



USAID | **BOLIVIA**
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RURAL COMPETITIVENESS ACTIVITY

COMPETITIVENESS AND MANAGEMENT
APPROACHES TO IMPROVE ENVIRONMENTAL
PERFORMANCE

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ACRONYMS

- ARCo – Rural Competitiveness Activity
- BTBC - Bolivia Trade and Business Competitiveness project
- CAINCO - *Cámara de Industria, Comercio, Servicios y Turismo de Santa Cruz*
- CADEPIA - *Cámara Departamental de la Pequeña Industria y Artesanía*
- CDIC - *Cámara Departamental de Industria de Cochabamba*
- CFR – Code of Federal Regulations
- CNI - *Cámara Nacional de Industria*
- CoC – Chain of Custody under FSC standards
- CONSUDE – Swiss International Cooperation
- CPTS – *Centro de Promoción de Tecnologías mas Limpias*
- CTO - Cognizant Technical Officer
- DCA - Development Credit Authority
- EEIS - Environmental Evaluation and Information System
- EMS - Environmental management system(s)
- ER - Environmental Review
- ESC – Economic Service Center
- FAO – Food and Agricultural Organization of the United Nations
- FLO - FairTrade Labeling Organization
- FSC – Forest Stewardship Council
- HACCP - Hazard Analysis and Critical Control Point
- IBNORCA – Instituto Boliviana de Normalización y Calidad
- IBTA – *Instituto Boliviano para la Tecnología Agropecuaria*
- IDA - Integrated Development Activity

IDB - Inter-American Development Bank
IEE - Initial Environmental Examination
IFOMA – International Federation of International organic Movements
IPM – Integrated Pest Management
ISO - International Organization for Standards
MEO – Mission Environmental Officer
OH&S - Occupational, health and safety
OHSAS - Occupation Health and Safety Assessment Series
P2 - Pollution prevention
PEA – Programmatic Environmental Assessment
PERSUAP – Pesticide Evaluation Report and Safer Use Action Plan
QWEST – Quality, Workplace, Environment and Safety Tool
RAI – *Registro Ambiental Industrial*
RASIM - *Reglamento Ambiental del Sector Industrial y Manufactoreo*
SA 8000 – Social Accountability standards
SME – Small and medium enterprise(s)
SYSO – *Sistema de Gestión de Seguridad y Salud Ocupacional*
USAID – United States Agency for International Development
UPSA - Universidad Privada de Santa Cruz
WHO – World Health Organization

EXECUTIVE SUMMARY

In the course of achieving the USAID/Bolivia mission's Strategic Objective for its Integrated Development Activity (IDA), environmental costs and benefits can be incurred. In compliance with 22 CFR Section 216 of the Foreign Assistance Act that regulates environmental oversight of USAID projects, a Programmatic Environmental Assessment (PEA) of the IDA WAS conducted in May – June 2006. Given the relatively large weight of the Rural Competitiveness Activity (ARCo) in the IDA program, contributed a consultant part-time to the PEA team. The objective of this input by ARCo was to help ground the work and deliberations of the PEA team in the ARCo's strategy and approaches for addressing competitiveness of rural sector businesses and associations. To this end, the present report focuses on how an environmental competitiveness approach can contribute to both greater compliance with the letter and spirit of 22 CFR Section 216 and more sustainable progress toward IDA and ARCo goals.

ARCo's main thrust is to help remove constraints to more efficient on- and off-farm rural enterprises through a private sector focused and market-led approach. The project also seeks to establish and strengthen linkages with international and local markets, strengthen producers associations and private agribusinesses, remove policy and trade bottlenecks affecting competitiveness, and facilitate access to business finance for rural enterprises. For these reasons environmental considerations in the PEA as they relate to ARCo's main goal of improving the competitive position of rural enterprise should be addressed at two fundamental levels: environmental compliance and environmental competitiveness, with the concept of "environmental competitiveness", stretching across environmental, worker safety, health and social corporate responsibility issues. In the context of the issues and associated measures developed for the PEA and a determination to integrate an environmental management approach into the process, the following approaches specific to ARCo were discussed at length with the PEA team,

some of which were incorporated into the draft PEA. Regardless of the content of the final PEA document, the se approaches will complement approved mitigation measures, in keeping with the goals and strategy of the ARCo program:

- Compliance with Bolivian environmental law
- Environmental “benchmarking” as part of overall competitive evaluation.
- Expand and open market outlets that require higher environmental, worker safety and socially responsible management
- Create incentives to improve environmental performance of project operators
- Specialized training and technical assistance
- Pesticide and Integrated Pest Management (IPM)
- Potential role of ARCo in coordination and oversight of a strategic plan for road and infrastructure development in the Yungas
- Environmental monitoring, evaluation and reporting

Grades and standards are the language of trade that developing country producers and exports cannot ignore. Standards are both complex and evolving, incorporating features that go beyond simple quality, to the spheres of safety, environmental management, and human rights. Enterprises large and small, even in the Chapare and Yungas, will have to increasingly pay heed to such international grades and standards if they hope to compete in these markets. Bolivia is fortunate in that there are numerous groups and organizations that offer services in environmental management systems (EMS), certification, and cleaner production to enterprises of all size, thus numerous opportunities for ARCo to join efforts to deliver training and technical assistance to enhance the performance of its export clients in these and other areas.

MAIN RECOMMENDATIONS

Facilitation of capacity building in environmental management systems should be a priority. In many cases, this will contribute as much, or in some cases more, than anything else ARCo can do to improve the competitiveness and long-term viability of client business as well as ensure regulatory compliance with Bolivian law and 22 CFR Reg. 216. Efforts to improve environmental performance should be done in an integrated manner in the context of firms’ overall business strategy, not as an add-on to simply comply with USAID and national regulations.

The starting point for this effort is to strengthen the internal capacity of ARCo in environmental competitiveness issues and market standards through training of staff and operators to define ways to routinely incorporate these themes into project operating procedures and those of their stakeholders and client firms. It will take the full commitment of ARCo and USAID management if these recommendations and others that will come to light in the PEA, are to be meaningfully translated into concrete actions. This will also require a commitment to make resources already available for short and long technical assistance, specialized training and, setting up internal screening procedures useful to project staff and client firms alike to identify risks and opportunities.

1. ARCo should require that all client firms are compliant with Bolivian environmental law (No. 1333) and, in the case of the forest product enterprises, Bolivian forestry law (No. 1700). As with other information required by ARCo for enrolling businesses in assistance programs, client firms should present copies of documents supporting compliance (*Licencia Ambiental, Registro Ambiental Industrial, Certificado Forestal de Origen, Aprobación de Plan de Manejo Forestal*, etc.). Firms that cannot demonstrate compliance with national environmental regulations, a recognized problem particularly for smaller enterprises, should be required to do so within a reasonable timeframe once they enter the ARCo program.
2. Increasingly strict environmental, worker and consumer safety and social responsibility practices and norms by sophisticated and demanding export markets require that these considerations become a fundamental and integral part of client firms' competitive models, business plans and general operating procedures. This should be done early, beginning with initial contacts and application of "environmental benchmarking" and other diagnostic tools that ARCo and ESC may apply.
3. Openness and "buy-in" by top management to improve environmental, safety and social performance should be one of the criteria used by ARCo and the Economic Service Center (ESC) operators to decide which firms to accept into its assistance program.
4. As with other competitiveness factors, the concept of "continuous improvement" should ground specific interventions by ARCo, ESC operators and client firms in EMS with the goal of instilling the central role environmental, safety and social considerations play in the ability of enterprises to compete in national and international markets.

5. ARCo client firms should be given guidance in evaluating the feasibility and advantages of applying international certification and standards systems to their operations. As part of its overall marketing efforts, ARCo should track and distribute to stakeholders information on market trends and requirements for certified products in different sectors.
6. An additional fulltime national Environmental Management advisor should be hired for at least a 12 month period who would be responsible for internalizing EMS, worker and consumer safety, and social responsibility concerns and opportunities routinely into all project operations - planning, implementation methodologies, training, technical assistance, market development, monitoring, and evaluation. Another fulltime advisor in environmental planning would be required if coordination and oversight of a Yungas road and infrastructure strategic plan were to be included in the ARCo contract.
7. Environmental management systems, national regulatory compliance and market standards should be central themes in ARCo training modules. Specialized, higher-level training should be done early in ARCo to familiarize project staff, business center operators, business trainers, and top management of client firms in:
 - Clean production
 - Pollution prevention (P2) and control
 - EMS and risk assessment
 - Market standards and grades
 - Regulatory compliance
8. ARCo should take immediate steps to identify and assist high-risk client enterprises to address pressing environmental and safety hazards.
9. The pool of national technical expertise offered by ARCo assistance programs through the ESCs should be expanded to include assistance in EMS, IPM, cleaner production, market standards and certification, worker safety, and consumer health.
10. Synergies between ARCo and other projects, programs and institutions should be maximized to take advantage of certification, cleaner production, technical assistance and training services. Key counterparts and collaborators could include: CNI, *Cámara Departamental de Industria de Cochabamba*, CAINCO, IBNORCA, UPSA, CADEPIAs, CPTS and FUNDES.

11. The user-friendly Quality, Workplace, Environment and Safety Tool environmental diagnostic and decision-making tool (QWEST) currently under development by Chemonics would help ARCo and its operators analyze partner/client operations and develop “environmental competitiveness” plans that address, in an integrated fashion, the four - Cs of environmental competitiveness: cost-savings, compliance with regulations, conformity to market standards, and corporate responsibility.
12. The ARCo monitoring and evaluation system should include indicators to track environmental regulatory compliance, application of environmental management systems, buyer requirements, certification and audits of client operations, and exports to certified markets.
13. The investment needed to implement the above recommendations and measures outlined in the report varies between \$ 1.2 to 1.35 million over the life of ARCo, depending on the project’s eventual role in coordination and oversight the Yungas road improvement strategy.

SECTION I

INTRODUCTION

In the course of achieving the USAID/Bolivia mission’s Strategic Objective for its Integrated Development Activity (IDA), environmental costs and benefits can be incurred. In compliance with 22 CFR Section 216 of the Foreign Assistance Act that regulates environmental oversight of USAID projects, an initial environmental examination (IEE) identified issues and their relative significance for each of the IDA components. Interventions financed by USAID through various contractors and grantees that posed significant potential impacts were given a positive determination under the Threshold Decision, with the recommendation that a more in-depth environmental evaluation be conducted to expand on main issues identified, assess potential impacts, and propose specific measures to mitigate negative impacts and advance positive outcomes that will contribute to IDA goals and enhance the environment.

The size and scope of the IDA program and the breadth of the issues identified in the IEE led to preparation a comprehensive scoping document for a Programmatic Environmental Assessment (PEA) of the IDA. A multi-disciplinary team was organized by the International Resources Group under an EPIQ IQC task order. Given the relatively large weight of the Rural Competitiveness Activity (ARCo) in the IDA program, it was agreed that ARCo contribute a consultant part-time to the PEA team. The objective of this input by ARCo was to help ground the work and deliberations of the PEA team in the ARCo’s strategy and approaches for addressing competitiveness of rural sector businesses and associations. To this end, the present report focuses on how an environmental competitiveness approach can contribute to both greater compliance with the letter and spirit of 22 CFR Section 216 and more sustainable progress toward IDA and ARCo goals.

The environment is a crosscutting theme spanning all aspects of the value chain for different crops and agricultural products. Small producers dependent on a fragile natural resource base face a host of challenges to remain competitive in increasing globalized national and international markets. Finite water supplies for irrigation and processing must be efficiently utilized and

protected. Soil fertility on ever smaller parcels has to be conserved. Indiscriminate clearing of forests on the steep slopes of the Yungas region can be catastrophic for the region's rich biodiversity and lead to unacceptable soil erosion and sedimentation of waterways. The high cost of agricultural inputs and potential health and environmental risks from an overdependence on pesticides are other considerations that affect the competitiveness of small producers.

ARCo's main thrust is to help remove constraints to more efficient on and off-farm rural enterprises through a private sector-focused and market-led approach. The activity will strengthen rural competitiveness by inserting Chapare and Yungas value chains into emerging regional trade regimes and local markets to generate employment and increase incomes from licit activities. As such, ARCo supports development and strengthening of production, post-harvest, and processing. The project also seeks to establish and strengthen linkages with international and local markets, strengthen producers associations and private agribusinesses, remove policy and trade bottlenecks affecting competitiveness, and facilitate access to business finance for rural enterprises.

Economic Service Centers (ESCs) are the primary mechanism through which ARCo seeks to strengthen the production chains in the economic corridors. The ESCs operate in the intermediate cities located in the corridors of the Cochabamba Tropics (Villa Tunari and Ivirgarzama) and the Yungas (Coroico and Caranavi, the latter since suspended). Their work consists of: (i) helping local products and services meet market requirements, i.e. requirements of customers or buyers in and outside the country; (ii) improving the efficiency of productive and commercial processes, and (iii) supporting producers to organize supply in the context of production chains. The fundamental objective of the ESCs is to promote economic development in the corridors based on generating sales and creating jobs. Consistent with goals described above, a key focus for the centers is to include new actors and activities, to broaden the beneficiaries of alternative development. Furthermore, the centers have more aggressively pursued opportunities to support producer groups to change the misconception that the project's focuses on larger private enterprises. As the main interface for assistance offered through ARCo to local rural enterprises, the ESCs will have a critical role in identifying how environmental factors affect the competitiveness of individual operations. As such, many of the recommends presented in this report are relates to strengthening the skills and methodologies of the ESC operators.

The inputs and recommendations presented in this report were discussed in detail with the PEA team during the issues identification phase of its deliberations. ARCo top management (COP and DCOP) were briefed in detail as to the main recommendations and budget proposed for pursuing a proactive environmental agenda in keeping with ARCo goals and objectives. Finally, as this report was preparation as the draft PEA was released for comment, the

consultant provided input to the draft that was incorporated into to the comprehensive response to the PEA prepared by ARCo and sent to the ARCo CTO and PEA team for their consideration. This report largely takes into account the observations to the draft PEA.

SECTION II

ENVIRONMENTAL COMPETITIVENESS

The competitiveness of Bolivian producers and processors in both international and national markets is increasingly dependent on their ability to meet rapidly evolving market standards and regulatory requirements. Beyond basic quality, many export markets require conformance to national and international standards for worker and consumer safety, environment, and phyto-sanitary controls. For this reason environmental considerations in the PEA as they relate to ARCo's main goal of improving the competitive position of rural enterprise should be addressed at two fundamental levels: **environmental compliance** and **environmental competitiveness**. The standard "impact – mitigation" approach of many environmental assessments can be greatly improved if market dynamics can be brought to bear to affect environmental and social concerns in a positive way. The concept of "environmental competitiveness", stretching across environmental, worker safety, health and social corporate responsibility issues allows projects and stakeholders to analyze their performance in these areas in the larger context of best business management practices which encompasses the following fundamentals of a "four-C" outcome:

- **Conformity** – Business, especially those selling into export markets, are compelled by buyers to meet specific and demanding market standards
- **Cost** – Companies are constantly looking for ways to cut costs and increase productivity, areas where environment management systems (EMS), clean production and pollution prevention (P2) can have significant impacts
- **Compliance** – Firms are increasingly responsible for recognizing and proposing mitigation for activities and businesses are coming under increasing scrutiny by authorities, buyers and consumers to comply with regulations

- **Corporate responsibility** – Whether at a neighborhood level or internationally, enterprises of all sizes are being called to task for upstream and downstream impacts generated beyond the confines of their immediate operations.

Building on the initiatives of previous IDA projects, the sister Bolivia Trade and Business Competitiveness project (BTBC), and several important national programs, there are excellent opportunities for more systematic integration of “environmental competitiveness” criteria in the ARCo project, if not to the broader IDA program, to assure not only higher environmental regulatory compliance, but more importantly, greater attention by client firms to market-based signals that lead to voluntary behavioral changes and positive impacts that will be sustainable beyond the life of the project. This can be achieved in large measure by adopting EMS, P2, and market standards approaches at the firm-level. To this end, ARCo should:

- Identify opportunities to have as a basic feature of ARCo II *routine operating procedures* the notion of “environmental competitiveness”:
 - Introducing environmental compliance and management issues in “competitiveness benchmarking” and business planning
 - Assessing risks and controlling costs
 - Spurring investment in innovative, cost-effective clean production technologies
 - Systematically addressing environmental issues in project training and technical assistance
- Deepen understanding of international standards and addressing limitations to their adoption by ARCo stakeholder.
- Keep client enterprises compliant with local laws, export market standards and, thus, open for business
- Increase productivity and reduce risk
- Improve access to dependable suppliers and higher-end, value-conscious markets
- Focus environmental concerns on the bottom line.

SECTION III

ENVIRONMENTAL MANAGEMENT SYSTEMS—BASIC CONCEPTS¹

With the goal of moving ARCo to an environmental competitiveness framework, it is useful to briefly present some of the basic concepts of environmental management systems or EMS. EMS is first and foremost a planning and implementation tool that a company or organization can employ to manage the way it interacts with the natural environment. Unlike environmental regulations, EMS focuses on a company's processes and operations rather than its emissions, effluents and wastes; rather, a company's emissions, effluents and wastes are the results or way the effectiveness of an EMS is measured. An EMS is built around a company's operations rather than just checking the status of its compliance with a collection of unrelated and unprioritized environmental regulations or norms. It is also built on principles of strategic management just like any other management tool a good manager would want to use to improve productivity, reduce costs and reduce risks. In sum, an EMS is a system for continually improving the environmental performance and thereby the business and sustainability of a company.

Simple or complex, an EMS costs a company time, staff energy, and money. The motivation for top management to invest in an EMS is that it pays. Any sound EMS will be productive, generating improvements in environmental performance, operational efficiency and environmental risk reduction for enterprise of any size that all contribute to the company's bottom-line. Establishing and maintaining an EMS in an organization responds to at least ten types of drivers:

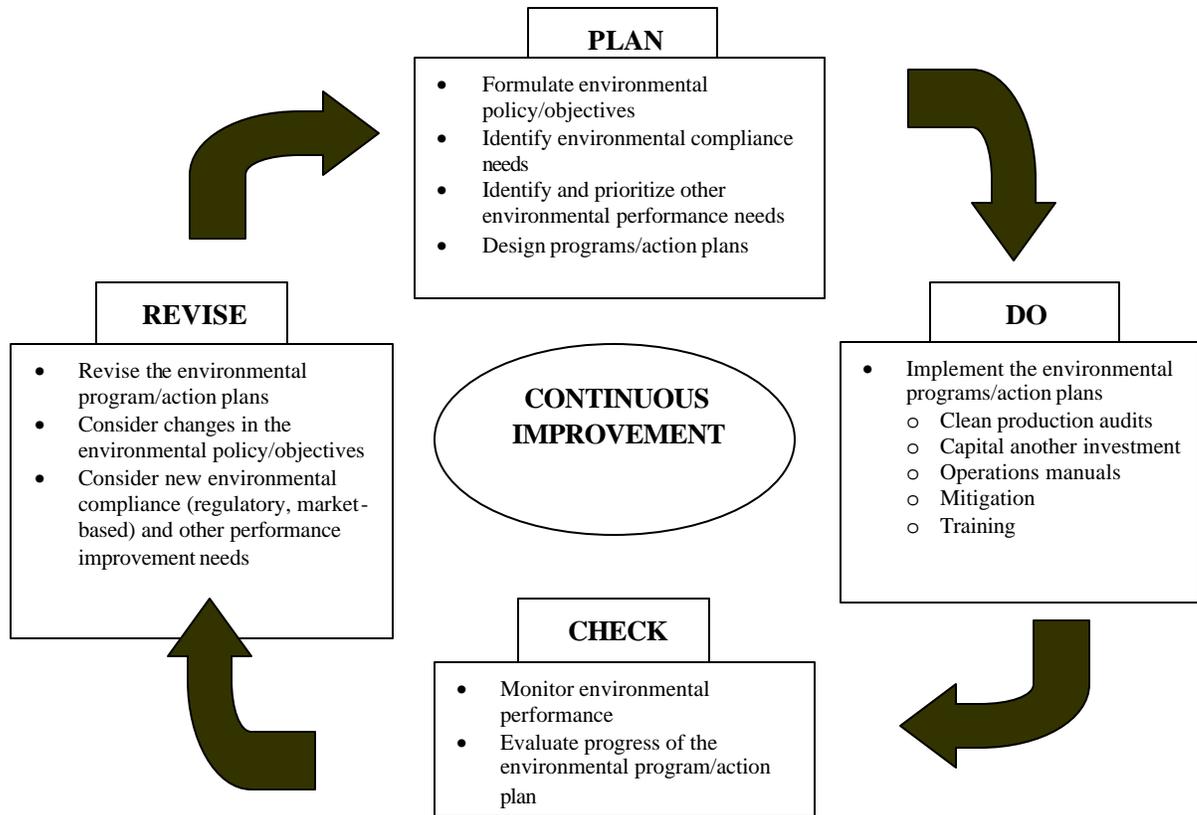
- Minimize the cost of operations required for environmental management and compliance (energy and raw material utilization, Law 1333, PEA)

¹ This discussion is largely drawn from Bendavid-Val, A. and N. P. Cheremisinoff, *Achieving Environmental Excellence – Integrating P2 and EMS to Increase Profits*, 2003.

- Improve environmental performance at lower cost (prioritize actions)
- Improve overall enterprise management and business performance (spill-over effects)
- Prepare for coming trends in environmental management (in Bolivia, sector-specific regulatory norms like RASIM)
- Improve prospects for long-term sustainability
- Reduce overall operating costs (energy, raw materials, waste treatment,
- Achieve high rates of return on capital investments (choice of equipment and processes)
- Lower capital and other business service costs and greater access to capital (lender environmental requirements)
- Improve market access (conformance with buyer-driven requirements)
- Achieve better public, community and government relations (image and goodwill)

Some companies, usually larger companies selling to more sophisticated markets (i.e. INDATROP, ANDITRADE, Fabopal, CEIBO, Boli-Espana) will reap additional benefits of ISO 14001 certification that verifies compliance with ISO standards for an EMS. At whatever level may be appropriate for a given organization, like any other planning and implementation systems, consistent application of the basic elements of EMS – planning, implementation, monitoring and revision – will lead to continual improvement of performance. The dual application of an EMS approach and responsiveness to rapidly evolving market standards and regulatory requirements can result in outcomes that

Figure 2.1 Basic Elements of an EMS



SECTION IV

MAIN ENVIRONMENTAL ISSUES IDENTIFIED IN THE PEA

As a part-time member of the PEA team, the consultant contributed to definition of the principal environmental issues related to implementation of the *overall IDA program*. These environmental issues and proposed remedial and proactive measures were discussed at length with members of the IDA team and mission environmental office and became the framework for preparation of the PEA, including mitigating measures and recommendations reflected in the Draft PEA document.

A. PRODUCTIVE VALUE CHAINS

- Issue: Overcoming critical bottlenecks
- Measures:
 - Examine environmental factors of individual production chains
 - Integrate environmental management as a key competitiveness factor
 - Seek synergies with other programs and projects
 - Provide specialized training in environmental management and markets for certified products

- Issue - Incentives to improve environmental performance
- Measures:
 - Use markets to drive better environmental performance of businesses

- Incorporate incentives to encourage better environmental management into contracts and sub-contracts

B. AGRICULTURE AND PESTICIDES

- Issue: Need for pesticides in many agricultural production chains in the Chapare
- Measures :
 - Orient production towards greener markets to lessen pesticide use and reduce production costs.
 - Independent monitoring of pesticide use, practices promoted by the IDA program and residues on products
 - IBTA – Carry out demand-driven integrated pest management applied research through IBTA-Chapare
- Issue: Expansive organic production in the Yungas
- Measures:
 - Do not promote crops in the Yungas that would require pesticides to prevent contamination of existing organic production.
 - Continue to move producers toward markets for environmentally certified products

C. SOCIAL AND PRODUCTIVE INFRASTRUCTURE AND ROAD IMPROVEMENT (ESPECIALLY IN THE YUNGAS)

- Issue: Deforestation related to road improvement
- Measures:
 - Prepare a strategic plan for road improvement and productive infrastructure in the Yungas
 - Assure that annual planning and field implementation follow strategic plan guidelines
- Issue: Weak environmental supervision
- Measures:
 - Provide adequate resources for environmental oversight
 - Provide field personnel with adequate authority to take immediate corrective actions
 - Improve linkages between general annual planning and field execution of specific works
 - Reinforce environmental parameters in the contract between USAID and Camino Vecinales
 - Perform periodic independent environmental audits of infrastructure investments
- Issue: Partial implementation of mitigation measures in the field
- Measures:
 - Prepare environmental practices manual

- Incorporate environmental requirements and measures into construction contracts
- Train field supervisors and construction contractor

D. ACCUMULATIVE IMPACTS

- Issue: Degradation of watersheds threatens investments in productive infrastructure
- Measures:
 - Expand watershed management interventions (with municipalities)
 - Support incipient watershed management committees in the Chapare
 - Actively seek closer coordination among donors
- Issue: Loss of forest cover
- Measures:
 - Improve governance of TCOs by indigenous groups
 - Prioritize land titling of TCOs.
 - Monitor accumulative environmental impacts at the watershed level and widely disseminate results (local authorities, private sector, general public)
 - Key indicators:
 - 1) Water flows and quality
 - 2) Biodiversity of fish species
 - 3) Forest cover – extent and changes by type
 - 4) Crop yields as a proxy for soil fertility

SECTION V

APPROACHES AND INITIATIVES TO ENHANCE ENVIRONMENTAL PERFORMANCE

In the context of the issues and associated measures developed for the PEA and a determination to integrate an environmental management approach into the process, the following recommendations specific to ARCo were discussed at length with the PEA team, some of which were incorporated into the draft PEA. Regardless of the content of the final PEA document, the suggestions offered below will complement approved mitigation measures, in keeping with the goals and strategy of the ARCo program.

A. COMPLIANCE WITH BOLIVIAN ENVIRONMENTAL LAW

ARCo should verify that its client companies are in compliance with Bolivian environmental law (No. 1333) and, in the case of firms involved in wood and non-wood forest products, compliance with the Bolivian forestry law (No. 1700) should be verified as well. The procedures outlined in the RASIM (*Reglamento Ambiental del Sector Industrial y de Manufactureo*) offers an agile and less costly alternative to become compliant under Law No. 1333 that can be used by many of the firms ARCo anticipates assisting. (RASIM can be applied to any business that is involved in post-harvest agricultural operations

and processing as well as to industrial operations.) ARCo client firms that are not compliant with Bolivian law, a situation that could face many of the smaller, informal enterprises and would-be clients of ARCo-supported Economic Service Centers (ECS), should be offered instruction and technical assistance to become so over a reasonable period of time (four to six months). To this end, the ARCo environmental team should help project client firms on how to navigate the technical and administrative procedures with the Prefecture and municipal offices.

If firms are non-compliant after this period, USAID assistance should be halted. This action is first justified in the context of PEA requirements and Bolivian law. However, a second consideration is related to the eligibility criteria ARCo and the ESCs use to select firms for assistance. In cases where business owners and managers are closed-minded to addressing environmental concerns and other issues such as worker safety and social responsibility as important aspects to doing business, this may be an early indicator of just how effective other assistance offered by ARCo to such firms will be in other spheres of their operations. Openness to improve environmental, safety, and social performance should be other criteria that ARCo and the ESCs use to decide which firms to accept into its assistance program.

B. ENVIRONMENTAL “BENCHMARKING” AS PART OF OVERALL COMPETITIVE EVALUATION.

Adequate environmental management practices and systems, occupational safety, health and social responsibility are increasingly important to buyers, importers, retailers and consumers. Equally important are opportunities that firms can reap with respect to market access, improved quality, lowering operating costs and risk, and goodwill if open to addressing these issues logically from a business perspective. The *AgroTe* operation in Senda B, Chapare has most definitively benefited from the simple diagnostic and action plan for its production chain performed by the *Centro de Promocion de Tecnologias mas Sostenibles* (CPTS) under the CONCADE project, in the form of lower energy costs, less wastage and higher productivity. On a parallel track, AgroTe has worked closely with its growers (and shareholders) to develop low -input, more integrated production systems to enable the company to enter the market for organic teas and lower production costs (and hence increase profit margins) at the farm level. A pineapple grower association in Enterazama, Chapare, APAMI, has gone organic in response to attractive market demand. Organic cacao growers in the Alto Beni who sell to CEIBO and coffee growers in the Yungas are also benefiting from modifications to their field production systems that yield higher profits as well as better environmental performance.

The competitive benchmarking methodology that ARCo carries out with clients through the ESCs should incorporate production input and waste

streams, energy usage, worker safety, consumer health, sanitary and phyto-sanitary and regulatory (both national and international) aspects of clients' operations. The inclusion of these features of a production chain will sometimes prove to be more decisive to an operation's competitiveness than quality, packaging, or marketing, and could pose greater risks to the viability of the business if not addressed. Again, training of ESC operators and ARCo staff to raise their skills in analyzing these facets of a business and developing actions in the context of overall business plans should be a first priority of the ARCo environmental team. In Annex C, an environmental benchmarking form developed by the environmental advisor on the sister BTBC II project for non-agricultural enterprises could be easily modified to the characteristics of agricultural businesses and associations that ARCo assists. Some of the risks and opportunities that could come to light from an expanded competitiveness benchmarking approach for evaluating individual operations include:

- Organization and logistics of supply chains
- Need for more precise production protocols to improve input utilization and reduce waste
- Energy audits to reduce consumption and costs
- Cleaner production technologies
- Organization and planning of production lines
- Worker training programs that address priority needs in worker health and safety, SPS, and handling and disposal of toxic and dangerous materials, especially pesticides.
- Implementation of quality control and environmental management systems based on ISO 9001 and 14001 standards, respectively
- Linking smaller operators to the supply chains of larger, more progressive companies and markets for certified products
- Proper lighting, hygiene facilities, physical plant layout, task rotation, and other workplace modification to enhance quality, safety and productivity.
- Advantages of mandatory use of available safety equipment, such as gloves, safety glasses, respirators, and ear plugs
- Control of dust, soil, and other particulate matter
- Pollution prevention (P2), wastewater treatment, input recovery systems (recycling) and monitoring

- Documentation, monitoring, and training plans
- Upgrading information technology for better cost, quality, and inventory control and marketing
- New product development that improves raw material utilization
- Export markets for certified products - ISO 9001, ISO 14001, OHSAS 18001, organic (IFOAM), Rainforest Alliance, Utz Kapeh, Green Deal and GreenGlobe 21 (tourism), Fair Trade, etc.

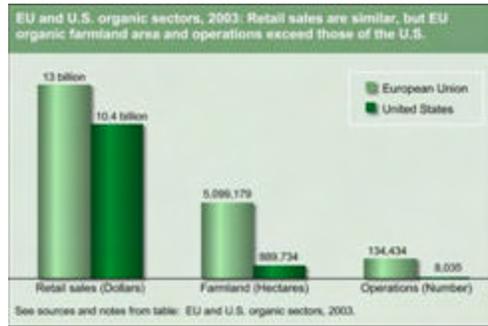
Once initial environmental benchmarking of individual firms is completed, a next step will be to prioritize problems and opportunities so that assistance and investments can be better targeted to mitigate the most serious problems and reap the greatest benefits. Finally, the pool of national technical expertise for ARCo assistance programs available to businesses through the ESCs should be expanded to include advisors in EMS, clean production technology, market standards and certification, worker safety, and Integrated Pest Management (IPM).

The user-friendly Quality, Workplace, Environment and Safety Tool environmental diagnostic and decision-making tool (QWEST) currently under development by Chemonics would help projects analyze their partner/client operations and develop “environmental competitiveness” plans that address the four- Cs of competitiveness, cost-savings, compliance and corporate responsibility in an integrated fashion. With a modest investment to complete development, QWEST would be an invaluable tool for ARCo staff, ESCs, and clients to identify and prioritize environmental problems affecting operations and urgent actions. As QWEST would be a valuable tool too for other USAID/Bolivia projects like MAPA II and BTBC, cost-sharing arrangements might be considered. (See Annex D)

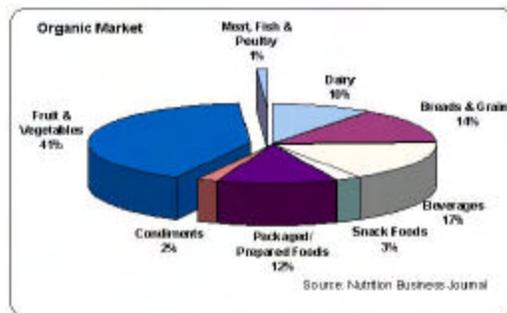
C. EXPAND AND OPEN MARKET OUTLETS THAT REQUIRE HIGHER ENVIRONMENTAL, WORKER SAFETY AND SOCIALLY RESPONSIBLE MANAGEMENT

Certification of products to international standards can give businesses a key competitiveness edge. ARCo should give special attention to expanding and opening markets for certified products that meet international environmental, social and safety standards. The pull of markets for higher value products will be the strongest incentive for businesses and associations to improve their performance vis-à-vis the environment, worker conditions and relations with communities. Client firms should be given guidance in evaluating the feasibility and advantages of applying international certification and standards to their operations.

As part of its overall marketing efforts, it would be useful for ARCo to track and distribute information on market trends and requirements for certified products in different sectors. For example, the annual growth of markets for organic fresh and processed food is growing at a rate of 25 percent worldwide while by comparison the market growth of conventional products is only 2 – 3 percent. In Bolivia, cacao and coffee producers have responded to demand for organic products that offer higher prices and ancillary environmental and health benefits at the farm level. With such high growth rates, it makes sense for ARCo to look carefully at organic market opportunities for businesses involved in exporting tea, pineapple, bananas, palm heart, turmeric, and black pepper.



Similarly, certification to other international certification standards can open new markets for many of the export-oriented agricultural production chains in the Yungas and Chapare. For example, in the late 1990's under the CONCADE program, the Rainforest Alliance “Better Banana” standard was considered for Chapare growers. In hindsight, this initiative may have been premature given the low sophistication of producer groups at the time and market outlets then restricted to domestic and Argentine markets. The maturation of producer associations since then and the recent opening of new European markets for Chapare bananas may merit reconsideration of the Rainforest Alliance standard (required by La Chiquita for all its suppliers in Latin America) or even organic certification.



Linking smaller operators to the supply chains of larger, more progressive companies and markets for certified products is another strategy that drive innovative agricultural practices, opens high-value markets and improves environmental outcomes for both growers and processors, as the experience of the La Naturalez company in Cochabamba illustrates below. El Ciebo in the Alto Beni (organic cacao), AgroTe in the Chapare (organic green and black tea) and INDATROP also in the Chapare (ISO 9001 certified palm heart; ISO 14001 certification environmental management systems under consideration) are other examples of progressive anchor companies that have recognized the opportunities that international market standards can contribute to their

position in increasingly competitive markets that are having significant positive upstream financial and environmental impacts for suppliers.

C.1 PRODUCTOS ECOLÓGICOS NATURALEZA S.A. – LINKING SMALL SUPPLIERS TO HIGHER VALUE, ECO-FRIENDLY PRODUCTION CHAINS

La Naturaleza is an integrated company specializing in natural herbal, fruit, *mate* and health teas. La Naturaleza is an outstanding example of a forward-looking, dynamic company self-described by its owner as an “*empresa eco-social*”, an expression that encompasses economic vibrancy, ecological consciousness of the impact of its actions, and social responsibility to its suppliers, workers, buyers and end-users of its products. A main challenge for the company is how to manage the increased costs related to doing business as an “*empresa eco-social*” (certifications, labor costs, raw material, specialized equipment, quality control, etc.). For La Naturaleza, the answer lays in continuous improvements in productivity, cost control and development of ever-higher value-added products for export to more sophisticated markets. Its strategic plan to 2010 calls for La Naturaleza to become a leading national “*eco-social*” company with growing exports in international markets.

La Naturaleza has a full line of teas that are processed at a small plant in Sacaba. Its main market is still domestic (55 percent of total sales), but the company is rapidly growing exports to Colombia through a strategic alliance with a like-minded local distributor and is testing markets in Mexico, Europe, and Chile. Besides the dried fruits and herbs it produces from its organically certified farm in Tarata, La Naturaleza buys primary material from small producers: mangos (Vinto); pineapple (APAMI/Chapare); green tea (AgroTé/Chapare); black tea (Yungas). Although the market for organic teas, both domestic and export, is still nascent, La Naturaleza is positioning itself for market trends to move in this direction, especially in Europe and Brazil. As a consequence, it has set the goal to eventually produce only organic products, which poses special challenges if it is to continue to source primary material from small producers. La Naturaleza’s determination to do so is demonstrated by its support to the APAMI producer association which has begun the process of organically certifying 50 ha of pineapple in the Chapare, an achievement that many tropical agronomists who work in the region thought not feasible due to pest and disease control, soil fertility, and flowering induction problems that traditionally require chemical inputs.

La Naturaleza has been aggressive in pursuing international certification of its suppliers, processing plant and products as a fundamental pillar of applying its vision to become an “*eco-social*” firm. By the end of 2005, all suppliers and its processing plant will be on the path to organic certification under the IFOAM standard. This is being done through BoliCert, a well-established national organic service provider. (The growing interest in organically produced products in Bolivia, especially coffee and cacao, has spurred a

competitive market for certification services. Besides BoliCert, BioLatina and IMO Control are two other national companies that are internationally accredited to offer organic certification services to the IFOAM standard.) Investment of organic production and certification of suppliers is being partially done with loans from PRODEM, which holds 36 percent of La Naturaleza shares.

ISO 9001 certification is in process and viewed as an essential part of the company's goal to improve its competitive edge through tighter and more formal quality and cost control systems. For similar reasons, ISO 14001 and HACCP certification are scheduled by 2007. FairTrade, Solidarity Markets of Europe and the European Fair Trade Association are other movements that promote "just trade" through adherence to internationally recognized standards. Prompted by market opportunities in Europe, particularly with its long-time client in Italy (CTM Italia), La Naturaleza is also interested in applying these "social responsibility" standards to its operations. Taken together, La Naturaleza is applying third-party certification as a way to give international market recognition to the "best management practices" it is dedicated to following in pursuit of its corporate vision. The La Naturaleza business model and experiences offer many lessons that could be applied to other agro-industrial and food processing firms of all sizes.

The firm's majority stockholder prioritized possible future assistance in the following areas:

- Analysis and modernization of its present processing facilities, including clean production and energy audits
- Identification and penetration of organic export markets
- Upgrade its information technology for better cost, quality and inventory control and marketing
- Product development
- Expand organic certification to new suppliers

D. INCENTIVES TO IMPROVE ENVIRONMENTAL PERFORMANCE.

Indicators should be developed to measure the performance of ESCs in proactively incorporating environmental compliance and management into their operations and those of their client firms. In the same way that ARCo has built economic incentives into the contracts of the ESCs (and other ARCo operators) to motivate superior progress in relation to sales, jobs and other goals, similar incentives should be considered by ARCo to fully integrate environmental factors into ESC operations and encourage their client businesses to strive for high environmental performance. This would require a

modification of ESC contracts (with USAID concurrence). Conversely, as has been suggested by the Mission Environmental Officer for the contracts of IDA primer contractors, ARCo sub-contracts, grant agreements and other implementation instruments should also include penalties and other consequences for operators that are non-compliant with IDA environmental requirements and thresholds. USAID should review the feasibility of including such incentives and disincentives in the road improvement contracts implemented through its Caminos Vecinales component.

E. SPECIALIZED TRAINING AND TECHNICAL ASSISTANCE

ARCo is a rural competitiveness project. As such environmental management systems, compliance with national laws and USAID regulations and the importance of market standards should be central themes in training modules and technical assistance offered either directly by ARCo staff or through the ESCs. The insertion of these aspects of competitiveness can be applied to varying degrees to all enterprises regardless of their size, and should begin at the first contract between client firms.

In conversations with the ARCo environmental advisor and operators of the Villa Tunari ESC, it was agreed that such a proactive approach to environmental aspects of a firm's competitiveness would be beneficial for all parties. Nonetheless, the ESC operators indicated that their knowledge of such practices, like "environmental benchmarking", market trends for certified products and Bolivian and USAID regulatory requirements was very low. Upgrading the skills of ESC operators and ARCo technical staff in these topics should be a first priority for the ARCo environmental team.

A continuous training program for IDA technical staff, ECS operators and business managers should cover the following topics:

- Environmental management as a central competitiveness theme.
- Environmental Management Systems (EMS adapted to small and medium enterprises
- Cleaner production technologies and practices
- Pollution prevention
- Market standards and internationally recognized certification systems
- Legal and regulatory requirements and norms

This program would be organized around a set of modules tailored to specific values chains:

- Environmental competitiveness and risk analysis (benchmarking) – benefits, costs and opportunities
- Introduction to EMS (motivations, benefits and costs)
- Markets – environmental requirements, trends
- Auto-evaluation of environmental risks and opportunities
- EMS plans – prepare and implement simple EMS plans with established progress markers and internal documentation by the firm
- Monitoring
- Calculation of costs and benefits

Didactic and extension materials, many already available from various government and development projects, should be widely distributed to ARCo clients and stakeholders directly or through the ESCs. Among the more important topics are:

- Environmental procedures under RASIM (available through the *Cámara Nacional de Industria*)
- Auto-diagnostic guides to reveal the most common environmental problems facing priority sectors or value chains (BTBC has developed guides for its most important sectors; See Annex D)
- Cleaner production guides (CPTS has developed guides for various processes and agricultural practices)
- Market grades, standards and certification programs
- Pesticide use and handling and IPM practices

F. PESTICIDES AND INTEGRATED PEST MANAGEMENT

Pesticide use by Chapare and, to a lesser extent Yungas, growers has been one of the most problematic, contentious and persistent environmental, marketing and health issues facing IDA programs past and present. Reg. 216 requirements for pesticides use, either directly or indirectly supported by USAID- financed projects, are clear. First, a separate environmental assessment is required as was done in 1993 under the CORDEP project and 2001 under CONCDAE program, or a Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP). Second, normally only pesticides classified for “General Use” by the U.S. Environmental Agency can be purchased or promoted. Finally, any pesticide use contemplated in USAID-supported

activities must be considered in the context of an Integrated Pest Management program (IPM) that considers pesticides as only one of many practices available to agronomists and producers to avoid significant economic damage to crops and livestock. Although IDA has moved research and extension programs toward IPM approaches, use of only EPA-approved products and better worker safety, assistance programs have been dispersed over a very wide universe of IDA stakeholders in the Chapare and priorities have not always been well-focused. As a result, progress in the correct selection, proper use and handling of products has been spotty.

Especially Chapare agricultural enterprises will continue to depend on pesticides as an essential input that can not be eliminated. Unlike previous IDA programs, ARCo does not assist whole value chains or sectors, but rather individual enterprises, with assistance defined by their business plans. As ARCo now faces the challenge of making crops more competitive in national and international markets, the issue of how to assist these agricultural enterprises to use pesticides efficiently and effectively will be increasingly important if not paramount for some value chains.

As in most parts of Bolivia and other developing countries, handling and application of pesticides by producers supported by past IDA projects is generally poor. These deficiencies expose farm families, laborers and downstream water users to unacceptable health risks, increase production costs, and have significant impacts on biological systems. The World Health Organization (WHO) estimates that on average 50% of the population engaged in agricultural in developing countries suffers from pesticide intoxication. In developed countries the figure is closer to 3%. Pesticide residues levels beyond tolerances set by FAO, USEPA and WHO can put consumers at risk and, if detected, put in jeopardy future sales to high-end export markets.

The market-led, enterprise focus of ARCo provides an opportunity to reframe the issues and responsibilities about pesticide use by IDA stakeholders and to take more concerted, focused actions that still ensure compliance with Reg. 216. The competent use of chemical pest controls can reduce production costs, raise quality, and increase the yield and reliability of production. The improper use of pesticides frequently raises production costs, invites resistance by pests to chemical controls, exposes field workers to significant health risks, and dangerously increases market risks if chemical residues above tolerance limits are detected.

The issue of how to support IPM research and extension in the IDA program was debated by the PEA team. In the past, IBTA-Chapare has taken the lead on research, with agendas sometimes driven by technicians' interests rather than market or producer needs. Extension programs of varying stripes then delivered IPM assistance to individual farmers and producer associations,

usually through one-off interventions. This approach has yielded unsatisfactory results and should not be repeated, especially since future USAID support to IBTA-Chapare is doubtful. Regardless of the future of IBTA-Chapare, the usefulness of an expensive research program specific to the Chapare should be questioned since many off-the-shelf practices and technologies already exist. An alternative to past models could include a four-pronged approach consisting of:

1. Conduct a PERSUAP. Since ARCo will base its assistance on business plans, it will become associated with pesticide use and, therefore, must ensure that its clients adhere to USAID Pesticide Procedures. ARCo should conduct a PERSUAP as soon as possible. The PERSUAP will define pesticide use, training and technical assistance parameters that will guide project assistance to clients whose production chains require the use of pesticides. Compliance with PERSUAP pesticide-use restrictions would then be required in business plans and assistance agreements. A scope of work developed for an agricultural project in Guinea is included in Annex C as a model

2. Provide specialized assistance to client enterprises in IPM. If IPM practices are to be applied more widely and effectively, assistance needs to be more focused. ARCo support for IPM should be directed at the enterprise or association level through business plans. Environmental benchmarking of enterprise operations should be a standard operating procedure that would reveal the risk level of ESC clients stemming from non-compliance with Reg. 216 pesticide procedures and, as importantly, non-conformance with markets standards due to improper pesticide use and inadequate monitoring of residues. The same rapid assessment would cast light on where IPM could help clients capture productivity gains – lower costs, increase yields, improve quality. This type of market-driven, client-focused technical assistance is already being tested by ARCo in the Chapare to help growers better access markets by addressing specific pest problems in banana and papaya through an IPM approach.

3. Monitor pesticide residues. Compliance with tolerance limits for pesticide residues required by export markets will be critical to opening and staying in those markets. Market and health risks call for a concerted monitoring program across the production chain not only at PROCEB/SENASAG or other inspection stations once products have been packed and being shipped. Specialized technical assistance and training should be considered to strengthen enterprises' understanding of the economic and environmental risks posed by incorrect pesticide use and how to undertake simple monitoring of their growers and suppliers. The level of training and assistance should be decided on a business by business basis for specific product lines according to the level of risk revealed by the environmental benchmarking.

4. Promotion of organic or other international standards to minimize pesticide use. As already described above, organic and other green markets

can provide the strongest incentives to reduce or eliminate pesticides. Even products where pesticides (and chemical fertilizers) were *de rigueur* in the past in the Chapare, the use of non-chemical practices have grown in popularity less in response to regulatory requirements and environmental concerns than to control rising production costs. Pineapple is a case in point, where organic production, once thought impossible due to growing conditions in the Chapare, is now being practiced by a number of producers. Given the strong “organic movement” already established in the Yungas, ARCo should not promote pesticide use in other non-organic production that might inadvertently put at risk established organic production in neighboring parcels.

G. YUNGAS ROAD IMPROVEMENT – ARCO’S ROLE

During the meeting between the PEA team and USAID to present principle issues and preliminary findings and recommendations, it was agreed that road improvement in the Yungas and Alto Beni poses some of the greatest environmental risks of any IDA component from deforestation, loss of biodiversity, soil erosion and degradation of water resources. Preparation of an overall road (and productive) infrastructure development plan or strategy is one way to avoid these potential environmental and economic costs as had happened in the Chapare from the unplanned expansion of the rural road network in the 80’s and 90’s. A road improvement strategy for the Yungas and Alto Beni would serve too as a counter-weight to the sometimes strong political and social pressure placed on Caminos Vecinales by municipalities, *sindicatos* and communities to approve road projects that often make little economic sense. It was agreed too that the current decision-making process for the Yungas road improvement program is flawed in that once broad annual targets and budgets are approved, selection of site-specific projects was largely left to the discretion of field engineers with little or no environmental evaluation or oversight.

It has been proposed that ARCo coordinate preparation and oversight of the Yungas and Alto Beni infrastructure development plan that would guide and prioritize road improvement projects based on economics, environmental and social criteria. ARCo should consider assuming this responsibility if this new activity and associated costs can be incorporated into the ARCo contract and if roles and responsibilities between the USAID IDA team, Caminos Vecinales, Government of Bolivia and ARCo are clearly defined regarding criteria guiding development of the strategic plan, approval of the plan, selection criteria and decision-making of individual road projects, inclusion of general and specific mitigation measures in subcontracts, and the procedures for issuance of stop-orders in cases of non compliance. A fulltime environmental planner, short-term assistance and corresponding logical support would be needed to coordinate preparation of the plan and oversee its implementation at an estimated cost of \$150,000 over the life of the project.

H. ENVIRONMENTAL MONITORING, EVALUATION AND REPORTING

Environmental performance in ARCo would be made more robust by incorporating the Environmental Evaluation and Information System (EEIS) developed by the Project C-23 into its existing monitoring and evaluation system. When demonstrated during a session with the PEA team, the EEIS proved to be a very useful and easy to use tool that has the capacity to track regulatory compliance, identify environmental risks at the field level, and guide users toward application of specific measures and practices. Consideration should be given to expanding the EEIS include the Yungas and Alto Beni regions where IDA operates. ARCo should design reporting requirements for all its implementing partners, i.e., quarterly reports have section on environmental compliance. Likewise, ARCo progress reports should address progress in implementing measures and requirements approved in the IDA PEA.

SECTION VI

CREATING SYNERGIES

INTER-INSTITUTIONAL COLLABORATION FOR IMPROVED ENVIRONMENTAL MANAGEMENT AND COMPETITIVE PERFORMANCE

Bolivia is fortunate in that there are numerous groups and organizations that offer services in EMS, certification, and cleaner production to enterprises of all sizes. As the following demonstrates, numerous opportunities exist where ARCo can join efforts to deliver training and technical assistance to enhance the performance of its export clients in these and other areas.

A. CLEANER PRODUCTION—CPTS; FUNDES

CPTS (*Centro de Promoción de Tecnologías Sostenibles*) is a leading Bolivian provider of cleaner production services to companies and organizations of all sizes. Institutionally, the CPTS is embedded in the CNI (*Cámara Nacional de Industria*) and has received support from USAID for seven years (the cooperative agreement with the USAID Environmental Office ending in September 2005 has been recently extended to September 2008). CPTS has also worked with the Alternative Development program to provide assistance to more than 30 processing plants and a number of hospitals and hotels in the Chapare.

CPTS approaches cleaner production issues as an integral part of an organization's "Total Quality Management" program and applies a step-wise methodology in its technical assistance:

1. Preliminary visit to size up the extent of a company's interest in cleaner production and identify obvious opportunities
2. Conclusion of a service contract with strict confidentiality clauses
3. Internal audit and benchmarking:

- Material balances
 - Energy consumption
 - Water use and discharge
 - Organization of production chains and technologies
 - Inventory systems
 - Worker safety and emergency preparedness
 - Infrastructure
 - Human resources
 - Regulatory compliance
4. Report with detailed recommendations, financial analysis, and investment plan with a goal of a minimum return on investment of 11 percent. The report can be the starting point for a more comprehensive EMS, eventually leading to ISO 14001 certification as in the case of PRAXAIR and Aceites Finos.
 5. Training
 6. Follow -up visits at 6 and 12 months

CPTS has provided services to more than 80 companies and organizations across a wide spectrum of sectors and enterprises scales. CPTS typically charges US\$300- 5,000 for these services depending on the company's size and complexity of its operations.

Together with FUNDES, CPTS has worked on publication of comprehensive cleaner production manuals for several of Bolivia's more important sectors, where big gains in efficiencies, P2, and safety can be achieved: wood products, textiles, tanneries, abattoirs, and meat processing. The manuals, however, are technical and appear not to be user-friendly for most business managers. The manuals will be the basis for drafting legal environmental norms and regulation specific to sectors that will be promulgated by VICE (Gabriela Murillo is the main contact) as part of the RASIM regulatory framework under Bolivian environmental law. ARCo should collaborate with CPTS and FUNDES to produce abridged versions of the manuals specifically for IDA sectors and value chains.

FUNDES-Bolivia is part of the FUNDES network in Latin America and is also a leader in the promotion of cleaner production technologies. FUNDES-Bolivia has a network of more than 60 technicians based in La Paz, Cochabamba, and Santa Cruz, some of whom have been trained in cleaner production by FUNDES experts from Chile, who offer a variety of services that can take a company through pre-audits and certification:

- Internal cleaner production audits
- Cost control
- Training
- Integrated services to production chains
- Cluster formation

FUNDES also has a special fund (*Fondo de Asistencia*) to help SMEs finance cleaner production initiatives.

As BTBC II has done, ARCo should enter into discussions with CPTS, FUNDES, and other cleaner production and certification providers on how to jointly support cleaner production, energy, and natural resource and pollution audits as a basic constituent of its assistance and training package to client firms. Associated costs would be covered under the same cost-sharing arrangements used to deliver other technical assistance. Financially sound investments in cleaner production, pollution abatement, work place safety, or certification should be permissible under the proposed Authority (DCA) credit guarantee planned in BTBC II. There currently are DCA for these purposes in Peru and Central America from which to draw lessons.

**B. SPECIAL ASSISTANCE TO SMES IN CLEANER PRODUCTION—
CÁMARA DEPARTAMENTAL DE LA PEQUEÑA INDUSTRIA Y
ARTESANÍA—COCHABAMBA AND SANTA CRUZ (CADEPIA)**

CADEPIA—Santa Cruz and Cochabamba recently concluded environmental projects for SMEs funded by DANIDA and GTZ. *Proyecto Danesa de Apoyo al Medio Ambiente* was organized around four components:

1. General awareness of the relation between the environment and competitiveness
2. Profitable environmental management
 - Efficient use of inputs
 - Market standards
 - Application of environmental criteria to cost management
3. Occupational safety under the Bolivian *Sistema de Gestión de Seguridad y Salud Ocupacional* (SYSO) standard
4. Pilot actions in different sectors, focusing on simple modifications
 - Illumination
 - Ventilation
 - Noise reduction

- Layout
- Protective gear and safety training

Results include direct financial benefits, better organization, and improved occupational security and health. Pilot projects demonstrated payback periods that ranged from 4 to 12 months for investments that reduce energy and water use, raw materials, and lost worker-days. Access to credit by SMEs is the biggest obstacle to replication of pilot projects to a wider number of firms.

The GTZ-funded *Programa Mercado Verde* assisted SMEs to access green markets, especially in Europe. Surveys showed that more than 20 percent of SMEs in Santa Cruz already export, particularly those in the wood, apparel, food, and jewelry industries. It was estimated that at least 40 percent of SMEs have the potential to penetrate “green markets” with modest measures to improve operations. For example, many smaller wood processors and carpentry shops already use FSC-certified logs and lumber, but are not themselves CoC certified.

C. SUPPORT TO THE INDUSTRIAL SECTOR—CÁMARA NACIONAL DE INDUSTRIA (CNI), CÁMARA DEPARTAMENTAL DE INDUSTRIA DE COCHABAMBA (CDIC), CÁMARA DE INDUSTRIA, COMERCIO, SERVICIOS Y TURISMO DE SANTA CRUZ (CAINCO)

The national and departmental industrial chambers of industry are leaders in the promotion of sound environmental stewardship, occupational safety, and risk management, but this was not always the case. The extent to which these organizations have come to recognize over the last decade the importance of these themes to their members’ competitiveness is nothing short of astounding. The CNI played a leadership role in working with national authorities by forming commissions to help draft, negotiate, and endorse application by members of the RASIM regulatory regime under the Environment Law. RASIM simplifies environmental evaluation and reporting procedures and introduces the concept of prioritizing remedial measures and “continuous improvement,” hallmarks of EMS approaches, thus allowing firms to meet environmental norms gradually, in accordance with an approved “*Plan de Gestión Ambiental*” (environmental management plan). As a consequence, compliance has ballooned with on-site application of prescribed mitigation improving.

The *cámaras* view cleaner production and EMS as fundamental business practices and support this with various programs and initiatives. The CNI sponsors the CPTS and is working to make the CPTS an independent foundation. More than 200 consultants have been trained through the CNI in environmental audits, monitoring, P2, and EMS. The *Programa Protección Ambiental Industrial en Bolivia* financed by Swedish cooperation has trained 15 high-level environmental specialists. Cleaner production initiatives have evolved into an innovative initiative by the CNI to establish a mechanism for

trading industrial residues and waste through a virtual information and marketplace. The *Bolsa de Residuos Industriales* (BRI) aims to turn one firm's waste into another firm's source of raw material, a win-win scenario for both businesses and the environment. The BRI plans to introduce trading in industrial wastes generated from the textile, wood, paper, food, chemical, metal works, and non-metallic sectors. BRI is currently USAID-funded and DANIDA will continue funding it next calendar year. (www.residuos.org.bo)

As markets evolve, certification is gaining importance in the CNI; 14 Bolivian firms are ISO 14001 certified. The CNI has been called on to assist Bolivian negotiators address environmental issues in Andean-American Free Trade Agreement negotiations and believes that SA 8000 standards for corporate social responsibility may become an issue in the Andean Trade Preference and Drug Control Agreement.

CDIC and CAINCO have in-house, permanent advisors to assist members with environmental aspects of their operations and sponsor conferences, courses, and seminars on EMS, cleaner production, and market standards. It is telling how the bi-annual environmental symposium organized by the CDIC has evolved over the years from a focus on regulatory compliance to market-led requirements and incentives. Finally, CNI houses one of the largest collections in Bolivia of literature and information on EMS, cleaner production, and related topics.

D. FINANCING FOR CLEANER PRODUCTION AND EMS—FUNDACIÓN PRODEM, FUNDA-PRO

SMEs face special challenges to finance investments in cleaner production technologies, EMS, and regulatory compliance. PRODEM is a second-tier financial institution that invests in SMEs with capital provided by the Inter-American Development Bank (IDB) and other sources. This is done either through loans or taking a direct equity stake in an SME through its *Fondo Empresarial Social*. An example of the latter is PRODEM's investment in La Naturaleza, targeted to assist pineapple suppliers to become organically certified. Technical assistance is typically a part of the investment package.

As a lender of IDB capital, PRODEM must comply with IDB environmental policies and national regulations. Access to technical assistance is available (up to US\$ 3,500) to help SMEs obtain their RAI or, if already compliant, to develop Integrated Management Systems that could include EMS, cleaner production, or certification. Some of the companies PRODEM has assisted in this area include La Naturaleza, Multi-agro, AGRIZAFV, ASOMEX, and Alimentos S.A.

FUNDA-PRO is another second-tier financial institution that manages a special cleaner production credit line—*Fondo Biomasa y Producción más Limpia*—to spur investment to improve energy efficiency and conservation by SMEs. The credit line totals US\$ 1 million with capital from the World Bank

and FUNDA-PRO. The *Fondo* has evolved from its original intent and design to aid rural households to convert from wood to alternative energy sources, and thus decrease deforestation. The Fondo is now available for a wide variety of cleaner production investments through FUNDA-PRO's network of 22 intermediate credit institutions. Under an agreement with CNI, loan applications are technically reviewed by CPTS without additional cost to SME applicants.

Although cleaner production can be highly beneficial for SME operations, the *Fondo* is nonetheless moribund. The *Fondo* has not been strongly promoted and SMEs have little knowledge of cleaner production concepts and applications. The cost of technical assistance to identify opportunities and prepare loan applications remains a barrier for SMEs. Finally, as with SME access to credit for other investments, collateral requirements, high interest rates, and short loan periods often prove difficult to surmount. With technical assistance and training from ARCo, project clients could be in a better position than other SMEs to tap this credit line.

E. TRAINING—UNIVERSIDAD CATÓLICA BOLIVIANA SAN PABLO (UCB); UNIDAD DE PRODUCTIVIDAD Y COMPETITIVIDAD (UPC)

UCB designs and delivers specialized courses focused on development of business strategies for SMEs located in El Alto for owners and managers with little formal education or business training. The courses included the following modules:

- Basic accounting and finance
- Marketing
- Business strategies
- Management and leadership
- Business model simulations

UPC and other organizations concentrated on specific productive processes (design, quality control, production systems, etc.), tools and strategies to help SMEs to enter into or increase sales in export markets and compete in public tenders. UCB and other institutions could potentially provide training, the following themes and topics that are particularly relevance to ARCo client enterprises:

- How to conduct a “self-environmental assessment” of current practices
- Inventory control, handling, and disposal of toxic substances
- Benefits and costs of cleaner production technologies
- Introduction to market standards

- How to (painlessly) comply with environmental regulations and why this is important

It cannot be stressed enough how the competitiveness of SMEs, especially those hoping to enter export supply chains, will increasingly depend on their environmental management performance. This facet of competitiveness should be built in to their strategic thinking, business models, market plans, and production and control systems at the earliest opportunity.

F. OTHER OPPORTUNITIES FOR SYNERGIES: *UNIVERSIDAD PRIVADA DE SANTA CRUZ—UPSA INSTITUTO BOLIVIANA DE NORMALIZACIÓN Y CALIDAD—IBNORCA*

Several other programs and organizations offer services and assistance in EMS and certification, including UPSA that has a number of programs that could be of service to ARCo client businesses:

- Environmental monitoring and other laboratories certified to HACCP and ISO 9001 (TUV-CERT No. 01-100-98167; ISO 17025 in future)
- CENACE—continuing education in “Total Quality Control” including EMS
- Air quality monitoring certified to WHO standards
- RASIM compliance
- P2
- Masters program in environmental management (supported by COSUDE)
- Wood laboratories

IBNORCA is a not-for-profit organization that has several programs and services related to export and national markets, quality control, and EMS that are highly relevant to BTBC II. IBNORCA is the only accredited ISO 9001 certifier in Bolivia. It also offers ISO 14001 and OHSAS 18001 certification services in conjunction with UNIT-AENOR, an Uruguayan firm accredited to these standards. To date, 25 operations have been ISO 9001 certified by IBNORCA and two firms each under ISO 14001 and OHSAS 18001.

IBNORCA leads a program to promote national standards and norms for wood, textile, leather, and food exports. Compliant companies can earn the “IBNORCA Seal of Conformity” and thus participate in public tenders for the provision of these goods and supplies. IBNORCA offers audit and conformity services and administers the “Seal of Conformity” trademark. Unfortunately high audit and trademark-use costs are squeezing many SMEs out of the public sector market as the GOB increasingly applies this standard. The NormExport program operated by IBNORCA aims to help SMEs penetrate these markets.

SECTION VII

INTERNATIONAL CERTIFICATION

TAKING IT TO THE NEXT LEVEL

Grades and standards are the language of trade that developing country producers and exports cannot ignore. Standards are both complex and evolving, incorporating features that go beyond simple quality, to the spheres of safety, environmental management, and human rights.² Enterprises large and small, even in the Chapare and Yungas, will have to increasingly pay heed to such international grades and standards if they hope to compete in these markets.

The dearth of official national standards and norms and weaknesses in environmental regulatory procedures can be partially surmounted by the application of international standards, norms, and certifications that may affect Bolivian businesses in select value chains. These international standards run the gamut from those developed by international organizations such as ISO, FAO, WHO, etc., to the standards of trade and commodity organizations and those of individual retail organizations like WRAP for the apparel sector.

A. ISO—INTERNATIONAL ORGANIZATION FOR STANDARDIZATION³

ISO is the world's largest developer of standards. Although ISO's principal activity is the development of technical standards these have important economic and social repercussions. The International Standards which ISO develops are useful to industrial and business organizations of all types: governments and other regulatory bodies; trade officials; conformity assessment professionals; suppliers and customers of products; services in

² Triple Standards: Integrating Developing Country Producers into the Value Chain—A Quick Reference Guide to Environmental, Quality and Social Standards. Chemonics International, Inc., 2003.
www.marketstandards.chemonics.net.

³ The discussion on ISO standards is excerpted from www.iso.org

both public and private sectors and; consumers and end users. ISO standards contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner. They make trade between countries easier and fairer, and provide governments with a technical base for health, safety and environmental legislation that are also increasingly applied in international trade agreements.

The ISO 9000 and ISO 14000 standards are known as “generic management system standards,” meaning that the same standards can be applied to any organization, large or small, whatever its product—including whether its “product” is actually a service—in any sector of activity, and whether it is a business enterprise, a public administration, or a government department.

VOLUNTARY

ISO standards are voluntary. A certain percentage of ISO standards—mainly those concerned with health, safety, or the environment—has been adopted in some countries as part of their regulatory framework, or is referred to in legislation for which it serves as the technical basis. Although voluntary, ISO standards may become a market requirement, as has happened in the case of ISO 9000 quality management systems, or of dimensions of freight containers and bank cards.

MARKET-DRIVEN

ISO develops only standards for which there is a market requirement. The work is carried out by experts from the industrial, technical, and business sectors that have asked for the standards, and that subsequently put them to use. These experts may be joined by others with relevant knowledge, such as representatives of government agencies, consumer organizations, academia, and testing laboratories.

CONSENSUS

Although ISO standards are voluntary, the fact that they are developed in response to market demand, and are based on consensus among the interested parties, ensures widespread applicability of the standards. ISO takes account both of evolving technology and evolving interests by requiring a review of its standards at least every five years to decide whether they should be maintained, updated, or withdrawn.

A1. ISO 9001/2 QUALITY MANAGEMENT STANDARDS⁴

ISO 9000 is concerned with “quality management” or what the organization does to enhance customer satisfaction by meeting customer and applicable regulatory requirements and continually to improve its performance in this regard. The ISO 9000 series (now up to date with the 2001: 9002 series), is the original ISO quality standard and its elements remain at the core of the other ISO series. There are more than 350,000 companies certified to the ISO

⁴ www.iso.org/iso/en/iso9000-14000

9001/2 standard and its backbone is the basis for a vast auditing industry that has been built to provide independent, third-party certification to supply chains worldwide.

A2. ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM STANDARD

Based on the same system principles as ISO 9001/2, the ISO 14000 series remains the basic world standard for environmental management systems. ISO 14000 is primarily concerned with “environmental management” or what the organization does to minimize harmful effects on the environment caused by its activities, and continually to improve its environmental performance.

Many of the more specific standards, for example those from individual production or retail organizations, are based on the principles of these more generic standards, to the point of frequently adopting the same language. Since the lack of good and appropriate management systems is perhaps the most common deficiency of ARCo client firms, the principles of ISO 14000 provide significant potential to improve the operations of the firms, product quality, and export potential, while at the same time moving toward improved environmental responsibility and compliance. The environmental aspect is also increasingly important in meeting the requirements of international markets and marketing organizations. The type of verification required for various certifications such as “FairTrade” and “Organic” certification have been inspired by these standards.

A3. OHSAS 18001 —OCCUPATION HEALTH AND SAFETY ASSESSMENT SERIES (OHSAS) ⁵

OHSAS 18001 is an Occupation Health and Safety Assessment Series for health and safety management systems. It is intended to help organizations control occupational health and safety risks. It was developed in response to widespread demand for a recognized standard against which to be certified and assessed.

The OHSAS specification is applicable to any organization that wishes to:

- Establish a management system to eliminate or minimize risk to employees and other interested parties who may be exposed to occupational, health, and safety (OH&S) risks associated with its activities
- Verify a firm’s conformance with its own OH&S policy
- Demonstrate such conformance to others

⁵ www.ohsas-18001-occupational-health-and-safety.com

- Implement, maintain, and continually improve an OH&S management system
- Seek certification/registration of its OH&S management system by an external organization

Essentially, OHSAS helps to minimize risk to employees, improve an existing OH&S management system, demonstrate diligence, and gain recognition, the sum benefits of which can be substantial.

B. SA 8000—SOCIAL ACCOUNTABILITY STANDARDS⁶

One standard related to social responsibility of businesses, particularly with regard to child labor, health and safety of employees, the right of employees to organize, etc. is Social Accountability (SA) 8000. There are others such as AccountAbility 1000 and several that are manufacturing-specific (i.e., WRAP for textiles and garments). Most of these standards are organized around the ISO 9000/14000 series and require similar systems and document controls, policies, management review, and public disclosure elements. Some, such as the Rainforest Alliances “Sustainable Agricultural Network–SAN” certification,⁷ are hybrids that apply both social and environmental norms.

The FairTrade Labeling Organization (FLO)⁸ provides a standard focused on labor conditions and other aspects of social responsibility to benefit small farmers (producer associations) and wage workers. Reference to environmental management is minimal, but “producers are expected to protect the natural environment and to make environmental management part of farm management.” Like many others, the FairTrade standard requires that producers implement integrated pest management to minimize the use of pesticides and it encourages producers to work toward organic certification.

C. FSC—FOREST STEWARDSHIP COUNCIL⁹

The FSC is one of several internationally recognized standards for responsible management of the world’s forests. FSC brings people together to find solutions to the problems created by bad forestry practices and to reward good forest management.

FSC is a stakeholder-owned system for promoting responsible management of the world’s forests. Through consultative processes, it sets international standards for responsible forest management and accredits independent third-party organizations that certify forest managers and forest product producers. Its trademark provides international recognition to organizations that support

⁶ www.sa8000.org

⁷ www.ra.org

⁸ www.fairtradeconfederation.org

⁹ www.fsc.org

the growth of responsible forest management and allow consumers to recognize products derived from certified forests and manufacturing operations worldwide. FSC undertakes marketing programs and information services that contribute to the mission of promoting responsible forestry worldwide.

During the past 10 years, 733 operations covering almost 60 million ha in 65 countries have been certified according to FSC standards, while several thousand products are produced using FSC certified wood that carry the FSC trademark. FSC operates through its network of National Initiatives in more than 34 countries. Bolivia leads the world in the tropical forest area certified to FSC standards, recently surpassing the 2 million ha mark.

D. COMMODITY/RETAILER-SPECIFIC STANDARDS

In response to consumer demands and pressure from groups concerned with environmental, socially responsible corporate behavior and worker rights, there are a growing number of sector-specific standards applied to buyers and retailers. Wal-Mart and K-mart have employed third parties to audit the operation of companies like Exportadores Bolivianos (jewelry) with regard to compliance with national environmental law, application of EMS, work-place conditions and worker safety, and adherence to socially responsible policies. Setting policies and demonstrating progress in their implementation through periodic independent audits are conditions for continued access to these significant markets.

The Utz Kapeh¹⁰ certification program specific to coffee, and is gaining recognition in European markets. Coffee farms and cooperatives use Utz Kapeh certification to prove that they grow their coffee professionally and with care for their local communities and the environment. Utz Kapeh empowers growers with knowledge on good agricultural practices and the global coffee market, and certification gives growers a stronger position in the market due to buyers' specific demand for certified coffee.

Utz Kapeh-certified farms minimize the use of water and energy and minimize the environmental impact of their activities as much as possible. Utz Kapeh coffee growers use agrochemicals responsibly by minimizing the use of fertilizers and pesticides, storing them safely and providing workers with appropriate protective clothing when necessary. Utz Kapeh has offices in Europe and Guatemala.

¹⁰ www.utzkapeh.org

E. FOOD SAFETY AND OCCUPATIONAL SAFETY AND HEALTH STANDARDS

Standards with regard to working conditions, use of protective gear, exposure to chemicals, noise, or other conditions that might compromise workers health:

- International Labor Organization Occupational Safety and Health Guidelines provide both general guidance and codes of practice addressing both specific sectors (open mines, construction, forestry), and specific issues including chainsaws, escalators, noise and vibration, and radiation.
- The U.S. Occupational Safety and Health Administration has an even longer list of specific sectors and topics on which it has standards that serve as regulations for industry in the United States.

Standards related to hygiene and handling of food products, purity, additives, etc.:

- *Hazard Analysis and Critical Control Point (HACCP)*—The joint standard on food safety of the U.S. Food and Drug Administration and the Center for Food Safety & Applied Nutrition.
- *CODEX Alimentarius*—The joint standard of FAO and WHO on food safety. Among the CODEX Alimentarius are chapters devoted to different types of food products. For example, the General Norm for Juice and Fruits details standards with regard to sugar, ethanol, contaminants, labeling, containers, use of concentrates and additives, and sampling and analysis.

F. RAINFOREST ALLIANCE SUSTAINABLE AGRICULTURAL PROGRAM¹¹

Sustainable agriculture is at the center of the Rainforest Alliance's efforts to conserve ecosystems by protecting healthy soils, rivers and wildlife and by promoting dignified living conditions for farm workers and neighboring rural communities. As a counter-weight to unbridled and unsustainable growth of the agriculture industry in recent years that has encouraged rampant deforestation and careless agrochemical use leading to ecosystem destruction and species loss worldwide, the mission of the sustainable agriculture program is to integrate productive agriculture, biodiversity conservation and human development. Farmers, companies, cooperatives and landowners who participate in the program must meet comprehensive, rigorous social and environmental standards. The Rainforest Alliance provides farmers with

¹¹ The description of the Rainforest Alliance sustainable agriculture program is largely taken from their website; www.ra.org

incentives to meet our standards, and encourages companies and consumers to support the farms making improvements toward sustainability.

The Rainforest Alliance is the international secretariat of the Sustainable Agriculture Network (SAN), a coalition of leading conservation groups that links responsible farmers with conscientious consumers by means of the Rainforest Alliance Certified seal of approval. The SAN includes environmental groups in Belize, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras and Mexico, with a watchdog group in Denmark and many associated academic, agriculture and social responsibility groups around the world. The SAN seeks to transform the environmental and social conditions of tropical agriculture through the implementation of sustainable farming practices. The conservation and rural development groups that manage the certification program understand local culture, politics, language and ecology and are trained in auditing procedures according to internationally recognized guidelines. Currently the SAN has social and environmental standards for coffee, bananas, cocoa, citrus, ferns and cut flowers and pineapple.

SECTION VIII

A ROADMAP TO ENHANCE COMPETITIVENESS

The main thrust of ARCo is to apply a market-led approach to rapidly assist businesses in the Chapare, Yungas and Alto Beni to grow, thus creating jobs and increasing incomes from licit productive activities. Support to firms to meet certification standards, better organize operations, and manage raw material inputs and waste streams will be valuable contributions that will lay the foundation to help these enterprises meet rigorous health, safety and environmental standards as basic elements of their competitiveness model.

Facilitation of capacity building in environmental management systems should be a priority. In many cases, this will contribute as much, or in some cases more, than anything else ARCo can do to improve the competitiveness and long-term viability of client business as well as ensure regulatory compliance with Bolivian law and 22 CFR Reg. 216. Efforts to improve environmental performance should be done in an integrated manner in the context of firms' overall business strategy, not as an add-on to simply comply with USAID and national regulations. Conformance with market standards, regulatory compliance, cost savings and "corporate" responsibility in the broadest sense, the hallmarks of environmental competitiveness, should be the impetus for enterprises to invest the resources needed to improve their performance.

Every effort has been made recommendations that are practical, results-oriented and within the technical scope and financial reach of the ARCo project. Taken as a whole, the recommendations seek to move ARCo from an "environmental compliance" frame of mind to an "environmental management" framework that contributes directly to achievement of project objectives, goals and hard target indicators, the long-term growth of enterprises, and fuller regulatory compliance. The recommendations together

with the measures approved in the PEA should be discussed with project staff, USAID, partners and stakeholders to decide how best to implement them.

The starting point for this effort is to strengthen the internal capacity of ARCo in environmental competitiveness issues and market standards through training of staff and operators to define ways to routinely incorporate these themes into project operating procedures and those of their stakeholders and client firms. It will take the full commitment of ARCo and USAID management if these recommendations and others that will come to light in the PEA, are to be meaningfully translated into concrete actions. This will also require a commitment to make resources already available for short and long technical assistance, specialized training and, setting up internal screening procedures useful to project staff and client firms alike to identify risks and opportunities. An illustrative budget and short-term technical follow up by the consultant preparing this report are proposed for achieving this end.

1. ARCo should require that all client firms are compliant with Bolivian environmental law (No. 1333) and, in the case of the forest product enterprises, Bolivian forestry law (No. 1700). As with other information required by ARCo for enrolling businesses in assistance programs, client firms should present copies of documents supporting compliance (*Licencia Ambiental, Registro Ambiental Industrial, Certificado Forestal de Origen, Aprobación de Plan de Manejo Forestal*, etc.). Firms that cannot demonstrate compliance with national environmental regulations, a recognized problem particularly for smaller enterprises, should be required to do so within a reasonable timeframe once they enter the ARCo program.
2. Increasingly strict environmental, worker and consumer safety and social responsibility practices and norms by sophisticated and demanding export markets require that these considerations become a fundamental and integral part of client firms' competitive models, business plans and general operating procedures. This should be done early, beginning with initial contacts, "environmental benchmarking" and other diagnostic tools that ARCo and ESC may apply.
3. Openness and "buy-in" by top management to improve environmental, safety and social performance should be one of the criteria used by ARCo and ESC operators to decide which firms to accept into its assistance program.
4. As with other competitiveness factors, an approach of "continuous improvement" should ground specific interventions by ARCo, ESC operators and client firms in EMS with the goal of instilling the central role environmental, safety and social considerations play in the ability of enterprises to compete in national and international markets.

5. ARCo client firms should be given guidance in evaluating the feasibility and advantages of applying international certification and standards systems to their operations. As part of its overall marketing efforts, ARCo should track and distribute to stakeholders information on market trends and requirements for certified products in different sectors.
6. An additional fulltime national Environmental Management advisor should be hired for at least a 12 month period who would be responsible for internalizing EMS, worker and consumer safety, and social responsibility concerns and opportunities routinely into all project operations - planning, implementation methodologies, training, technical assistance, market development, monitoring, and evaluation. Another fulltime advisor in environmental planning would be required if coordination and oversight of a Yungas road and infrastructure strategic plan were to be included in the ARCo contract.
7. Environmental management systems, national regulatory compliance and market standards should be central themes in ARCo training modules. Simple technical manuals and extension materials on these topics should be developed and distributed to client export firms. Many materials are readily available from government and other donor project. Specialized, higher-level training should be done early in ARCo to familiarize project staff, business center operators, business trainers, and top management of client firms in:
 - Clean production
 - Pollution prevention (P2) and control
 - EMS and risk assessment
 - Market standards and grades
 - Regulatory compliance
8. ARCo should take immediate steps to identify and assist high-risk client enterprises to address pressing environmental and safety hazards.
9. The pool of national technical expertise offered by ARCo assistance programs through the ESCs should be expanded to include assistance in EMS, IPM, cleaner production, market standards and certification, worker safety, and consumer health.
10. Synergies between ARCo and other projects, programs and institutions should be maximized to take advantage of certification, cleaner production, technical assistance and training services. Key counterparts and collaborators could include: CNI, *Cámara*

Departamental de Industria de Cochabamba, CAINCO, IBNORCA, UPSA, CADEPIAs, CPTS and FUNDES. The Environmental Management team should take the lead on strengthening inter-institutional cooperation in these areas. ARCo should collaborate with BTBC II to work with FONDA-PRO to stimulate demand by client firms for its credit line for cleaner production investments: *Fondo de Biomasa y Producción más Limpia*.

11. The user-friendly Quality, Workplace, Environment and Safety Tool environmental diagnostic and decision-making tool (QWEST) currently under development by Chemonics would help projects analyze their partner/client operations and development by Chemonics would help ARCo and its operators analyze partner/client operations and develop “environmental competitiveness” plans that address, in an integrated fashion, the four - Cs of environmental competitiveness: cost-savings, compliance with regulations, conformity to market standards, and “corporate” responsibility. With a modest investment to complete development, QWEST would be an invaluable tool for ARCo staff, ESCs, and clients to identify and prioritize environmental problems affecting operations and urgent actions. As QWEST would be a valuable tool too for other USAID/Bolivia projects like MAPA II and BTBC, cost-sharing arrangements might be considered. (See Annex D)
12. The ARCo monitoring and evaluation system should include indicators to track environmental regulatory compliance, application of environmental management systems, buyer requirements, certification and audits of client operations, and exports to certified markets.
13. The investment needed to implement the above recommendations and measures outlined in the report varies between \$ 1.2 to 1.35 million over the life of ARCo depending on the project’s eventual role in coordination and oversight the Yungas road improvement strategy. An illustrative budget follows.

Illustrative Budget for an Environmental Competitiveness and Compliance Strategy for ARCo; June 2006 – May 2009

Investment	Amount
Fulltime Senior National Environmental Advisor – Compliance and Monitoring	\$ 100,000
Fulltime Environmental Advisor – Environmental Management Systems	\$ 100,000
Coordination and oversight of the Yungas Infrastructure Strategic Plan (fulltime environmental planner, short-term technical assistance, logistical support)	(\$ 150,000)
Annual Environmental Reviews; (2007, 2008, 2009)	\$ 120,000*
Technical and other assistance cost-share to client firms provided through Business Plans for Environmental Management Systems, certification, and compliance with mitigation measures including monitoring	\$ 600,000**
Expand and insert into ARCo M&E system of use-friendly Environmental Information and Evaluation System designed by C-23; software license; modify to include ARCo value chains and processing operations supported by ARCo	\$ 5,000
Implementation of use-friendly environmental screening and EMS decision-making tool (QWEST) ^{***}	\$ 25,000
Specialized training and technical assistance for project and Economic Service Center staff (modular over Life of Project)	\$ 100,000
Production and publication of simple EMS, cleaner production and mitigation manuals for most common impacts for each principal export value chain	\$ 30,000
Pesticide residue monitoring and testing (spot checks)	\$ 100,000****
Support of seminars, conferences, workshops, symposia, etc. on EMS, cleaner production, certified markets, organic production, etc.	\$ 20,000
Total	\$1,200,000
(Total with coordination and oversight of Yungas road plan)	(\$1,350,000)

* US or TCN short-term technical assistance

** US or TCN short-term technical assistance

*** Costs could be shared with the MAPA II and BTBC projects

**** Approximate based on 300 samples/year; \$180 cost/sample; 50% cost share with PROCEB/SENASAG and/or client firms

ANNEX A

SCOPE OF WORK

ANNEX B

ENVIRONMENTAL BENCHMARKING TOOLS IN BTBC II

FICHA TECNICA DIAGNOSTICO EN SEGURIDAD INDUSTRIAL Y SALUD OCUPACIONAL

Razón Social Empresa

Nombre unidad industrial

RAI CAEB Categoría RASIM

Tamaño de empresa: Grande Mediana Pequeña

Características	Si	No	Explicar situación actual (área, operación)
SUSTANCIAS PELIGROSAS: 1. Se tiene una lista de insumos/productos/residuos peligrosos? 2. Se almacenan insumos/productos químicos? 3. Se manejan (transportan, manipulan, etc) insumos/productos químicos? 4. Se cuenta con procedimientos de manejo y almacenamiento de insumos/productos químicos? 5. Se cuenta con contenedores adecuados, etiquetas, etc?			
RECOMENDACIONES 1. 2. 3.			TIPO
VENTILACION: 6 Se cuenta con ventilación adecuada? 7. Se requieren mas puertas, ventanas? 8. Se requieren ventiladores o acondicionadores de aire? 9. Se aíslan equipos o maquinaria que genera calor? Se aprovecha el calor?			
RECOMENDACIONES 1. 2.			TIPO

3.			
ILUMINACION: 10. Se cuenta con adecuada iluminación? 11. Se han colocado maquinas, equipos próximos a luz natural? 12. Se debe mejorar la iluminación artificial? Donde? 13. Existen áreas de reflejo o brillo molesto?			
RECOMENDACIONES 1. 2. 3.			TIPO
SEGURIDAD ELECTRICA: 14. Existen conexiones irregulares, alambres enredados, tomas de corriente inseguras? 15. Existen cubiertas para cajas, paneles, interruptores, toma corrientes? 16. Existen conexiones a tierra de equipos eléctricos? Medidas Necesarias: _____ _____ _____			
RUIDO: 17. Se han identificado los niveles de ruido ocupacional? 18. Se cuenta con protección personal contra ruidos? 19. Se han realizad medidas de aislamiento de ruido? Medidas Necesarias: _____ _____ _____			
SALIDAS DE EMERGENCIA: 20. Cuantas salidas de emergencia existen por piso? 21. Las salidas de emergencia están libres de obstáculos? 22. Existe señalización de salidas de emergencia? Medidas Necesarias: _____ _____ _____			
VIAS DE ACCESO Y BARRERAS: 23. Existen accesos, corredores, pasillo, puertas de movimiento de personas? Están señalizados? 24. Los corredores y pasillos están libres de obstáculos? Medidas Necesarias: _____ _____ _____			
LIMPIEZA: 25. Se realiza mantenimiento y limpieza a equipos, maquinaria e instalaciones?, 26. Se realiza limpieza de áreas de trabajo? 27. Los trabajadores tienen rutina de limpieza o aseo personal? 28. Se cuenta con áreas de aseo personal? Baños, duchas? Cuales son las condiciones? Medidas Necesarias: _____ _____ _____			
EQUIPOS DE PROTECCION:			

<p>29. Se provee de equipos adecuados de protección? 30. Se requieren guantes, overoles, cascos, orejeras, zapatos de seguridad, gafas protectoras?</p> <p>Medidas Necesarias: _____ _____ _____</p>			
<p>SEÑALIZACION: 31. Se han identificado las tareas y acciones que impliquen riesgo? 32. Se cuenta con señalización? 33. Se utilizan códigos de colores y formas para la señalización?</p> <p>Medidas Necesarias: _____ _____ _____</p>			
<p>INCENDIOS: 34. Se cuenta con procedimientos para prevenir incendios? 35. Se cuenta con procedimientos para evacuar por incendios, y acciones de emergencia? Que hacer, Quien?, Como? 36. Se cuenta con extintores? Se ha determinado capacidades en función a áreas, materiales y riesgos?</p> <p>Medidas Necesarias: _____ _____ _____</p>			
<p>OTROS ASPECTOS DE ERGONOMIA: 38. Dispone de carretillas, carritos, cintas transportadoras, u otros equipos mecánicos para mover cargas pesadas? 39. Los operarios trabajan agachados o con malas posturas? 40. Son adecuados las sillas, asientos, bancos, mesas, tarimas, plataformas u otros muebles? 41. Están los interruptores y controladores al alcance? 42. Se tiene previsto contar con agua fresca u otras bebidas para los trabajadores?</p> <p>Medidas Necesarias: _____ _____ _____</p>			
<p>CAPACITACION DE PERSONAL: 43. Se cuenta con un programa de capacitación del personal para saber quien, como, cuando y que hacer en los siguientes casos:</p> <ul style="list-style-type: none"> • Señalización? • Manejo y almacenamiento? • Limpieza? • Emergencias? • Equipo de protección? <p>Medidas Necesarias: _____ _____ _____</p>			

FICHA TECNICA

DIAGNOSTICO AMBIENTAL

Razón Social Empresa

Nombre unidad industrial

RAI CAEB Categoría RASIM

Tamaño de empresa: Grande Mediana Pequeña

1. CHECK LIST DE GENERACION DE RESIDUOS

USO DE ENERGIA Y EMISIONES	SI	NO	RESIDUOS SÓLIDOS Y RECICLAJE	SI	NO
a) Procesos de combustión			a) Residuos de los procesos industriales		
b) Combustibles			b) Materiales de tratamiento y limpieza		
c) Las que usen, generen o emitan sustancias volátiles			c) Envases y embalajes de materias primas e insumos		
d) Las que emitan ruidos y vibraciones			d) Residuos de los procesos de descontaminación		
e) Las que emitan olores			e) Equipos, maquinarias en desuso, partes y piezas;		
f) Las que emitan sustancias agotadoras del ozono			f) Residuos de sus productos;		
g) Uso de Energía Eléctrica			g) Residuos líquidos o semisólidos contenidos en recipientes		
			h) Reciclaje y recuperación		
USO DE AGUA Y EFLUENTES			NOTAS TECNICAS:		
a) Procesos que generen residuos líquidos					
b) Vertido o derrame de líquidos					
c) Operaciones de limpieza de materias primas, equipos y ambientes					
d) Uso de agua					

OBSERVACIONES

2. IDENTIFICACION Y CARACTERIZACION DE RESIDUOS - IMPACTOS AMBIENTALES

2.1 Identificación y Caracterización de fuentes y puntos de emisiones atmosféricas, ruido y vibraciones

FUENTES Y NIVELES DE EMISIONES ATMOSFERICAS

OPERACIÓN/ PROCESO	FUENTE	COMBUSTIBLE	SUSTANCIAS CONSIDERADAS

RECOMENDACIONES	TIPO
1.	
2.	
3.	
4.	

FUENTES Y NIVELES DE EMISIONES SONORAS (Interior de la Unidad Industrial)

FUENTE	DURACION	HORARIO	NIVEL (dBA)

RECOMENDACIONES	TIPO
1.	
2.	
3.	
4.	

OPERACIÓN/ PROCESO	EQUIPO/ MAQUINARIA	POTENCIA INSTALADA (KVA)	CONSUMO (KWH)	COSTO (\$US)

RECOMENDACIONES	TIPO
1.	
2.	
3.	
4.	

2.2 Identificación y Caracterización de fuentes y puntos de descargas líquidas

FUENTES, VOLÚMENES Y PUNTOS DE DESCARGAS LIQUIDAS

FUENTE	USO (m3/mes)	COSTO (\$US)	VOLUMEN DE DESCARGA	TRATAMIENTO O PREVIO A LA DESCARGA	PUNTO DE DESCARGA

RECOMENDACIONES	TIPO
1.	
2.	
3.	
4.	

2.3 Identificación y Caracterización de fuentes de generación de residuos sólidos, sitios de almacenamiento temporal y entrega para disposición final, Reciclaje

RESIDUOS SÓLIDOS GENERADOS, CARACTERIZACION, ALMACENAMIENTO Y DISPOSICIÓN

OPERACIÓN GENERADORA	RESIDUO SÓLIDO CARACTERÍSTICA	CANTIDAD (t/año)	ALMACENAMIENTO TEMPORAL	DISPOSICIÓN FINAL	COSTO (\$US)

RECOMENDACIONES	TIPO
1.	
2.	
3.	
4.	

RECICLAJE, RECUPERACION

OPERACIÓN GENERADORA	RESIDUO SÓLIDO/CARACTERÍSTICA	CANTIDAD (t/año)	INGRESO (\$US)

RECOMENDACIONES	TIPO
1.	
2.	
3.	
4.	

2.4 Identificación, Caracterización y Manejo de las Sustancias Peligrosas

Las sustancias peligrosas que presenten alguna de las siguientes características: corrosiva, reactiva, explosiva, tóxica, inflamable, patógena o bioinfecciosa y radiactiva

MATERIAS PRIMAS	CARACTERÍSTICA	MANEJO
INSUMOS	CARACTERÍSTICA	MANEJO
PRODUCTOS	CARACTERÍSTICA	MANEJO

RECOMENDACIONES	TIPO
1.	
2.	
3.	
4.	

FICHA TECNICA

DIAGNOSTICO PRELIMINAR AMBIENTAL Y DE SEGURIDAD

Razón Social Empresa

Nombre unidad industrial

RAI CAEB Categoría RASIM

Tamaño de empresa: Grande Mediana Pequeña

1. NIVEL DE COMPROMISO INICIAL

	SI	NO
1. Conoce las ventajas de implementación de PML, P2, SGA?	<input type="checkbox"/>	<input type="checkbox"/>
2. Preferiría proveedores que cuenten con licencia o certificación ambiental y de seguridad?	<input type="checkbox"/>	<input type="checkbox"/>
3. Le exigen sus clientes (mercados) cumplimiento de la normativa ambiental y de seguridad, licencias, certificaciones?	<input type="checkbox"/>	<input type="checkbox"/>
4. Se han determinado las características y eficiencia de MP, insumos, productos, equipos, procesos?	<input type="checkbox"/>	<input type="checkbox"/>
5. Estaría interesado en capacitación sobre la temática ambiental?.	<input type="checkbox"/>	<input type="checkbox"/>
6. Podría citar los inconvenientes o dificultades para implementar un SGA?		
• Que implica costos		
7. Podría citar las ventajas y oportunidades que tendría para la empresa el establecimiento de un SGA?		
• Productividad		
• Orden		

OBSERVACIONES Y RECOMENDACIONES

1.
2.

2. IDENTIFICACION AMBIENTAL

CARACTERISTICAS	SI	NO	Motivo
-----------------	----	----	--------

MANEJO DE SUSTANCIAS PELIGROSAS:

Se manejan sustancias peligrosas Cuales?:			
Se cuenta con Hojas de Seguridad para las sustancias peligrosas			
Fabrica productos con características peligrosas			
RECOMENDACIONES			TIPO
1.			

ENERGIA Y EMISIONES AL AIRE:

Utiliza combustibles en el proceso. Cuales?			
--	--	--	--

Se tiene procesos de combustión Cuales?			
Tiene fuentes que generen sustancias contaminantes al aire Cuales?			
Realiza el auto monitoreo de sustancias al aire			
Cumple con los límites permisibles de emisión de sustancias			
Tiene fuentes que generen ruidos			
Cumple con los límites permisibles de ruidos ambientales			
Realiza acciones para prevenir, reducir o aislar los niveles de ruido			
Usa Energía Eléctrica Donde?			
Lleva registros de uso y costos?			
RECOMENDACIONES			TIPO
1.			
2.			

USO DE AGUA Y DESCARGAS LIQUIDAS :

Tiene fuentes que generen descargas líquidas Cuales?			
Realiza recirculación, reuso			
Realiza el auto monitoreo de parámetros en el agua			
Cumple con los límites permisibles para descargas de agua			
Cuenta con conexión a un sistema de alcantarillado. Esta autorizado y/o tiene contrato con EPSA			
Se transfiere las aguas residuales a terceros			
Se descarga a los sistemas de alcantarillado, cuerpos de agua o suelo: Sustancias radiactivas, compuestos organo halogenados, aceites y lubricantes minerales e hidrocarburos, lodos, semisólidos (prohibido)			
Se colocan en recipientes cerrados: aceites y lubricantes, lodos, semisólidos			
Diluye sus aguas residuales para lograr las concentraciones de los límites permisibles (prohibición)			
Lleva registros de uso, descargas y costos?			
RECOMENDACIONES			TIPO
1.			
2.			

MANEJO DE RESIDUOS SÓLIDOS

Se generan residuos sólidos. Cuales?			
Se reciclan y/o reutilizan los residuos			
Se clasifican los residuos en peligrosos y no peligrosos			
Se almacenan los residuos sólidos, cuales?			

Se entierran los residuos sólidos. Donde? (prohibición)			
Se combustionan residuos sólidos, cuales?			
Se entregan los residuos a operadores, cuales? Asimilables a domiciliarios			
Lleva registros de uso, generación y costos?			
RECOMENDACIONES			TIPO
1. 2. 3.			

CONTAMINACION DE SUELOS

Esta el suelo/piso de la industria acondicionado para evitar contaminación de suelos			
Realiza entierro de residuos sólidos			
Realiza vertido de aguas residuales			
Realiza vertido de lodos u otros semisólidos			
RECOMENDACIONES			TIPO
1. 2.			

REQUERIMIENTOS DE DOCUMENTOS AMBIENTALES

Cuenta con RAI aprobado			
Cuenta con MAI-PMA aprobado			
Cuenta con alguna certificación nacional (CR, CA, DAA, DIA, etc)			
Cuenta con alguna certificación internacional (ISO, FSC, WRAP, etc)			
RECOMENDACIONES			TIPO
1. 2.			

3. IDENTIFICACION SEGURIDAD INDUSTRIAL

VENTILACION: Se cuenta con ventilación adecuada? Se requieren ventiladores o acondicionadores de aire?
ILUMINACION: Se cuenta con adecuada iluminación? Se debe mejorar la iluminación artificial? Donde?
RUIDO: Se han identificado los niveles de ruido ocupacional? Se cuenta con protección personal contra ruidos?
LIMPIEZA: Se realiza mantenimiento y limpieza a equipos, maquinaria e instalaciones?
EQUIPOS DE PROTECCION: Se provee de equipos adecuados de protección?
INCENDIOS: Se cuenta con procedimientos para prevenir incendios?

Se cuenta con procedimientos para evacuar por incendios, y acciones de emergencia? Que hacer, Quien?, Como?	
SEGURIDAD ELECTRICA: Existen conexiones irregulares, alambres enredados, tomas de corriente inseguras? Existen cubiertas para cajas, paneles, interruptores, toma corrientes?	
RECOMENDACIONES	TIPO
1. 2. 3. 4.	

NA: No Aplica

4. RECOMENDACIONES PRIORIZADAS

No.	Recomendación	Tipo (*)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

(*) el tipo se refiere al rango de costos estimados para realizar las recomendaciones

A = 0 a 1000 \$us

B = 1000 a 5000 \$us

C = mas de 5000 \$us

SAMPLE SCOPE OF WORK FOR PERSUAP

Guinea Agribusiness Marketing Linkage Activity

Scope of Work

Develop a Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP)

For Activity No. 2 of the Special Activity Fund

The activities to be carried out under this scope of work are centered on complying with USAID's environmental regulations for Activity No. 2 of the GAMLA Special Activity Fund (SAF). Specifically, it will be required to prepare a Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) for Activity No. 2 of the SAF. Activity No. 2 is to install and maintain mango demonstration plots, provide improved mango varieties and train small-scale producers in orchard maintenance practices. The work will be carried out by the centre de Recherche Agronome de Fulaya (CRAF), one of several research centers in Guinea under the Agriculture Research Institute of the Ministry of Agriculture. A description of Activity No. 2 is included in Annex I to this SOW.

Here is an excerpt of an overview of the USAID pesticide procedures:

"If USAID's resources are proposed for any activities that will involve assistance for the procurement or use, or both, of pesticides, planners must take into account these procedures. "Use" is interpreted broadly to include the handling, transport, storage, mixing, loading, application, clean up of spray equipment, and disposal of pesticides, as well as the provision of fuel for transport of pesticides, and providing technical assistance in pesticide management. In contrast, support to limited pesticide research and pesticide regulatory activities are not subject to scrutiny under the pesticide procedures.

USAID finances pesticides only on a case-by-case basis (and not on the basis of an approved commodity list) and then only after specific additional evaluation that would consider the potential benefits conferred by the use of the proposed pesticide, such as in a PERSUAP. **The kinds of factors to be considered in such an assessment should include, but not necessarily be limited to, the following (22 CFR 216.3 (b)(1)(i)(a-l):**

1. USEPA's registration status of the requested pesticide(s);
2. basis for selection of the requested pesticide(s);
3. extent to which the proposed pesticide use is part of an IPM;
4. proposed method or methods of application, including availability of appropriate application and safety equipment;

5. any acute and long-term toxicological hazards, either human or environmental, associated with the proposed use and measures available to reduce such hazards, if not eliminate them;
6. effectiveness of the requested pesticide(s) for the proposed use;
7. compatibility of the proposed pesticide(s) with target and non-target ecosystems;
8. conditions under which the pesticide(s) are to be used, including climate, flora, fauna, geography, hydrology, and soils;
9. availability and effectiveness of other pesticides or non-chemical management methods;
10. requesting country's ability to regulate or control the distribution, storage, use, and disposal of the requested pesticide(s);
11. provisions made for training of users and applicators; and,
12. provisions made for monitoring the use and effectiveness of the pesticide(s).

USAID's pesticide procedures require that any proposed use of pesticides be limited to products that are registered, without restrictions, for the same or similar uses in the U.S. by USEPA. Any proposed pesticide use that does not conform to such standards needs to be subject to an Environmental Assessment or Environmental Impact Statement. Pesticides cancelled or suspended by USEPA are never approved for use in a USAID project. Similarly, products classified as Restricted Use Pesticides by USEPA are almost never approved for use in USAID projects.

As an example, if a country requested financing for pesticides, it would be encouraged to use products registered for the same or similar uses in the United States. If no such products existed, the environmental review requirements would become progressively more stringent as one moved from previously registered to never registered pesticides.

It is important to understand that the term "restricted" refers to changes in product uses required by the USEPA as a condition to renew or re-register a product. In contrast, the pesticides listed... are those which, in the United States, may only be purchased or applied by well-trained and officially *certified* applicators or under their direct supervision on the basis of health and/or environmental risk criteria."

Annex II to this SOW provides the PERSUAP Guidance for Pesticide Programs with Action Plan, while Annex III shows a PERSUAP sample outline.

The work described herein will be carried out by a team of two consultants: an international consultant from Chemonics' home office, assisted by a field consultant in Guinea. The International consultant will write the PERSUAP, while the local consultant will provide field information from Guinea as input for the report.

A Times New Roman font, size 12 is must be used for the text of the report. The report should be written in English.

Level of effort: A level of effort of six working days for each consultant is authorized for this study.

Annex I
Special Activities Fund, Activity No. 2
Install and Maintain Mango Demonstration Plots, Provide Improved Mango Varieties, and Train Small-Scale Producers in Orchard Maintenance Practices

GAMLA
Special Activities Fund
Activity No. 2

Title: Install and maintain mango demonstration plots, provide improved mango varieties and train small-scale producers in orchard maintenance practices.

Background: SIPEF, a Belgium importer of fruit and vegetables with fruit production operation in West Africa is presently the only large-scale exporter of fresh mangoes from Guinea. The company operates a mango packing and cold storage facility at Dabuya, in the heart of the Kindia mango processing area. SIPEF purchases ripe mangoes from small-scale producers in the area. The mangoes are selected, packed and cooled at its Dabuya station and exported by refrigerated sea container to Europe. The company's exports are presently constrained by the limited availability of export-quality mangoes in the Kindia area, of the varieties that are in high demand in Europe.

The underlying problem is that most of SIPEF's suppliers have only a few trees and provide absolutely no maintenance to their mango groves. Consequently, most of the fruit that is available cannot be exported since it is damaged by insects and disease. Furthermore, much of the fruit is not of export variety and therefore has no external markets.

Guinea is fortunate in that its production season (March – June) falls within the European market window, and its mango exports are highly prized by European consumers. Consequently, there is a ready market for additional mango exports.

Proposed activity: It is proposed to contract with the Centre de Recherche Agronome de Fulaya (CRAF), one of several research centers within the Agriculture Research Institute of the Ministry of Agriculture, to establish and maintain demonstration plots within the five mango production zones around Dabuya where SIPEF purchases its fruit for export. CRAF will establish and maintain a total of 10 hectares of demonstration plots within the five zones over the remaining life of the GAMLA project, which will provide direct benefits to the small-scale producers for the next two production seasons. The demonstration plots will be used to provide training in good orchard maintenance practices for SIPEF's mango suppliers. A total of 25 lead producers will be trained prior to the first harvest season (March 2006 – June 2006). Before the start of the second season (March 2007 – June 2007) the 25 lead producers will train, under the guidance of CRAF, an additional 250 mango producers. In addition to its demonstration and training activity, CRAF will establish plant nursery to produce Kent and Keats varieties of mango plants that will be provided, on a cost sharing basis, to the mango producers associated

with SIPEF. These plants will be used for grafting onto existing mango trees and thereby convert the groves into producers of export varieties of mangoes. Grafting techniques will be part of the demonstration and training activities as well. The SAF budget contemplates the production of approximately 10,000 plants, a sufficient number to convert 100 hectares of producing mangos into export varieties.

SIPEF will actively participate in this activity. First, the company will establish a quality bonus scheme whereby those participating producers who provide superior quality fruit will be rewarded. Second, SIPEF will establish an orchard maintenance fund that will be used to finance orchard maintenance for its associated producers during the growing season. The cost of maintaining the orchard of an individual farmer will be deducted from the payments to that farmer for the fruit purchased by SIPEF. A memorandum of understanding (MOU) will be written for the signature of representatives of SIPEF, CRAF, and the GAMLA project spelling out their respective role and responsibilities.

The budget for this special activity is included in the annex to this SAF description.

Justification: This special activity will work to remove one of the constraints that limit the availability of export-quality mangoes in Guinea. With improved orchard maintenance and the use of export mango varieties, greater quantities of export-quality fruit will be produced by the farmers to be exported by SIPEF, which will benefit both parties.

Demonstration and training will also provide long term benefits to the participating farmers by improving their capabilities as mango growers.

Administration: The GAMLA project will contract directly with CRAF to carry out the work of establishing and maintaining the demonstration plots, training the farmers, establishing the nursery and delivering the mango plants to the farmers. SIPEF will collaborate closely with this activity. The GAMLA office manager will oversee the entire administrative process.

Annex II

PERSUAP Guidance for Pesticide Programs with Action Plan

February 22, 2002

USAID/AFR guidance: preparing PERSUAPs for pesticide programs in Africa

Overview of review requirements

All USAID activities are subject to evaluation via, at minimum, an Initial Environmental Examination (IEE). And because of risk concerns presented by pesticides, the USAID environmental regulations require that at least the 12 factors outlined in the Pesticide Procedures described in 22 CFR 216.3 (b)(1)(i) (a through l) be addressed in the IEE for any program that includes assistance for the procurement or use of pesticides. The Africa Bureau asks that these factors be examined in a particular type of document, termed a “Pesticide Evaluation Report and Safer Use Action Plan” (PERSUAP), which is submitted as an attachment to the IEE. (Note: the IEE itself can be very brief, with the analytical work contained in the attached PERSUAP.) The PERSUAP focuses on the particular circumstances of the program in question, the risk management choices available, and how a risk management plan would be implemented in the field. Further details about what to include in a PERSUAP are given below.

Why is a local-level assessment such as a PERSUAP needed for USAID pesticide programs? To help in understanding the utility, consider the U.S. system for promoting pesticide safety. When the USEPA registers pesticides for use in the United States, it specifies the manner in which the product can be “safely” used (i.e., with an acceptably small risk), including safety equipment needed when applying the pesticide, how to apply it, the allowed uses, etc. But the context in which EPA makes these registration decisions is important to note. An extensive system of capabilities and resources exist in this country that help give EPA confidence these specifications will be followed and the product will be used appropriately. These include a 97% literacy rate meaning most of the population can read labels; close control by EPA over the content of the label; training requirements and programs for those pesticide products that require applicator certification; worker protection requirements; occupational safety regulations; and relatively effective federal, state and local enforcement mechanisms. In allowing the use of certain pesticides in its African programs, USAID cannot rely on the same societal capabilities and resources that the USEPA does to assure appropriate use of the product. The preparation of a PERSUAP gives a program manager the opportunity to consider practical actions by which to reduce the risks of using pesticide products in a program, taking into consideration the context in which the products will be used, the particular elements of the program, and the different capacities of the partners involved.

Who prepares a PERSUAP?

Program managers are generally responsible for assuring that environmental review requirements for their programs are met, including PERSUAPs. As for all environmental reviews, guidance and assistance for PERSUAPs is available from the the appropriate Mission Environmental Officer (MEO), Regional Environmental Officer (REO), the Africa Bureau Environmental Officer (BEO), or the BEO/DCHA if Title II (PL 480) funds are involved.. Considerable reference materials, as well as examples of other PERSUAPs, are available through these contacts, or directly from the Africa Bureau’s ENCAP program website, www.encapaffrica.org.

Components of an activity-level PERSUAP

A PERSUAP basically consists of two parts, a “PER” and a “SUAP.” The Pesticide Evaluation Report (PER) section addresses the 12 informational elements required in the Agency’s Pesticide Procedures. The Safer Use Action Plan (SUAP) puts the conclusions reached in the PER into a plan of action, including assignment of responsibility to appropriate parties connected with the pesticide program.

Below are three annexes which further elaborate the content needed in a PERSUAP:

- 1. Detailed guidance for developing a Pesticide Evaluation Report:* provides detailed guidance on the information that should be provided in the Pesticide Evaluation Report, following the 12 informational elements required by the Pesticide Procedures section of USAID’s environmental regulations.
- 2. Representative Elements for a Safer Use Action Plan:* Describes the elements needed in a plan that takes action to assure issues resolved in the Pesticide Evaluation Report are resolved in the implementation of the development program being reviewed.
- 3. “A Practical Guide To Reducing Pesticide Risks in Development Projects”:* This brief guide was prepared by staff of the UNFAO, and provides a useful list of problems to watch for as well as practical responses. USAID programs using pesticides would do well to use this guide as a checklist to look for problems and as a source of inspiration for ways to deal with those problems.

Annex 1: Detailed guidance for the development of a Pesticide Evaluation Report

<p>USAID “Pesticide Procedures” Element and Description (from USAID Pest Management Guidelines, 1991)</p>	<p>Specific Guidance for Pesticide PERSUAP</p>
<p>a. USEPA registration status of the proposed pesticide. Pesticides are registered in the U.S. by active ingredient and by formulation. “Registration status” possibilities of the active ingredients and the formulated products include registered, never registered, and cancelled.</p>	<p>In the PERSUAP: <i>Identify the registration status in the U.S. and in the host country. Identify the formulated pesticide product to be used.</i></p> <p>USAID is effectively limited to using pesticide active ingredients registered in the U.S. by the U.S. Environmental Protection Agency for the same or similar uses. Other pesticides not registered in the U.S. may be authorized, but only if the USAID program can show that no alternatives are not available, as required under USAID Pest Management Guidelines for the use on non-U.S. registered pesticides. Host country pesticide registration procedures must also be identified and followed.</p>
<p>b. Basis for selection of the pesticide: This refers to the economic and environmental rationale for choosing a particular pesticide. In general, the least toxic pesticide that is effective is selected.</p>	<p>In the PERSUAP: <i>Explain the basis for selection of the pesticide product to be used, including active ingredient and formulation.</i></p> <p>Pesticide product selection may be driven by a number of factors, including efficacy, price, availability, safety, etc. All things being equal, a program should choose the pesticide active ingredient and formulation that presents the least overall risk.</p> <p>Formulation is a key determinant of toxicity, and should be considered in selecting a particular pesticide product. Formulation can also have an impact on exposure; for example, solid formulations can eliminate the potential for poisoning through accidental exposure to concentrated liquid product.</p> <p>Packaging can have a significant impact on exposure potential. Large containers necessarily introduce hazardous product transfer steps, as well as the possibility that the product will end up in a smaller, poorly labeled container. Smaller containers are generally better for use in USAID programs.</p>

<p>c. Extent to which the proposed pesticide use is, or could be, part of an IPM program: USAID policy promotes the development and use of integrated approaches to pest management whenever possible. This section discusses the extent to which the proposed pesticide use is incorporated into an overall IPM strategy.</p>	<p>In the PERSUAP: <i>Describe the extent to which the proposed product(s) is/are or could be a part of an IPM program. Describe the connection between the USAID activity and regional, national and local control programs (as appropriate).</i></p> <p>Integrated pest management, and its public health counterpart, integrated vector management, is USAID policy because it is the most effective, economical, and safest approach to pest control. “Integrated pest management attempts to control pests in an economically and environmentally rational manner; it emphasizes non-chemical tactics which cause minimal disruption to the ecosystem.”¹² USAID programs should assure that the choice of pesticides was made after consideration of other pest management options available, and that this is the most effective and environmentally sound option available.</p>
<p>d. Proposed method or methods of application, including the availability of application and safety equipment: This section examines in detail how the pesticide is to be applied and the measures to be taken to ensure its safe use.</p>	<p>In the PERSUAP: <i>As stated, describe in detail how the pesticide is to be applied and the measures to be taken to ensure its safe use.</i></p>
<p>e. Any acute and long-term toxicological hazards, either human or environmental, associated with the proposed use, and measures available to minimize such hazards: This section of the IEE examines the acute and chronic toxicological data associated with the proposed pesticide. In addition to hazards, this section of the IEE also discusses measures designed to mitigate</p>	<p>In the PERSUAP: <i>Describe measures the program will take to reduce the potential for exposing humans or nontarget organisms to selected pesticides. Also describe monitoring measures that will allow the program to identify problems with users applying other pesticides.</i></p> <p>It is recommended that this be the key section of the PERSUAP, in which the majority, or perhaps all, of the planned mitigation measures are described. To address this element, the PERSUAP should summarize the toxicity to humans and other non-target organisms of the pesticide products chosen for the program in</p>

¹² USAID. 1990. Integrated Pest Management: A.I.D Policy and Implementation.

<p>any identified toxicological hazards, such as training of applicators, use of protective clothing, and proper storage.</p>	<p>question, the potential exposure opportunities presented by those products, and the risk reduction actions the program will take to minimize such exposure opportunities. The risk reduction actions should be described in sufficient detail to show that they are indeed workable solutions. If protective clothing is recommended, for example, assurance should be provided that a sustainable source of such protective clothing has been identified, a schedule for its replacement, training in its use, etc.</p>
<p>f. Effectiveness of the requested pesticide for the proposed use: This section of the PERSUAP requires information similar to that provided in item b, but more specific to the actual conditions of application. This section also considers the potential for the development of pest resistance to the proposed insecticide.</p>	<p>In the PERSUAP: <i>Explain what recommendations or evidence suggests that the ITM products proposed are effective in the program area.</i></p>
<p>g. Compatibility of the proposed pesticide use with target and non-target ecosystems: This section examines the potential effect of the pesticide on organisms other than the target pest (for example, the effect on bee colonies kept in the area). Non-target species of concern also include birds and fish. The potential for negative impact on non-target species should be assessed and appropriate steps should be identified to mitigate adverse impacts.</p>	<p>In the PERSUAP: <i>Describe efforts that are being made to minimize environmental exposure to pesticide products.</i></p> <p>This section should address the toxicity of the products and the environmental risk mitigation measures that the program will take. The key options for environmental risk mitigation are product choice and exposure reduction. In this section, therefore, describe the relative environmental risk of the product chosen versus the other options. Also describe efforts the program will make to reduce exposure of the environment, through choice of pesticide product and packaging, preparation of educational materials, training, etc.</p> <p>This question might also be covered in response to question (e), and if so, simply reference that section without repeating it.</p>

<p>h. Conditions under which the pesticide is to be used, including climate, flora, fauna, geography, hydrology, and soils: This section examines issues such as the potential for contamination of surface and groundwater sources.</p>	<p>In the PERSUAP: <i>Describe the environmental conditions under which the pesticide is to be used, identifying any environmental factors that might be particularly sensitive or subject to contamination from re-treatment operations.</i></p> <p>This item refers to particular environmental factors that might accentuate the effects of exposure to pesticides, and the potential need for measures to reduce those risks. Examples of special conditions that need to be noted here include sensitive ecosystems in the project area and superficial groundwater tables.</p>
<p>i. Availability of other pesticides or non-chemical control methods: This section identifies other options for control of pests and their relative advantages and disadvantages.</p>	<p>In the PERSUAP: <i>Describe other pest management options being pursued in the geographic area of the activity, either as part of the USAID activity or otherwise, and explain why this particular vector control method was chosen over other available options.</i></p>
<p>j. Host country's ability to regulate or control the distribution, storage, use, and disposal of the requested pesticide: This section examines the host country's existing infrastructure and human resources for managing the use of the proposed pesticide. If the host country's ability to regulate pesticides is inadequate, the proposed action could result in greater harm to the environment.</p>	<p>In the PERSUAP: <i>Summarize the host country's capacity and structure for the regulation of public health and agricultural pesticides. Identify the approval/registration status of the pesticide product in the host country.</i></p> <p>The host country's capacity and structure for the regulation of public health and agricultural pesticides should be summarized. A critical issue for a pesticide activity supported by the Agency is the extent to which the host country's regulatory oversight will help to control distribution, storage, use and disposal of the pesticide products in question. USAID activities should always be in compliance with local environmental and public laws and regulations, but that is not necessarily enough. If host country regulatory systems and institutions are not sufficient to give a reasonable expectation that environmentally sound practices will be enforced, USAID still bears responsibility for assuring environmental protection at each of these steps in the pesticide life cycle.</p> <p>Government oversight over pesticides is important for controlling the quality of products as well as their environmentally-sound use and disposal. USAID programs of substantial size should generally include an element of capacity-building work with host country institutions that govern public health pesticide use. These measures should be identified in this chapter of the PERSUAP.</p>
<p>k. Provision for training of users and</p>	<p>In the PERSUAP: <i>Describe the provisions made to train and educate those who</i></p>

<p>applicators : USAID recognizes that safety training is an essential component in programs involving the use of pesticides. The need for thorough training is particularly acute in developing countries, where the level of education of applicators may typically be lower than in developed countries.</p>	<p><i>will be using the pesticides.</i></p>
<p>1. Provision made for monitoring the use and effectiveness of this pesticide: Evaluating the risks and benefits of pesticide use should be an ongoing, dynamic process.</p>	<p>In the PERSUAP: <i>Describe monitoring and evaluation programs for pesticide use activities, and the health and environmental safety-related information that is collected via this M and E capacity.</i></p> <p>Monitoring programs should actively investigate, to the extent possible, the following issues:</p> <ul style="list-style-type: none"> • Effectiveness of Information, Education and Communication materials and activities in promoting safe handling, use and disposal of pesticide products. • Adverse health and environmental effects and the frequency and severity with which they occur. • Quality control of pesticide products. • Effectiveness of the chosen products and their alternatives, including whether or not resistance is developing. • Safe and effective pesticide use and handling practices by program staff and end users.

Annex 2: Representative Elements for Pesticide Safer Use Action Plan

A pesticide safe use action plan should:

- ❖ **Be programmatically linked to national pesticide registration and pest management programs**
- ❖ **Ensure formal national registration of pesticides**
 - Establish pesticide quality standards and control procedures
 - Provide for enforcement
 - Require good packaging and clear and adequate labeling
- ❖ **Define and assure safe use practices**
 - Identify pesticides appropriate for use, selecting the least toxic insecticides and formulations possible, and considering non-pesticide alternatives.
 - Define appropriate methods of pesticide handling, storage, transport, use and disposal.
- ❖ **Assure accessibility of protective clothing and equipment needed.**
 - Training, development and distribution of appropriate information, education and communication
 - Specific IEC messages, along with sale and treatment, regarding the proper handling, use, disposal of pesticides, and related waste, at the distribution, storage, handling, use, disposal stages, at all levels, but especially at the village and household levels.
- ❖ **Emphasize operational research & monitoring & evaluation: Roles of key actors**
 - Quality control of insecticide(s)
 - Research on alternative insecticides and effectiveness under local conditions
 - Mosquito susceptibility to insecticide(s) of choice
 - Safe and effective use of insecticide by parties at all levels
- ❖ **Identify Roles and Responsibilities:**
 - Public Sector: coordination, regulatory oversight and management, defining environmental responsibilities, and others
 - Commercial Private Sector
 - Non-profit private sector, PVOs, NGOs
- ❖ **Integrate Mitigation Measures, for example:**
 - Choice of USEPA-recommended pesticides
 - Avoid disposal of treatment solution in bodies of water
 - Avoid washing application equipment where the residues would impinge on bodies of water
 - For bulk pesticides, provisions for spill prevention and clean-up
- ❖ **Disposal provisions for used pesticide containers**

Annex 3: A Practical Guide To Reducing Pesticide Risks in Development Projects¹³

Basic principle of risk reduction: risk must be evaluated in the local conditions of the project or activity.

1) Some common errors

- Pesticide not registered in the host country
- Pesticide not evaluated/registered in the country of origin (OECD)
- Pesticide not efficacious for the planned use
- Formulation is not stable in tropical conditions
- Formulation not adapted for the available application equipment
- Quantities exceed the real need
- Pesticide is too dangerous for the users
- No label / in a foreign language
- Packaging of an inappropriate volume
- Packaging not strong enough

2) Basic principles

- Promote IPM as the preferred approach for pest control
- Reinforce the management of pesticides by the host country
- Use good practices in the provision of pesticides

3) Constraints to IPM -- pesticides

- Aggressive marketing of pesticides
- Policies of government/donors
- Governmental policies / donors promote the use of pesticides
- Economic/financial
- Institutional
- Centralized decision-making in favor of pesticides

4) Possible responses

- Put in place a project/program for plant protection/vector control
- Put in place IPM/IVM projects/programs
- Donation/purchase of pesticides

¹³ Translated from Oct. 2000 presentation at IPM workshop by H. van der Walk, UNFAO Sahel Regional Program, Bamako, Mali.

5) Use of pesticides in development projects -- some recommendations if one is obliged to use pesticides.

Stage 1 – phytosanitary problem analysis

- Is the pest biology known?
- Is the environment and are the farmer practices known?
- Is the pest impact known (financial loss)?

Stage 2 – analysis of management options.

- Has the pesticide efficacy been evaluated for the crop/pest and locality in question?
- Are agronomic/cultural measures known and applied?
- Is biological control possible?
- Has an IPM system been developed?

Stage 3 – risk reduction

- Risk = toxicity x exposure
- Minimize the risk of the pesticides used by:
 - Reducing toxicity of choices
 - Reducing the duration of exposure
 - Reducing the degree of exposure

6) Risk reduction measures:

Avoid use

- Avoid pesticide use, if possible.
- Avoid pesticide use as the only control option, if possible.
- Integrate pesticide use into an IPM system -- minimize the frequency and dose of applications
- Use pesticides as a last resort

Toxicity reduction

- Use the least toxic commercial products available – basic principles:
- Products authorized? -- regulation.
- Products efficacious? -- regulation / research
- Products acceptable to users? -- extension / farmers' groups
- WHO acute toxicity classes:
 - Ia Extremely hazardous
 - Ib Highly hazardous
 - II Moderately hazardous
 - III Slightly hazardous
 - U Unlikely to present any acute hazard in normal use
- Lists of concern :
 - Products in WHO toxicity classes Ia, Ib (and II)
 - Products not registered in OECD countries
 - «PIC » or «POP » chemicals

(FAO: will not use Ia/Ib in development projects. World Bank / OECD: will not finance Ia/Ib/(II) if use is directly by or accessible to small farmers or in countries without good regulatory programs.)

Exposure reduction

- Prior to use
 - Transport, Packaging, Storage
- During use (« safer use »)
 - Training
 - Formulation
 - Equipment
 - Protective material
 - Buffer zones
- After use
 - Waiting period
 - Cleaning / bathing
 - Storage
 - Disposal
 - Monitoring

Annex III

PERSUAP Sample Outline Representative Agriculture Sector PERSUAP Outline

[this is only a guide, not a prescription]

Title Page
Acronyms
Acknowledgements
List of Figures , photos
List of Boxes
List of Tables

EXECUTIVE SUMMARY
Findings and Recommendations

1.0 Introduction: Background and Program Description

- 1.1 Scope and Aim of the Report
- 1.2 Country Background
 - 1.2.1 Physical environment and resources
 - 1.2.2 Crop protection research and development

- 1.3 Study Methodology
- 1.4 USAID Development Partners and Program(s) Under Consideration

2.0 Pest [and related] Problems In The Field [*prioritize*] and IPM Options [*where available*]

- 2.1 Insect Pests, Mites and Nematodes
- 2.3 Plant Diseases
- 2.4 Weeds
- 2.4 Other [*e.g., vertebrate, biophysical*]
- 2.5 Pests of Stored Products
- 2.6 Magnitude of Pest Problems and Prioritization [*incl. which ones are not emphasized*]
- 2.7 IPM programs in [country]
- 2.7 Priority Geographic Areas of Intervention

3.0 Pesticide Evaluation Report: Pesticide Use In [country's] Agriculture [*in sector being analysed*] – Current Situation

Structure around the 12 factors of the USAID Pesticide Procedures. *This is the minimum requirement.* Organize the generic material together in one place, then treat the pesticide specific discussion separately by pesticide, *in Section 4:*

- PROVISIONS MADE FOR MONITORING THE USE AND EFFECTIVENESS OF THE PESTICIDE;
- [COUNTRY'S] ABILITY TO REGULATE OR CONTROL THE DISTRIBUTION, STORAGE, USE, AND DISPOSAL OF THE PESTICIDE; AND
- PROVISIONS MADE FOR TRAINING OF USERS AND APPLICATORS, AND OUTLINE A TRAINING PLAN FOR PARTICIPANTS AND EXTENSION OFFICERS;

One Example:

- 3.1 Pesticide Import and Consumption
 - 3.1.1 Pesticide types and major users
 - 3.1.2 Sources of pesticide imports
 - 3.1.3 Toxicity of pesticides

- 3.1.4 Pesticides recommended by extension
- 3.1.5 Pesticides used in stored grains
- 3.2 Pesticide Regulation
 - 3.2.1 Pesticide import and registration requirements
 - 3.2.2 The FAO's Prior Informed Consent procedures
 - 3.2.3 Pesticide handling and safety procedures
 - 3.2.4 Obsolete pesticides

Another example:

- 3.1 Pesticide Imports
- 3.2 Local Production
- 3.3 Pesticide Use in Small-scale Agriculture
- 3.4 Pesticide Use in Commercial Agriculture
- 3.5 Pesticide Regulation
 - 3.5.1 Toxicity of pesticides
 - 3.5.2 Pesticide registration data requirements
 - 3.5.2.1 Specifications
 - 3.5.2.2 Efficacy data
 - 3.5.2.3 Toxicological data
 - 3.5.2.4 Data on environmental effects
 - 3.5.2.5 Residues on food
 - 3.5.2.6 Labeling requirements
 - 3.5.2.7 Packaging requirements
 - 3.5.2.8 Authorization of registration
- 3.6 Pesticides Registered for Agricultural Use in [country]
- 3.7 Pesticides Registered for Use against External Parasites on Animals
- 3.8 Capacity of GO[...] to Implement Pesticide Regulation

4.0 Proposed Pesticides [*pesticide specific analyses, and reasons for choosing; what alternatives considered and eliminated, and why*]. Some information covering the USAID Pesticide Procedures' "12 Factors" can be presented in tabular summary form

Pesticide specific information needed, at minimum:

- THE USEPA AND [COUNTRY] REGISTRATION STATUS OF THE REQUESTED PESTICIDES;
- THE BASIS FOR SELECTION OF THE REQUESTED PESTICIDE (S);
- THE EXTENT TO WHICH THE PROPOSED PESTICIDE USE IS PART OF AN INTEGRATED PEST MANAGEMENT PROGRAM (IPM);
- THE PROPOSED METHOD OF APPLICATION, INCLUDING AVAILABILITY OF APPROPRIATE APPLICATION AND SAFETY EQUIPMENT;
- ACUTE OR LONG TERM TOXICOLOGICAL HAZARDS, EITHER HUMAN OR ENVIRONMENTAL, ASSOCIATED WITH THE PROPOSED USE, AND MEASURES AVAILABLE TO MINIMIZE SUCH HAZARD;
- THE EFFECTIVENESS OF THE PESTICIDE FOR THE PROPOSED USE;
- COMPATIBILITY OF THE PROPOSED PESTICIDE WITH TARGET AND NON-TARGET ECOSYSTEMS;
- THE AVAILABILITY AND EFFECTIVENESS OF OTHER PESTICIDES OR NON-CHEMICAL CONTROL METHODS;

5.0 Safer Use Action Plan [*mitigation actions, incl. least toxic choices, IPM, training, protection, monitoring. Etc.*]

Link this to the programs' workplans where possible.

An elaborate example:

5.1 Improved Capacity for Safe Handling of Pesticides

- 5.1.1 Training on safe handling procedures
 - 5.1.1.1 Training of trainers
 - 5.1.1.2 Training of pesticide dealers
 - 5.1.2 Safe disposal of obsolete pesticides
 - 5.1.3 Support for strengthening capacity of farmers' credit cooperatives unions
 - 5.2 Promoting Use of Safer Pesticides
 - 5.2.1 Creating awareness about hazards associated with pesticides
 - 5.2.2 Use of safer pesticides
 - 5.2.3 Introduction of safer pesticides
 - 5.3 Development and Implementation of IPM
 - 5.3.1 Identification and promotion of available IPM technologies
 - 5.3.2 Strengthening IPM research and development
 - 5.3.2.1 Establishing significance of pests
 - 5.3.2.2 Determining the influence of cultural practices on pests and natural enemies
 - 5.3.2.3 Determining population dynamics of major pests and their natural enemies:
 - 5.3.2.4 Exploration of biological control agents
 - 5.3.2.5 Screening for host-plant resistance
 - 5.3.2.6 Screening of safer pesticides
 - 5.3.2.7 Integrating the research results
 - 5.3.2.8 Human resource development
- 6.0 Practical Guide to Reducing Pesticide Use?

REFERENCES

ANNEXES

Annex I: Terms of Reference

Annex II: Work Plan and Schedule

Annex III: Pesticides Registered by MOA in [country]

Annex V: Pesticides Registered by ... for [e.g., Use against External Parasites on Animals]

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Annex VI: Persons Met, Resource People, Collaborators

Annex VII. Recommended Distribution

ANNEX D

QUALITY, WORKPLACE, ENVIRONMENT, AND SAFETY TOOL (QWEST)

INTRODUCTION AND SAMPLE QUESTIONNAIRE

QWEST is being developed as a Web-based application and diagnostic tool for projects. The tool consists of the questionnaire, accompanying suggested corrective actions, and the database that tracks progress toward improved operations. Once potential partners have completed the questionnaire, the application will tally their compliance/cost/competitiveness risk per the relevant industry and propose appropriate corrective actions.

Projects can use the QWEST tool to assess partners as they are identified and activities developed. Using the tool on a client level will highlight corrective actions that can be proactively built into the SOW for project-related assistance, whether a grant, training, STTA, procurement services, or other type of assistance.

The QWEST application will be available for project use in November 2005.

Sample questionnaire. Sections A-H below are questions that QWEST asks project staff to complete with a potential client's business/activity information. The QWEST application will evaluate responses to Sections D-H and provide suggested corrective actions. Corrective actions are not included below.

A. System Data

1. Date
2. User name

B. Client Data: Please fill in the contact information for the site you are assessing.

1. Organization Contact Information
2. Client Name
3. Client Title
4. Name of Client Organization
5. Name of Client Organization CEO
6. Name of Parent Organization (if applicable)
7. Address
8. Country
9. Telephone number
10. Fax number
11. Email

C. General Enterprise Information: Please select the applicable answer to the questions below. All questions must be filled in before proceeding to the next one.

1. Select type of enterprise:
Private Enterprise
Cooperative
Nongovernmental Organization
Public utility or service
Other
2. Enter type of enterprise (other):
3. Select type of industry:
Agrifood Processing
Business Development Services
Crop Production
Education/Training
Forestry
Hotels/Tourism
Manufacturing - Chemical
Manufacturing - Electrical
Manufacturing - Forest & Wood-products
Manufacturing - Garments & Textiles
Manufacturing - Metal

Medical/Health
Services
Transportation

4. Select industry aspects:
 - Bottling
 - Canning
 - Cold pressing
 - Dairy
 - Degreasing
 - Drying
 - Extruding
 - Farming
 - Fermentation
 - Finishing
 - Forging
 - Fuel Storage
 - Grading
 - Harvest
 - Irrigation
 - Milling
 - Mining
 - Painting
 - Pickling
 - Polishing
 - Power Generation
 - Pressing
 - Pulping
 - Refining
 - Sandblasting
 - Stripping
 - Tanning
 - Washing
 - Welding
 - Wood Preserving
 - Not Applicable
5. Select type of ownership:
 - Joint Venture Partnership
 - Limited Liability Company (LLC)
 - Public-Private Partnership
 - Other
6. Enter type of ownership (other):
7. Year established

8. List principal products:
9. Select export country/countries: (drop down list of countries)

D. *Management Attributes*: Please select the applicable answer to the questions below. These questions are designed to evaluate the level of formality of the organization's management structure.

1. Select number of employees at client site:
 - a.) 1-10
 - b.) 11-50
 - c.) 51-200
 - d.) 200+
2. Number of shifts worked at site:
One
Two
Three
3. Does the organization have an organizational management chart? Y/N
4. Do supervisory staff have written job descriptions? Y/N
5. Are there designated representatives for quality assurance? Y/N
6. Are there designated representatives for worker health and safety? Y/N
7. Are there designated representatives for environmental management or pollution control? Y/N
8. Are there designated management representatives for employee grievances? Y/N
9. Has the organization ever conducted a risk assessment in quality assurance? Y/N
10. Has the organization ever conducted an employee health and safety risk assessment? Y/N
11. Has the organization ever conducted an environmental risk assessment? Y/N
12. Does the organization conduct scheduled audits of quality? Y/N
13. Does the organization conduct scheduled audits of employee health and safety? Y/N

14. Does the organization conduct scheduled audits of environment management and pollution? Y/N
15. Does the organization have a written accident prevention plan and emergency evacuation procedure? Y/N
16. Does the organization maintain appropriate product specifications to assure product quality? Y/N
17. Does the organization maintain copies of local and current employee health and safety regulations? Y/N
18. Does the organization maintain copies of local and current environmental management and pollution regulations? Y/N
19. Does the organization routinely reject suppliers inputs based on quality deficiencies? Y/N
20. Does the organization routinely reject suppliers inputs based on lack of employee health and safety requirements? Y/N
21. Does the organization routinely reject suppliers inputs based environmental management systems? Y/N
22. Does the Organization have written policy statements that addresses Quality? Y/N
23. Does the Organization have written policy statements that addresses Environmental concerns? Y/N
24. Does the Organization have written policy statements that addresses Occupational Health & Safety? Y/N
25. Does the Organization have written policy statements that addresses Internal Code of Conduct? Y/N

E. *Environmental Characterization*: This section is intended to help managers assess the nature and scale of environmental and social impacts of anticipated activities. Most of the attributes required to determine the nature and scale of environmental impact should have been determined during the conduct of an initial environmental examination (IEE) which is legally required prior to project commitment. Please ensure that you have a copy of the IEE in hand at project outset in prior to reviewing individual activities.

1. Will the project support technical studies and activities and analyses that are involved in extractive industries (e.g., mining, forestry, hunting, fishing, etc.)? Y/N

2. Will the project support intermediate credit organizations including banks, other microfinance lenders, or NGOs? Y/N
3. Will the project support controlled experimentation? Y/N
4. Will the project support the development of irrigation perimeters? Y/N
5. Will the project support river basin management? Y/N
6. Will the project support the development of dams? Y/N
7. Will the project support the development of water impoundments? Y/N
8. Will the project support the development of river diversion? Y/N
9. Will the project support the development of sewerage projects? Y/N
10. Will the project support the development of large-scale potable water sources? Y/N
11. Will the project support the development of drainage projects? Y/N
12. Will the project support the development of large-scale agricultural mechanization? Y/N
13. Will the project support the development of new lands development? Y/N
14. Will the project support the development of land bunding or terracing? Y/N
15. Will the project support resettlement projects? Y/N
16. Will the project support the development of penetration road building? Y/N
17. Will the project support the development of road improvement? Y/N
18. Will the project support the development of power plants? Y/N
19. Will the project support the development of industrial plants?
20. Will the project support the agricultural pesticide use? Y/N
21. Will the project support the medical pesticide use? Y/N
22. Will the project support the veterinary pesticide use? Y/N
23. Will the project support exotic species introduction? Y/N

F. Production & Processing Site Description : Please select the applicable answer to the questions below. All questions must be filled in before proceeding to the next one.

1. Select the site's proximity to closest town:
0-1km
1-2km
Greater than 2km
2. Select the site's distance to nearest to nearest stream, river, lake:
0-1km
1-2km
Greater than 2km
3. Select the types of solid wastes are generated from the site: (Drop down list of wastes by relevant industry)
4. Select the types of liquid wastes are generated from the site: (Drop down list of wastes by relevant industry)
5. Select the types of air wastes are generated from the organization: (Drop down list of wastes by relevant industry)
6. Select how solid wastes are managed:
Collected
Land filled
Incinerated
Treated/Released
Septic system
Discharged to rivers
Made available to secondary markets
Equipment dismantled
Recycled
7. Select how liquid wastes are managed:
Collected
Land filled
Incinerated
Treated/Released
Septic system
Discharged to rivers
Made available to secondary markets
Recycled

8. Select how air wastes are managed:
Collected
Incinerated
Treated/Released

G. *Walk through Inspection*: First complete a site walk-through. Second, evaluate as best as possible the status of the following conditions. These responses can be completed as either acceptable or unacceptable.

1. Product quality deficiencies: Acceptable/Not Acceptable
2. General housekeeping problems: Acceptable/Not Acceptable
3. Evidence of chemical releases: Acceptable/Not Acceptable
4. Inadequate or incorrect product or hazardous chemical labeling: Acceptable/Not Acceptable
5. Lack of safety warning signs: Acceptable/Not Acceptable
6. Improper segregation or storage of hazardous material and/or waste: Acceptable/Not Acceptable
7. Leaking valves, lines, and containers: Acceptable/Not Acceptable
8. Available and use of personal protection equipment: Acceptable/Not Acceptable
9. Inadequate machine guarding: Acceptable/Not Acceptable
10. Uncovered chemical/waste containers: Acceptable/Not Acceptable
11. Inadequate/incorrect emergency equipment: Acceptable/Not Acceptable
12. Improper lighting/ventilation: Acceptable/Not Acceptable
13. Inadequate or ineffective maintenance: Acceptable/Not Acceptable
14. Presence of uncontrolled physical, chemical, and biological hazards: Acceptable/Not Acceptable
15. Fire suppression equipment: Acceptable/Not Acceptable
16. Other observations

H. *Chemonics Project Resource Allocation Strategy*: Please evaluate the type of assistance this client request from this USAID funded project.

1. What type of technical assistance is the client requesting from the project office?
Short-term technical advisory services
Short term management advisory services
Procurement services
2. What type of grants activities are being proposed in grants request?
Training
Procurement
Management
Financial systems
Long-term staffing
Short-term staffing
3. What type of procurement activities is the client requesting from the project office?
Agricultural products
Pesticides
Vehicles
Computer equipment
Other equipment over \$500 per unit
Other equipment under \$500 per unit
4. What type of services will be provided by the project office in a subcontract?
Technical advisory services
Management advisory services
Training
Financial systems

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