general health and well-being of local population; information on endemic diseases and incidence levels; birth rates; rates of morbidity and mortality; infant and maternal health; nutritional status; and prevalence of sexually transmitted diseases, AIDs and alcoholism among the local population.*
- Assessment of Impacts. Provide a description of the activities to be undertaken by the proponents of the two projects that will have an impact (positive or negative) on the social baseline conditions described in Section 1 above. For example, describe the impacts of the acquisition of land for project facilities, the construction and operation of those facilities, and the construction and operation of facilities that may directly or indirectly support the construction and operations of the projects (e.g., access roads, labor camps, etc.). Provide maps that indicate the location of the proposed facilities in relation to communities and land areas/natural resources used by them. Particular attention should be given to the following:
 - impacts on public health related to emissions and waste streams (planned or accidental) generated by project facilities;
 - impacts on public health and safety related to an influx of construction workers and increased vehicular traffic on the existing road network;

- impacts on employment patterns as a result of direct and indirect job creation by the construction and operations of the projects or potential job loss resulting from negative impacts of the construction and operations of the projects (e.g., hospitality and tourism);
- impacts on the livelihoods of people living in the projects area of influence who are dependent on natural resources for their livelihoods (e.g., fishermen, farmers, ranchers);
- impacts of projected demand for raw material on the expansion of plantation area and land ownership or land-based livelihoods (e.g., physical displacement of farmers, ranchers, share-croppers, farm laborers, etc.

In addition, the opinions and attitudes toward the projects held by the communities that make up the sample for this assessment should be recorded.

- Identification of Mitigation Measures. For each of the social impacts identified in Part 2 (above), describe what actions are being taken or will be taken by the project proponents to mitigate negative impacts on communities in the project area and to minimize disruption of their daily lives. In the absence of relevant information, describe any social or community development programs currently operating in or around the projects area of influence. If programs exist, do they meet the development priorities of their target communities? Are there opportunities for the project proponent to support new programs or expand existing programs to meet the development priorities of communities in the project area?
- Reporting. Within one week of commencing the assignment, the consultant will submit a draft Table of Contents of the cumulative social impact assessment to IFC for review.
- Timing. Based on this review, the consultants will prepare a draft report for IFC review within 30 working days of contract signing. Based in this review, the consultant will prepare a final report within ten working days of submission of the draft report.

4. Public Consultation (ex-ante and ex-post the CIS Report). An independent consultant will undertake the public consultation effort. PCI will make its individual specialists available as necessary to support the consultation exercises.

III Applicable Policies and Guidelines

The constituents of this addendum, as well as the entire study has to be carried out using applicable IFC/WBG policies and guidelines and the attached Guidance Note - Cumulative Impact Assessment

Applicable IFC/WBG Policies and guidelines are listed below:

- World Bank Group Technical Guidelines on Pulp and Paper, PPAH, July 1998
- IFC Technical Guidelines on Hazardous Material Management, December 2001;
- IFC Technical Guidelines on Occupational Health and Safety, June 2003;
- IFC Technical Guidelines on Plantations, July 1998;
- IFC Technical Guidelines on Port and Harbor Facilities, July 1998;
- World Bank Policy on Forests (OP 4.36), November 2002;
- IFC Policy on Forestry (OP 4.36), November 1998;
- IFC Policy on Pest Management (OP 4.09), November 1998;
- IFC Policy on Projects on International Waterways (7.50), November 1998;
- IFC Policy on Natural Habitat (OP 4.04), November 1998;
- IFC Policy on Environmental Assessment (OP 4.01), dated October 1998;
- IFC Policy Statement on Forced Labor and Harmful Child Labor, dated March 1998

IV Project Documentation

The environmental and social documentation expected to be used for the study is listed in the original TOR. The study team shall identify any additional information requirements, such as those listed in Section II above, and gather such information if readily available, generate primary information if possible, or otherwise report further information requirements to be obtained by the companies over the period prior to startup.

V Schedule and duration

The original duration of the study was four to six weeks producing a draft report by mid-September of 2005. The draft report was produced as scheduled and was commented by IFC staff. An amended draft is expected by October 1, 2005. Duration of additional activities will be as follows.

- Gathering additional available environmental and social information, generating primary information, and processing data (including running air and water quality models) = 4 to 5 weeks
- Assessment of cumulative impacts, mitigation and management measures, report drafting = 1 to 2 week
- Final report expected by end of November of 2005.

Schedule for CIS Addendum											
Task	*	October	November	**	December						
1. Air Quality Modeling:											
Information gathering	■	■									
Air quality modeling		■	■								
Impact assessment and reporting			■								
2. Water Quality Modeling:											
Information gathering	■	■	■								
Air quality modeling		■	■	■							
Impact assessment and reporting			■	■							
3. Social Impact Assessment:											
Information gathering	■	■	■								
Impact assessment		■	■	■							
Report preparation			■	■							
4. Public Consultation and Disclosure											
Participation in PC&D					■	■					
Milestones	*	Presentation of amended CIS draft report									
	**	Presentation of final CIS report									

VI Additional Team Requirements

- PCI shall use the team included in its original proposal and any other specialist necessary to complete the study as required.
- Specifically, PCI shall include a professional social scientist in the team.

Guidance Note - Cumulative Impact Assessment

1. IFC's *Procedure for the Environmental and Social Review of Projects (December 1998)* states that a full Environmental Impact Assessment (EIA) is required if a project is likely to have significant adverse environmental and social impacts that are sensitive, diverse, or unprecedented. Project-specific EIAs should normally cover cumulative impact of the proposed project and other developments which are anticipated. When a plan or program consisting of a set of projects in a particular area is considered for finance by IFC, a Cumulative Environmental Impact Assessment (CEIA) is required.

2. Cumulative Impact Assessment has been defined as the analysis of all the effects of an area from one or more activities as they accumulate over time and space. Cumulative effects can result from an accumulation of effects from various activities or from a combination of effects from one activity. In either case, cumulative effects can be different in nature (e.g. synergistic), larger in magnitude, greater in significance, more long-lasting, and/or greater in spatial extent than is the case with individual effects¹.

3. This note provides guidance on how to incorporate cumulative effects analysis into the components of an environmental assessment². A comprehensive CEIA comprises the cumulative effects of the projects in a plan or program.

4. The key components of an environmental assessment are: scoping, describing the affected environment and determining the environmental consequences. There are a number of steps of a cumulative effects analysis in each of these components as follows.

5. *Scoping*. The purpose of scoping for cumulative effects is to determine whether the resources, ecosystems and human communities of concern have already been affected by past or present activities; and whether there are other activities planned in the area that may affect the resources in the foreseeable future. This stage involves consultation with local authorities, the community and other interested persons concerning cumulative effects issues. Scoping for cumulative effects include the following steps.

- a) Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.
- b) Establish the geographic scope for the analysis.
- c) Identify other actions affecting the resources, ecosystems and human communities of concern.

6. *Description of the Affected Environment*. The description of the affected environment relies on information obtained through the scoping process and should include all potentially affected resources, ecosystems and human communities. Describing the environment potentially affected by cumulative effects should include the following steps:

- a) Characterize the resources, ecosystems, and human communities identified during scoping in terms of their response to change and capacity to withstand stresses.
- b) Characterize the stresses affecting these resources, ecosystems and human communities and their relation to regulatory thresholds.
- c) Define a baseline condition for the resources, ecosystems and human communities.

7. *Determining the Environmental and Social Consequences of Cumulative Effects*. The resources identified during scoping most encompass all those needed for analysis of cumulative effects. Also, all relevant past, present, and reasonably foreseeable future actions must be identified. As an iterative process, cumulative effects analysis often identifies additional resources during the analysis phase. In addition to confirming the resources and actions to be considered, the following steps should be followed to determine the environmental consequences of cumulative effects:

- a) Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

¹ Institution of Professional Engineers New Zealand. IPENZ Guidelines for the Integration of Environmental Issues into Engineering Practice.

² US Council for Environmental Quality. Regulations for implementing the National Environmental Policy Act.

- b) Determine the magnitude and significance of cumulative effects.
- c) Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.
- d) Address uncertainty through monitoring the cumulative effects of the selected alternative and adaptive management.

10. *Contents of a Cumulative Environmental Impact Assessment Report.* A Cumulative Impact Assessment (CEIA) report is required when a plan or program consisting of a set of projects in a particular area is considered for finance by IFC. Examples of this include the long-term development plan of an extractive industry (e.g. a mining complex, an oil or gas field), the development program for a privately-owned industrial corridor, a private housing development plan. A CEIA report includes similar components to those of a project EIA (see Guidance Note B) but has a significant emphasis on cumulative effects analysis.

11. A CEIA should include the following items (not necessarily in the order shown):

- a) **Executive summary.** Concisely discusses significant findings and recommended actions.
- b) **Policy, legal, and administrative framework.** Discusses the policy, legal, and administrative framework within which the CEIA is carried out. Explains the environmental and social requirements of any cofinanciers. Identifies relevant international environmental agreements to which the country is a party.
- c) **Project description.** Concisely describes the proposed plan or program, associated and related

facilities and any off-site investments that may be required.

- d) **Impact Identification (Scoping).** *Describes* the geographic, ecological, social, and temporal context of the plan or program, including the dimensions of the cumulative effects analysis area. Also takes into account current and proposed development activities within the plan or program area but not directly connected to it. This section includes a map showing the extent of the plan or program and its area of influence.
- e) **Description of the Affected Environment.** Describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the plan or project is implemented. Data should be relevant to decisions about the location, design, operation or mitigatory measures of the plan or program. The section indicates the accuracy, reliability and sources of the data.
- f) **Environmental and social impacts.** Predicts and assesses the likely cumulative impacts of the plan or program, in quantitative terms to the extent possible. Identifies mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for enhancement. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention.
- g) **Analysis of alternatives.** Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the “without

project” scenario—in terms of their potential environmental and social impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantifies the environmental and social impacts to the extent possible, and attaches economic values where feasible. States the basis for selecting the particular design of the proposed plan or program.

h) *Environmental Action Plan (EAP).*

A project’s consists of the set of mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The EAP also includes the actions needed to implement these measures. The action plan is sometimes also known as a “management plan” or “corrective action plan” when used in conjunction with a project specific environmental audit (see Guidance Note D). This section of the CEIA is prepared in a stand-alone format and is updated by the project sponsor to reflect the final understandings between IFC and the project sponsor on environmental and social issues.

i) *Appendixes.* The CEIA report should also include, but not necessarily be restricted to, the following appendixes:

- List of CEIA report preparers - individuals and organizations.
- References - written materials, both published and unpublished, used in study preparation.

- Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local non-governmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs.
- Tables presenting the relevant data referred to or summarized in the main text.