

ALTO MAYO CONSERVATION INITIATIVE MONITORING REPORT N^o1 (2008-2012)



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Prepared By	Conservation International-Peru
Contact	Av. Dos de Mayo, Miraflores, Lima 18, Perú Tel: +51 1 6100 300 Email: l.espinel@conservation.org Website: www.conservation.org/sites/peru/

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1 PROJECT DETAILS

1.1 Summary Description of the Project

The Alto Mayo Protected Forest (AMPF) covers approximately 182,000 hectares of land in the Peruvian Amazon of extremely high value for biodiversity conservation and watershed protection. This area forms part of the Abiseo-Condor-Kutukú Conservation Corridor, one of the most threatened ecosystems in the world which houses an incredible number of endemic plants and animals of global importance. In addition, runoff from the Alto Mayo forests gives rise to several major rivers which provide clean and abundant water supplies and support several economic activities of the local population living in the Alto Mayo basin. For example, the Yuracyacu River provides water for the cities of Yuracyacu and Nueva Cajamarca, while supporting the irrigation of over 9,000 hectares of rice cultivation downstream. Its forests are also recognized for their importance in preventing soil erosion, protecting soils in the lowland areas from torrential flows and floods, and for their scenic beauty. The Alto Mayo forests also store a significant amount of carbon, whose release in the atmosphere through deforestation results in the emission of large quantities of greenhouse gases which contribute to climate change. Conserving the Alto Mayo forests is therefore critical for mitigating global climate change, conserving biodiversity, and ensuring the provision of ecosystem services to the local population. For these reasons, the Peruvian government established the Alto Mayo Protected Forest in 1987 as part of the National System of Protected Areas.

Despite the designation of the Alto Mayo forests as a Natural Protected Area (NPA) by the State, insufficient funds for managing the area, the building of a national highway in 1975 that crosses the AMPF, and the high rates of migration from the Andes to the Amazon region have resulted in widespread settlement inside the area, making it one of the NPAs with the highest deforestation rate in Peru. The threats to the area have increased in the last decade with the linking of the highway to other regional mega-development projects such as IIRSA¹ and the rising price of coffee -the main crop grown in this area-, leading to increasing deforestation and the subsequent loss of ecosystem services that this NPA provides. This scenario will continue unless new mechanisms are designed to add value to the standing forest so that it can compete economically with other land uses.

In response, Conservation International and its allies in the region designed the Alto Mayo Conservation Initiative (AMCI), whose main goal is to promote the sustainable management of the AMPF and its ecosystem services for the benefit of the local populations and the global climate. The AMCI recognizes that the key to achieving significant greenhouse gas (GHG) emissions reductions (ERs) and other ecological gains in the AMPF is designing a new mechanism to give the forest an economic value that competes with alternative uses of the land. Currently, conventional coffee production is the primary economic activity among settlers in the AMPF, despite the illegality of this activity under the land use restrictions of the NPA. The conventional coffee production techniques used by the vast majority of coffee producers within the AMPF are highly unsustainable. Most coffee plantations do not utilize organic fertilizers, pest control methods, or effective post-harvest management techniques, causing coffee plantations to quickly lose productivity. When production decreases, most coffee producers convert

¹ The Initiative for the Integration of the Regional Infrastructure of South America (IIRSA) is a development plan to link South America's economies through new transportation, energy, and telecommunications projects.

plantations to pastureland and deforest new areas to establish new coffee plantations. These poor management techniques dominate the coffee production systems in all the sub-basins of the AMPF and encourage the cycle of deforestation.

Conservation Agreements (CAs) are being established between local communities and the AMPF Head Office in order to increase the productivity and sustainability of their coffee plantations, thereby increasing individual family incomes and reducing their need to deforest other areas to establish new coffee plantations. Specifically, settlers are being instructed on the production of organic, shade-grown coffee, thereby replacing the current traditional coffee plantations with sustainable, low-impact agro-forestry systems with the goal of restoring degraded areas. In parallel, the AMCI is investing in strengthening the governance and enforcement capabilities of the AMPF Head Office in order to equip them with the necessary skills and resources to successfully manage the complex dynamics between local populations and the Protected Area's conservation goals and to address other drivers such as illegal land trafficking. Additionally, the AMCI is performing extensive outreach and sensitization activities to build awareness among the local population and increase their involvement in conservation activities. With the financial support of carbon financing, these actions are facilitating the conservation of large expanses of forest with associated climate change mitigation benefits, while also creating opportunities for the sustainable development of local communities.

1.2 Sectoral Scope and Project Type

The project falls under scope 14 of the VCS, namely Agriculture, Forestry, and Other Land Use. The AFOLU project category is Reducing Emissions from Deforestation and Forest Degradation (REDD). This is not a grouped project.

1.3 Project Proponent

The project proponent of the Alto Mayo Conservation Initiative is Conservation International Foundation (CI) through its Peru office (CI-Peru). CI-Peru has overall control and responsibility of the AMCI initiative and is in the process of obtaining an administration contract to co-manage the AMPF together with the local Head Office of the National Service of Natural Protected Areas by the State (SERNANP). Pursuant to the administration contract, CI-Peru will have the right of use of any greenhouse gas (GHG) emission reductions and/or removals arising during the contract period in connection with its performance of environmental services that generate GHG emission reductions and/or removals in the AMPF. CI-Peru's right to use the carbon credits is more fully discussed in the Proof of Title section of the PD (1.12.1).

CI is a global, non-governmental organization (NGO) based in Washington D.C. (USA), with offices in more than 30 countries and more than 1000 partners around the world. CI's mission is to help societies adopt a more sustainable approach to development—one that considers and values nature at every turn. CI has more than two decades of experience in leading successful conservation initiatives around the world and collaborating with local partners in the field. As an organization with a strong foundation on science, CI has a long history of deforestation mapping, Land Use Change modelling, and spatial analyses that has become increasingly relevant to REDD applications. For ten years, even prior to the increasing interest in REDD, CI has made major contributions to the scientific understanding of tropical deforestation patterns and rates. CI has produced wall-to-wall, fine-resolution, multi-temporal

deforestation maps for twelve tropical countries and regions². CI has used these products to perform spatial analyses focused on habitat mapping and was one of the first NGOs to adopt habitat mapping using remote sensing as a standard practice. Most recently these deforestation maps have been used to generate baseline scenarios for REDD initiatives. Some of these maps have also been used by governments in national REDD-readiness efforts, such as in Liberia and Madagascar. CI has also worked extensively with Clark Labs, the developers of the IDRISI software suite, to advance the Land Change Modeller for REDD applications.

In addition to the technical work, CI is building a diverse portfolio of site-level REDD-plus initiatives around the world and working on project design and implementation, with four projects already validated under the Verified carbon Standards (VCS) and/or the Climate, Community and Biodiversity Standards (CCBS) in China, the Philippines and Brazil, and several more ongoing in Fiji, Madagascar and the DRC, among others. CI is also involved in developing feasibility studies for REDD-plus initiatives in a number of countries, and operates a Carbon Fund to channel investments in support of REDD-plus activities. At the national level, CI advises numerous countries on REDD-plus policy and UNFCCC negotiations, as well as on REDD-Readiness and Measuring, Monitoring, Reporting and Verification (MRV) issues and is testing the development of nested approaches to REDD-plus in order to link its ground activities with national REDD-plus frameworks. Finally, CI has conducted extensive capacity building efforts on REDD-plus that have involved more than 1,300 stakeholders, including government officials, representatives from NGOs, indigenous leaders, rural communities, the corporate sector, and academia.

In Peru, CI has been working since 1989, helping to establish the first protected areas in the Amazon. CI-Peru supports conservation efforts at all scales, ranging from the creation of protected areas at the local level to the design of biodiversity conservation corridors on a regional scale. For 20 years, CI and its local partners have worked to create and consolidate the Vilcabamba-Amboro and Condor-Abiseo-Kutuku conservation corridors. CI Peru has initiated a variety of pilot projects related to payment schemes for environmental services, especially those related to REDD-plus, to ensure the long-term provision of these services and the protection of the ecosystems that provide them. CI-Peru works with regional governments, federations of indigenous peoples, the Ministry of the Environment and the National Service of Natural Protected Areas to ensure the success of these initiatives. CI-Peru consists of a multidisciplinary team of 14 Peruvian staff members, who are experts in both social and natural sciences and are supporting the AMCI initiative. In addition, CI-Peru has a technical team of six consultants led by the AMCI Field Coordinator, to provide on-the-ground assistance to the AMPF Head Office. The team's objective is to strengthen the signing of Conservation Agreements in the AMPF by facilitating partnerships between the local population and the AMPF Head Office. Several members of the team have extensive agroforestry experience, specializing in the development of sustainable agroforestry coffee and cacao systems in the Peruvian Amazon and have ample field experience working on conservation projects in NPAs in Peru.

² e.g. Leimgruber et al 2005, Christie, et al 2007, Harper, et al 2007a, 2007b, Killeen et al 2007; see https://learning.conservation.org/spatial_monitoring/Forest/Pages/default.aspx

Contact information:
Luis Espinel, Country Director, Conservation International Peru
Email: l.espinel@conservation.org
Telephone: +51 1 6100 300
Address: Av. Dos de Mayo, Miraflores, Lima 18, Perú
Website: www.conservation.org/sites/peru/



1.4 Other Entities Involved in the Project

Servicio Nacional de Áreas Naturales Protegidas por el Estado (SERNANP)

The National Service for Natural Protected Areas Protected by the State (SERNANP) is the government agency responsible for establishing the technical and administrative criteria for the creation and protection of National Protected Areas in Peru. It manages Peru's National System of Natural Protected Areas (SINANPE, or *Sistema Nacional de Áreas Nacionales Protegidas por el Estado*) of which the AMPF is part of. SERNANP has a diverse array of conservation professionals with a wide range of areas of expertise that together make up the basis from which it manages the vast expanse of protected areas at the national level.

SERNANP participates in the AMCI through the AMPF Head Office (*Jefatura*) which is its decentralized branch in charge of managing and protecting the AMPF in the field in accordance with an approved Master Plan. Although officially designated as a Protected Area in 1987, the AMPF didn't have personnel or an assigned budget until the year 2000, and its Master Plan was not finalized until 2008. Despite these challenges, the local AMPF Head Office has been able to strengthen institutionally and today is made up of several park rangers, who after 10 years in office have gained ample experience in dealing with the challenges and social complexity that characterize this Protected Area. The AMPF Head Office is responsible for signing and monitoring Conservation Agreements with the local population, and is the ultimate authority within the AMPF.

SERNANP also supports the AMCI through its headquarters in Lima. For this project, the headquarters office has been particularly important for establishing the guidelines and legal framework for implementing Conservation Agreements within a Protected Area. It has also signed a Cooperation Agreement with CI-Peru to support the management of NPAs, and is engaged in a process of transferring legal rights to CI to co-manage the area together with the AMPF Head Office through an administration contract. SERNANP is also interested institutionally in the possibility of the AMCI project becoming a model for financing the long-term management of an NPA through REDD revenue.

Contact information
Carlos Antonio Martín Soria Dall'Orso, Ph.D., Secretary General
Email: csoria@sernanp.gob.pe
Telephone: +51 1 717 7529
Address: Calle Diecisiete Nro. 355, Urb. El Palomar, San Isidro, Lima 27
Website: www.sernanp.gob.pe



Asociación para la Investigación y Desarrollo Integral (AIDER)

The Association for Research and Integrated Development (AIDER) is a Peruvian institution with over 18 years of experience in managing natural resource conservation projects in the Amazon. Its thirty-two staff members have extensive experience in REDD and other forestry related projects. AIDER has supported the successful validation and registration of the first Clean Development Mechanism reforestation project in Peru³. It holds administration contracts for two NPAs in Peru, both of which are REDD projects undergoing VCS and CCB validation⁴. AIDER is a technical advisor to the AMCI project, responsible for conducting the biomass inventory of the AMPF, doing background analysis of the agents and drivers of deforestation, supporting project implementation and contributing to the development of the Project Design Documents (PDD).

Contact information
Jaime Nalvarte, Executive Director
Email: lima@aider.com.pe
Telephone: +51 1 421 5835
Address: Av. Jorge Basadre 180 Oficina 6 – San Isidro. Lima, Perú
Website: www.aider.com.pe



Sociedad Peruana de Derecho Ambiental (SPDA)

The Peruvian Society for Environmental Law (SPDA) is an organization dedicated to integrating environmental conservation into development policies to achieve a sustainable society. SPDA has extensive experience in legislation, environmental management, international treaties, international environmental law, and capacity building regarding legal principles and social responsibility. Specifically, the Forestry Program of SPDA has conducted extensive analyses on the regulatory aspects of REDD-plus in Peru on behalf of the Peruvian Government and other stakeholders. SPDA is a legal advisor to the AMCI project and provides crucial support on issues related to proof of title, NPA law, land tenure,

³ <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1245856381.67/view>

⁴ [Proyecto Reducción de la deforestación y degradación en la Reserva Nacional Tambopata y en el Parque Nacional Bahuaja Sonene del ámbito de la región Madre de Dios en Perú](#)

administration contracts, Conservation Agreements, and others.

Contact information
José Luis Capella
Email: jcapella@spda.org.pe
Telephone: +51 1 422 2720
Address: Prolongación Arenales 437, San Isidro, Lima, Perú
Website: www.spda.org.pe



Asociación Ecosistemas Andinos (ECOAN)

The Association for Andean Ecosystems (ECOAN) is a Peruvian NGO with more than ten years of experience in implementing conservation projects and conducting research on flora and endangered bird species in Peru. In addition, ECOAN operates ecotourism initiatives and implements community development projects. These projects are located in six regions across Peru, several of which focus on sustainable forestry and forest conservation initiatives. ECOAN manages the Lechucita Bigotona biological station in the buffer zone of the AMPF and has ample experience working with communities living in and around its boundaries. Supported by the AMCI field staff and the AMPF Head Office, it will be responsible for working directly with local settlers to design and implement Conservation Agreements in the field.

Contact information
Constantino Aucca Chutas
Email: caucca@ecoanperu.org
Telephone: +51-84-227988
Address: Pasaje Los Pino D-1-B; Urb. La Florida, Wanchaq, Cusco
Website: www.ecoanperu.org



Additional stakeholders

While SERNANP and the AMPF Head Office are key partners in the AMCI initiative and represent the main stakeholders involved in the management and administration of the AMPF, CI recognizes the importance of involving all local stakeholders in the AMCI, ranging from local government officials and private interests to the broader civil society and individual settlers. The Law of Natural Protected Areas (Article 15) requires that all public NPAs in Peru have a Management Committee to provide local stakeholders a voice in the management of NPAs and ensure that they are being managed in accordance with their conservation goals. The AMPF Management Committee, created in 2001, was recognized through Departmental Resolution N° 007-2005-INRENA-IANP in 2005 and provides the main platform for stakeholder dialogue on issues related to the management of the AMPF. As a result of the support received through the AMCI, it currently consists of 59 representatives from local governments and

population centres, regional governments, public and private sector institutions, and other organizations with an interest in the management of the Protected Area. This umbrella committee, representing a diverse body of stakeholders has been, and will continue to be, the main mechanism through which the AMCI will involve local interests in the project and maintain an open dialogue. In addition, the AMCI recognizes that the success of the AMPF in conserving its 182,000 hectares of Amazonian forest is inherently linked to the livelihoods of the populations that live in and around its boundaries. Therefore, individual settlers that sign Conservation Agreements with the AMPF Head Office also represent key stakeholders in the AMCI initiative.

As described above, the size and complexity of the project requires collaboration among a broad range of partners and local actors with different roles and responsibilities within the project. Figure 1 illustrates the institutional structure of the AMCI REDD project identifying the Project Proponent, its main partners, and the key stakeholders involved. Note that, as the ultimate authority responsible for the management of NPAs in Peru, SERNANP and the AMPF Park Service are identified as both a Project Participant and a key Project Stakeholder.

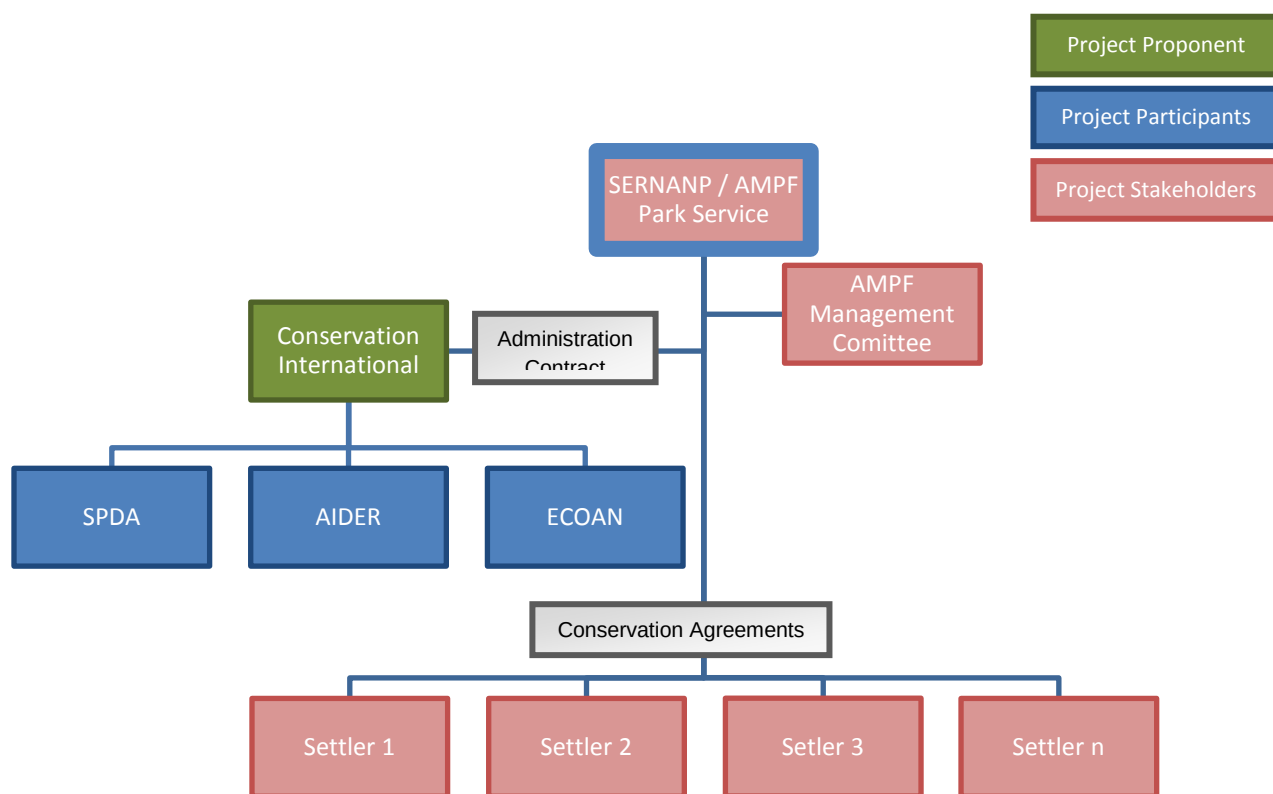


Figure 1. Institutional Structure of the Alto Mayo Conservation Initiative

1.5 Project Start Date

The start date of the project is 15th of June 2008. While several project activities, such as biomass inventories and feasibility studies for the establishment of Conservation Agreements and a REDD+ initiative began as early as 2007 (the project was presented during the 13th COP to the UNFCCC in Bali), this date represents the time when the activities that lead to the generation of GHG emissions reductions started to be implemented, through the development of Conservation Agreements in the field.

1.6 Project Crediting Period

The start and end date of the project crediting period are, respectively: 15th of June 2008 to 14th of June 2028, for a total of 20 years. The project crediting is subject to renewals.

1.7 Project Location

The project area corresponds to the Alto Mayo Protected Forest (AMPF), an area of 182,000 hectares in the northern Peruvian Amazon protected by the State, as established by Supreme Resolution No. 0293-87, DGFF-AG, dated July 23, 1987. Administratively, it is situated in the department of San Martín, between coordinates 5° 23' 21" S, and 77° 43' 18" W upper left corner and 6° 10' 56" S and 77° 12' 17" W lower right corner. The above area includes the districts of Yorongos, Rioja, Elías Soplín Vargas, Nuevo Cajamarca and Pardo Miguel in the province of Rioja, and the district of Moyobamba in the province of Moyobamba. Figure 2 illustrates the location of the project. As detailed in the Methodological Annex, while the AMPF comprises 182,000 hectares of land, the VCS project area, defined as the forested area within the AMPF following the VM0015 methodology (i.e. where GHG credits will be generated), is 153,929 hectares. GIS files of the physical boundaries that define the land included in the project area will be provided to the validator.

1.8 Title and Reference of Methodology

The project applies the "Methodology for Avoided Unplanned Deforestation" (VM0015, Version 1) approved by the VCS on July 12, 2011. The methodology requires referring to each of the steps and sub-steps using the same titles and numbers of the methodology so that its application can be transparently validated. Therefore, the Project Proponent has documented the application of the methodology to the AMCI project in a separate Methodological Annex, which represents the main Annex to the VCS PD.

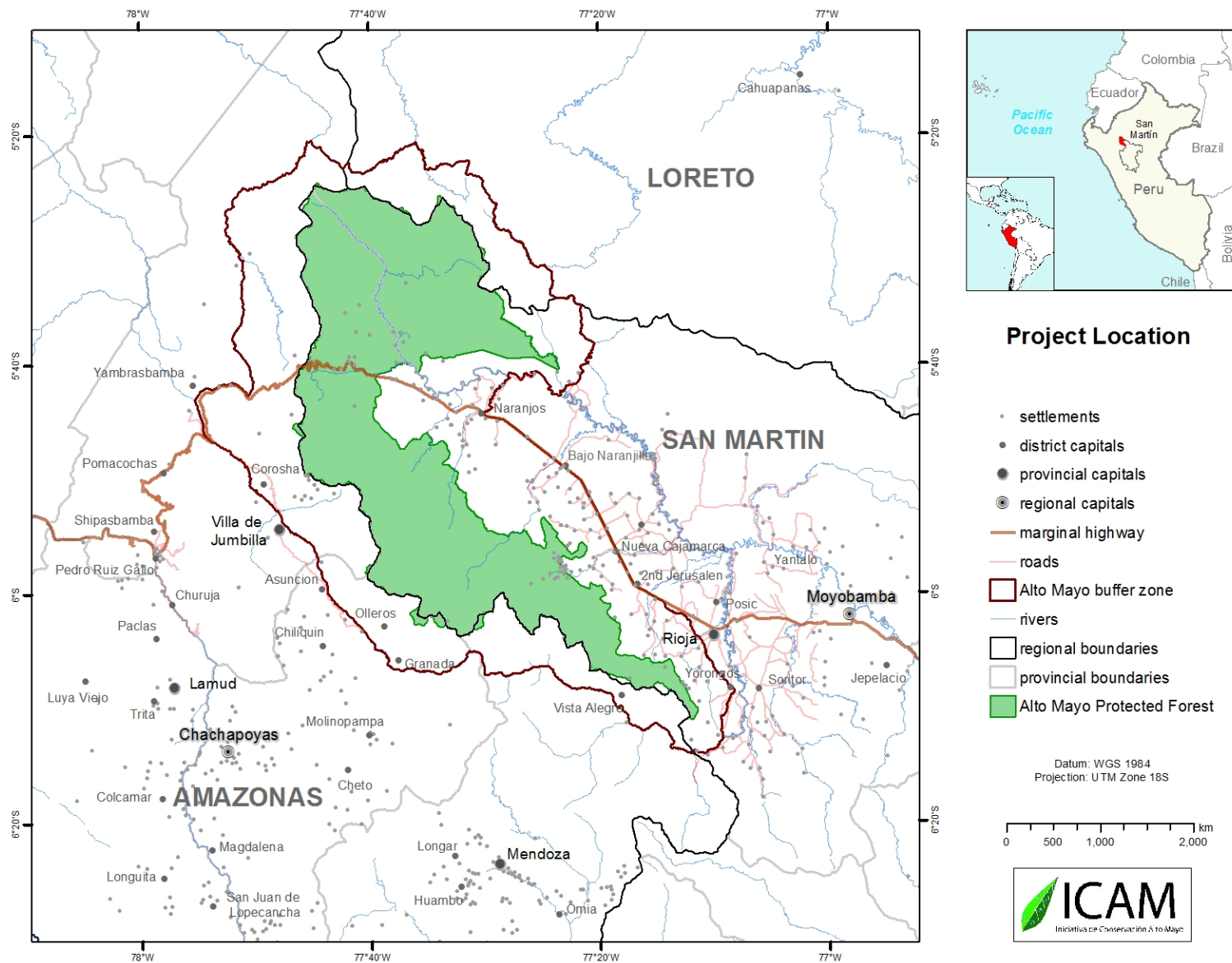


Figure 2. Location of the Alto Mayo Protected Forest

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The project activities of the Alto Mayo Conservation Initiative (AMCI) are aimed at addressing the drivers of deforestation within the Alto Mayo Protected Forest (AMPF). The AMCI recognizes that the key to achieving significant greenhouse gas emission reductions and other ecological gains in the AMPF is a dual strategy which combines improved governance and enforcement through the AMPF Head Office with a new incentive structure that makes sustainable agricultural activities economically competitive with alternative land uses. Based on this approach, project activities are structured around five strategic goals, namely: (I) improving the governance and enforcement capabilities of the AMPF local Head Office; (II) promoting sustainable land use practices that will reduce deforestation and forest degradation within and beyond the AMPF's boundaries through the signing of Conservation Agreements with local communities; (III) promoting a change in the perception of the local population towards the importance of the AMPF by increasing its environmental awareness and involvement in the conservation of the Protected Area; (IV) ensuring the long-term sustainability of the AMCI by creating long-term financial mechanisms through carbon financing and other PES schemes; and (V) integrating the AMPF in the broader policy agenda at the local, regional and national level.

During the first monitoring and verification period of the AMCI, all project activities were initiated on the ground and have been advancing successfully, reducing the pressure on the AMPF's forests and creating the conditions for the establishment of an innovative and more sustainable model of Protected Area Management based on the REDD+ mechanism.

During this initial verification period, strengthening the capacity of the AMPF Head Office and transforming conventional coffee farms into sustainable production systems through conservation agreements have clearly emerged as the most appropriate strategies for working with the local population given the challenging social context surrounding land use in the AMPF. Combined with an ambitious communications and environmental awareness-building campaign, and with efforts to strengthen the institutional positioning of the AMPF at the political level, these strategies have greatly contributed to establishing the principles of governance and sustainability promoted by the AMCI. Below follows a summary of the progress made under each strategy implemented by the project so far:

I. Strengthening of the governance and enforcement capabilities of the AMPF Head Office

In order to successfully reduce deforestation in the AMPF, the AMCI is investing in improving the governance of the protected area by supporting the AMPF Head Office to strengthen its capacity to respond to a range of diverse and dynamic threats. The efforts and investments based on this strategy during this initial verification period have clearly had a direct impact on the reduction of illicit environmental activities inside the AMPF. The technical support and training for the professional staff of the Head Office, including the hiring of additional rangers, and the improvement of the logistical infrastructure supporting their operations, has resulted in increased coverage and frequency of patrolling activities. Compared to 2008 when 37 patrols were carried out in just 5 sub-watersheds, in 2011, this number was increased to 135 patrols and 60 in the first semester of 2012, covering 10 of the 13 sub-watersheds of the AMPF, representing a threefold increase in patrolling activities and a twofold increase in overall coverage. This has not only improved the detection, prevention, and registration of illegal activities inside the AMPF, but has also allowed the Head Office personnel to reach a wider number of

people inside the Protected Area and increase their awareness regarding the importance of conserving the AMPF.

The enforcement and governance capacity of the AMPF Head office has been increased during this period through the acquisition of vehicles and equipment, infrastructure improvements, and the hiring of additional staff:

- Recruitment of 16 rangers, 1 lawyer, 1 environmental specialist, 1 administrator, 1 assistant, and 1 guard;
- Improved patrol management: 380 patrols conducted from January 2008 to May 2012 in 10 watersheds of the AMPF;
- Better demarcation of the AMPF boundaries: 9 new signs constructed and 5 refurbished.
- Construction and equipping of the Yuracyacu control post, and equipment for the Chisquilla and Sol de Oro control posts;
- Vehicles: 1 Toyota 4X4, 5 Yamaha AG 200 motorcycles, 2 Honda Motorcycles and 1 Honda motorcar CGL125;
- Field equipment: 11 digital cameras, 1 semi-professional digital camera, 1 generator, 30 large backpacks, 30 smaller backpacks, 13 GPS units, 30 tents, 30 mattresses, 8 binoculars, 30 headlamps, 30 raincoats, etc.;
- Computer equipment: 9 PCs, 2 laptops, 9 printers, 1 projector, 1 photocopier;

A particularly important achievement during this verification period has been the securing of an Administration Contract with the National Service of Natural Protected Areas (SERNANP), consolidating the legal instrument which will enable the AMCI to provide the most comprehensive level of support to the management of the AMPF provided by the NPA regulatory framework, and allowing the project to broaden its scope of activities and engagement with stakeholders in support of the AMPF.

II. Promoting sustainable land use practices through conservation agreements

The AMCI utilizes Conservation Agreements (CAs) as a tool to reduce the imminent drivers of deforestation inside the AMPF and prevent leakage of these activities outside the protected area. By providing concrete support for the establishment of organic, shade-grown coffee production systems, CAs aim to address one of the main underlying causes of deforestation in the AMPF by creating an incentive for settlers to shift their conventional coffee production systems towards more sustainable practices. CAs are signed between SERNANP, represented by its local AMPF Head Office, and individual coffee producers with the primary objective of conserving and restoring forest cover in the AMPF and protecting its ecosystem services.

During this initial verification period, CAs have proven to be an effective strategy for promoting sustainable land use practices among the population settled inside the AMPF. To date, 185 conservation agreements have been signed and implemented in 17 population centers (sectors) across 6 sub-watersheds of the AMPF. Taking into consideration the dynamics of the deforestation agents and drivers in the AMPF, the signing of conservation agreements during this initial period has targeted the major entry points to the AMPF, with a particular emphasis on the sub-watersheds of Aguas Verdes and Huasta, and the sectors of La Esperanza and Juan Velasco. Focus on these sectors is strategically important as they are near the population centers of El Paraiso and El Triunfo, two of the major hotspots where illicit environmental activities have historically taken place (Figure 3).

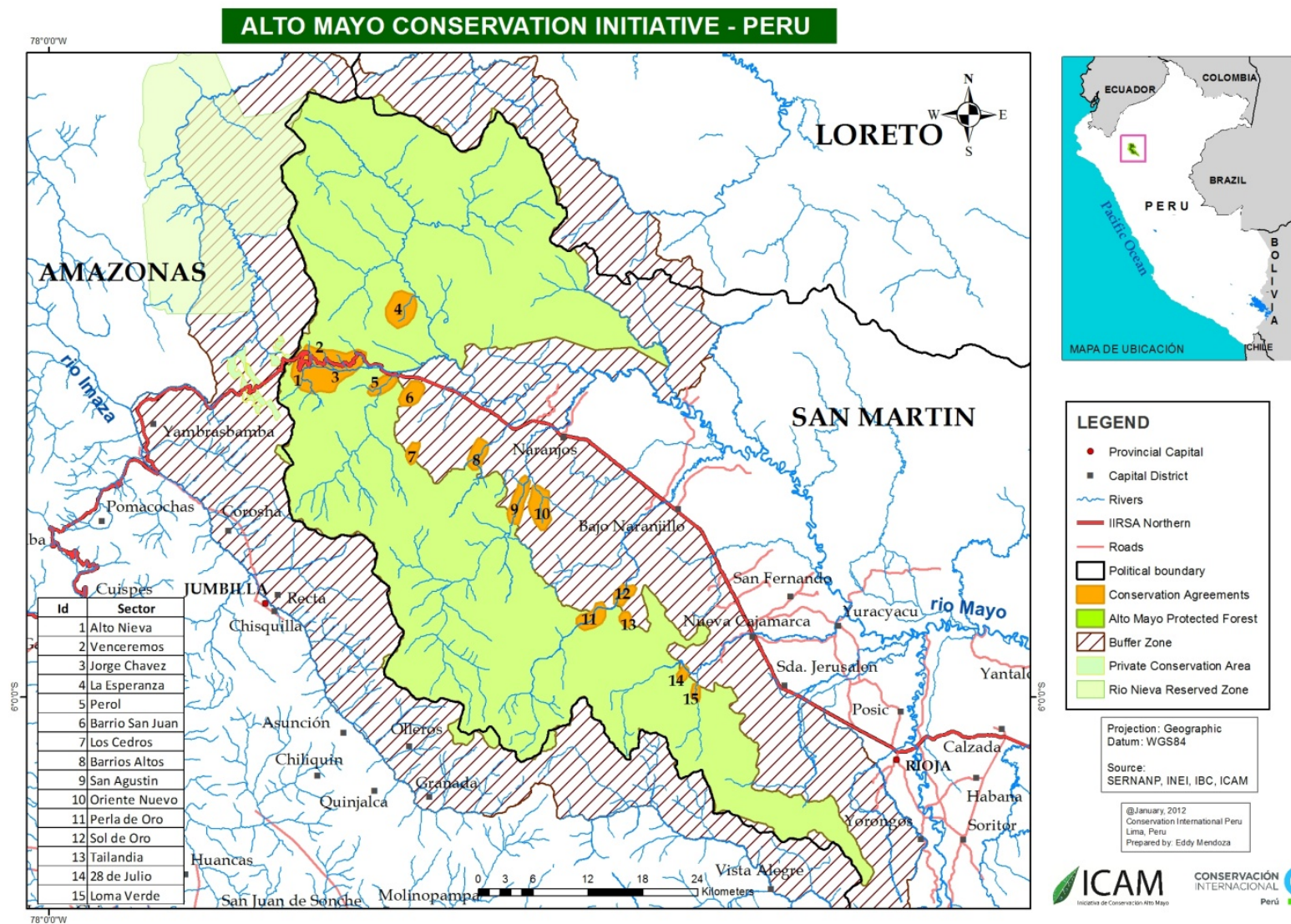


Figure 3. Conservation Agreements signed in the AMPF as part of the AMCI as of June 2012

Initial monitoring results from the implementation of the coffee package promoted by the AMCI are very encouraging, indicating a clear increase in productivity among participating farmers. Beyond the proof of the concept itself, i.e. that subscribers do not need to clear more forest in order to expand their area under cultivation as long as the quantity and quality of their production increases due to improved farming practices, one of the most striking impacts of this strategy has been a change in behavior by subscribers towards the AMPF Head Office. The increased presence of AMPF personnel in the field and the signing of conservation agreements between the local population and the Head Office have greatly contributed to reducing the level of conflict and establishing a more trusting relationship between the protected area management and the local people.

The major progress under this strategy can be summarized as follows:

- Conservation agreements signed with 185 farms where sustainable land use practices are now being practiced;
- Approximately 20,000 kg of organic fertilizers distributed among the settlers and applied on their farms;
- Approximately 50,000 native tree seedlings produced and distributed among the local population;
- 759 farming tools delivered to local farmers (e.g. for pruning, etc.);
- 1390 registered hours of individual technical assistance in improved farming practices provided;
- 20 efficient cook stoves built;
- 11 vegetable gardens and 530 fruit trees established.

III. Increasing the environmental awareness and involvement of the local population

This strategy has been key for engaging the local population in the conservation strategies of the AMCI and for promoting a change in people's perception towards the importance of the AMPF and its contribution to human well being. The AMCI has made significant advances towards this goal through the wide distribution of more than 8,200 communication materials such as brochures, factsheets, and posters; by providing information on local bulletin boards; and through the project's website, radio programs and informational spots on local television. All these products were developed in the context of specific sensitization campaigns targeting different issues relevant to the AMPF such as land speculation, deforestation, climate change, biodiversity, water quality, etc.

Youth environmental education has also been a major goal of the communication strategy to ensure the sustainability of the project in the future. CI, in collaboration with the AMPF Head Office, has initiated a pilot environmental education program at local schools through its "*Arbol Verde*" (Green Tree) campaign and has organized activities such as environmental drawing contests and reforestation excursions. Students from four schools in the districts of Rioja and Nueva Cajamarca also participated in training modules in environmental concepts, journalism, and media production to empower them to become environmental promoters in their communities (38 junior environmental promoters formed so far). Additionally, the communication strategy is collaborating with and training local journalists and media sources as important allies in the dissemination of environmental awareness and information about the project's activities.

Through these and other activities, the communication strategy of the AMCI has disseminated information on the activities and results of the project, as well as the importance of the conservation of the AMPF at the regional and national level. Lastly, to support the implementation of these activities and in order to

strengthen the communication abilities of the AMPF Head Office, a communications representative has been hired by the AMCI to lead the communication program on the ground.

IV. Ensuring the long term financial sustainability of the AMPF

One of the central goals of the AMCI is to secure a sufficient and stable funding stream from a variety of sources in order to support the implementation of the project's activities and ensure the sustainability of the AMPF in the long term. One of the key financing strategies of the AMCI to achieve this goal is to obtain funding from carbon credits generated from avoided deforestation in the AMPF through the voluntary carbon market and/or future compliance markets.

Achieving the current validation and verification under the VCS and CCB standards is an important part of the AMCI strategy that will potentially allow for the delivery of over 2.8M carbon credits which can be sold on the voluntary market to provide ongoing funding for the continuation of its activities on the ground with their associated climate, community and biodiversity benefits. The administration contract signed between CI and SERNANP will allow carbon credits to be registered with a designated VCS registry and a commitment that revenues generated from carbon sales will be invested exclusively towards strengthening the management of the AMPF and supporting the implementation of its Master Plan.

In addition, the AMCI aims to promote the AMPF as a model for bundling ecosystem services. To support this approach, the project has secured funding for piloting the implementation of a Payment for Hydrological Services program in the Yuracyacy sub-basin, whose headwaters are critical for securing a stable water source for more than 20,000 hectares of rice fields and 50,000 inhabitants located downstream.

V. Integrating the AMPF into broader development and political processes

Under this strategy, the AMCI aims to position the AMPF as an integral part of the San Martin region's vision towards healthy, sustainable economic development by building strategic alliances with a variety of actors at the local, regional, and national level.

The main achievement of this strategy so far has been the strengthening of the institutional positioning of the AMPF among local politicians. Up until a few years ago, the majority of the local authorities were unaware of the existence of the protected forest and of the effects of deforestation on the water and soil resources downstream. Today, all local authorities are aware of the existence of the AMPF as well as of the importance of its ecosystem services for the well-being of their constituencies. Based on this initial success, the AMCI aims to develop a management model that will allow for the integration of the AMPF into the regional policy-making and planning processes.

During this verification period and with the support of the AMCI the AMPF Head Office has signed four Memorandums of Understanding with a variety of actors in order to strengthen the management of the Protected Area in different areas such as research (Letter signed with the Faculty of Education and Humanities of the University of San Martin), control and surveillance (Letter signed with the Institute of Biological Research of the Eastern Cordilleras - INIBICO and with the Anti-Drug Tactical Operations Department of the Municipality of Rioja) and social development (Letter signed with the Regional Directorate for Energy and Mines). In addition, as a result of the strengthened political profile of the AMPF Head Office, in late 2011 the Regional Government of San Martin started the implementation of the project "Improving the Protection and Conservation Service of the Buffer Zone of the Alto Mayo Protected

Forest", which amounts to over 4 million Nuevos Soles (approximately US\$1.5 million).

Leakage and Permanence

The conventional coffee production techniques used by the vast majority of coffee producers within the AMPF are highly unsustainable. Most coffee plantations do not utilize organic fertilizers, pest control methods, or effective post-harvest management techniques, causing coffee plantations to quickly lose productivity. When production decreases, most coffee producers convert plantations to pastureland and deforest new areas to continue their coffee plantations. The conversion of new forest areas to coffee rather than intensifying production on existing areas is based on an economic rationale in which illegal markets make land available at a lower rate than the capital needed to intensify production. These poor management techniques, coupled with land speculation, dominate the coffee production systems in all the sub-basins of the AMPF and encourage the cycle of deforestation.

The AMCI uses Conservation Agreements both as a tool to reduce the imminent drivers of deforestation in the AMPF – the expansion of coffee production - and as a Leakage Management Strategy to prevent the displacement of baseline activities outside the Protected Area. The REDD project provides each individual coffee producer who signs a Conservation Agreement with a complete technological package that supports the production of sustainably grown coffee. The package includes high quality organic fertilizers, tools, materials to produce specialized compost, and guidance for applying organic pest control techniques. The project also provides regular, extensive technical assistance and training to each coffee producer. Access to tree nurseries is also provided to encourage the inter-planting of native tree species alongside the coffee. The sustainable coffee production system promoted by the AMCI is designed to eliminate the need to deforest new areas of forest in order to establish new coffee plantations, thus reducing the risk of leakage, while also managing existing coffee plantations with a lower environmental impact.

As an additional measure to prevent leakage outside of the project area, and in order to ensure the effectiveness and fairness of the Conservation Agreements approach, the project takes opportunity costs as an essential element into consideration in the design of the benefit package delivered to subscribers, ensuring that the activities promoted through the AMCI result in increased and stable income opportunities for the participating farmers. These incentives, paired with enhanced monitoring and enforcement by the AMPF Head Office, have greatly reduced the demand for low-cost land available in the past therefore also reducing land speculation.

The project has made significant progress in reducing the main risks to the non-permanence of the climate benefits achieved thus far. The AMCI has maintained a constant presence in the project area during this verification period through a highly skilled and experienced Project Management team working in close collaboration with the AMPF Head office. The community engagement activities have also been advancing, with extensive outreach and sensitization activities carried out to build awareness among the local population and increase their involvement in conservation activities. According to our registries, during the implementation of the project from November 2008 to April 2012, 976 persons have been consulted (household heads) in the AMPF and 524 in its buffer zone, representing more than 50% of the households living within the project area⁵.

In addition, the AMCI, in collaboration with the AMPF Head Office has worked with various government

⁵ Although there is no official registry, the AMPF Master Plan estimated approximately 1000 families living inside the AMPF in 2008.

agencies, such as the Regional Government of San Martin and local Municipalities, the Environmental Prosecutor's Office, National Police of Peru, and the Ministry of Energy and Mines, to collaborate in protecting the AMPF and ensure that its conservation objectives are considered in the political decisions of these institutions. To promote increased cooperation, the AMPF Head Office, with the support of the AMCI's legal experts, has been leading a series of training sessions with local stakeholders and influential leaders on the legal framework surrounding the NPA status of the AMPF and the land use restrictions that apply, as well as encouraging these groups to use their influence to support the conservation goals of the protected area. This training has been well-received by the community leaders involved and the AMCI aims to continue to offer this type of capacity building to local stakeholder groups as part of its project activities to lower the political risk of its operations.

In collaboration with SERNANP's legal office in Lima, the AMCI has developed a set of legal guidelines that provide the necessary framework to overcome the barriers related to insecure land tenure and use rights in the AMPF. Through the signing of Conservation Agreements, settlers inside the AMPF have been, for the first time, able to establish a formal relationship with the AMPF Head Office despite not having legal claim to the land or resources inside the protected area. In exchange for their commitment to conservation, subscribers receive tangible benefits and extensive technical support for establishing and maintaining sustainable coffee production systems in line with the objectives of the NPA. At the same time, the provision of the benefits identified in the CAs is subject to compliance with the conservation commitments made by the subscribers. In this way a quid-pro-quo relationship is established between the Head Office and the settlers.

Finally, securing an Administration Contract with SERNANP for the co-management of the AMPF represents a major achievement for the project's longevity, by consolidating the institutional and financial mechanism that will enable the AMCI to provide its long term support for the effective implementation of the PA's Master Plan.

Through all these strategies, the REDD project has made unprecedented advances in reducing the rate of deforestation in the AMPF, at a scale that would not be possible without the funding generated through the sale of GHG credits.

2.2 Deviations from the Monitoring Plan

There were no deviations from the monitoring plan during this monitoring period.

2.3 Grouped Project

n/a

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Please refer to respective PD section (4.1)

3.2 Data and Parameters Monitored

Data Unit / Parameter:	Forest Cover and Change Map (2006-2012)
Data unit:	Map
Description:	Digital map of forest cover in 2012 and change 2006-2012 in the project area and leakage belt (Figure 4)
Source of data:	Landsat and ASTER (MR Table 01.a.)
Description of measurement methods and procedures to be applied:	Satellite imagery-based forest cover change classification using decision tree and see5 methods.
Frequency of monitoring/recording:	At every verification period
Value applied:	2 ha of forest patch as minimum threshold
Monitoring equipment:	ERDAS 10.0 and ArcGIS 10.0
QA/QC procedures to be applied:	Quality Control and Assurance procedures are detailed in the Methodological Annex. The overall map accuracy is 93% for the classification of forest/non-forest in the remote sensing imagery
Calculation method:	n/a
Any comment:	Raster format – 30m resolution – projection system UTM zone 18S – datum WGS84. GIS files provided to the verifier.

Data Unit / Parameter:	ABSLPA _{i,t}
Data unit:	ha yr ⁻¹
Description:	Annual area of observed deforestation in the project area for the period 2009-2012
Source of data:	GIS processing
Description of measurement methods and	Results of overlaying the forest cover map with

procedures to be applied:	the project area boundaries
Frequency of monitoring/recording:	At every verification period
Value applied:	GIS files of the project boundary
Monitoring equipment:	Computer and ArcGIS 10.0 software
QA/QC procedures to be applied:	Projection system and datum was kept consistent. Clear and detailed documentation and independent desk review to assure consistency and accuracy of the GIS procedures
Calculation method:	Spatial Analysis tool (tabulate area in zonal statistics toolbox)
Any comment:	n/a

Data Unit / Parameter:	ABSLLK _{i,t}
Data unit:	ha yr ⁻¹
Description:	Annual area of observed deforestation in the leakage belt for the period 2009-2012
Source of data:	GIS processing
Description of measurement methods and procedures to be applied:	Results of overlaying the forest cover map with the leakage belt boundaries
Frequency of monitoring/recording:	At every verification period
Value applied:	GIS file of the leakage belt
Monitoring equipment:	Computer and ArcGIS 10.0 software
QA/QC procedures to be applied:	Projection system and datum was kept consistent. Clear and detailed documentation and independent desk review to assure consistency and accuracy of the GIS procedures
Calculation method:	Spatial Analysis tool (tabulate area in zonal statistics toolbox)
Any comment:	n/a

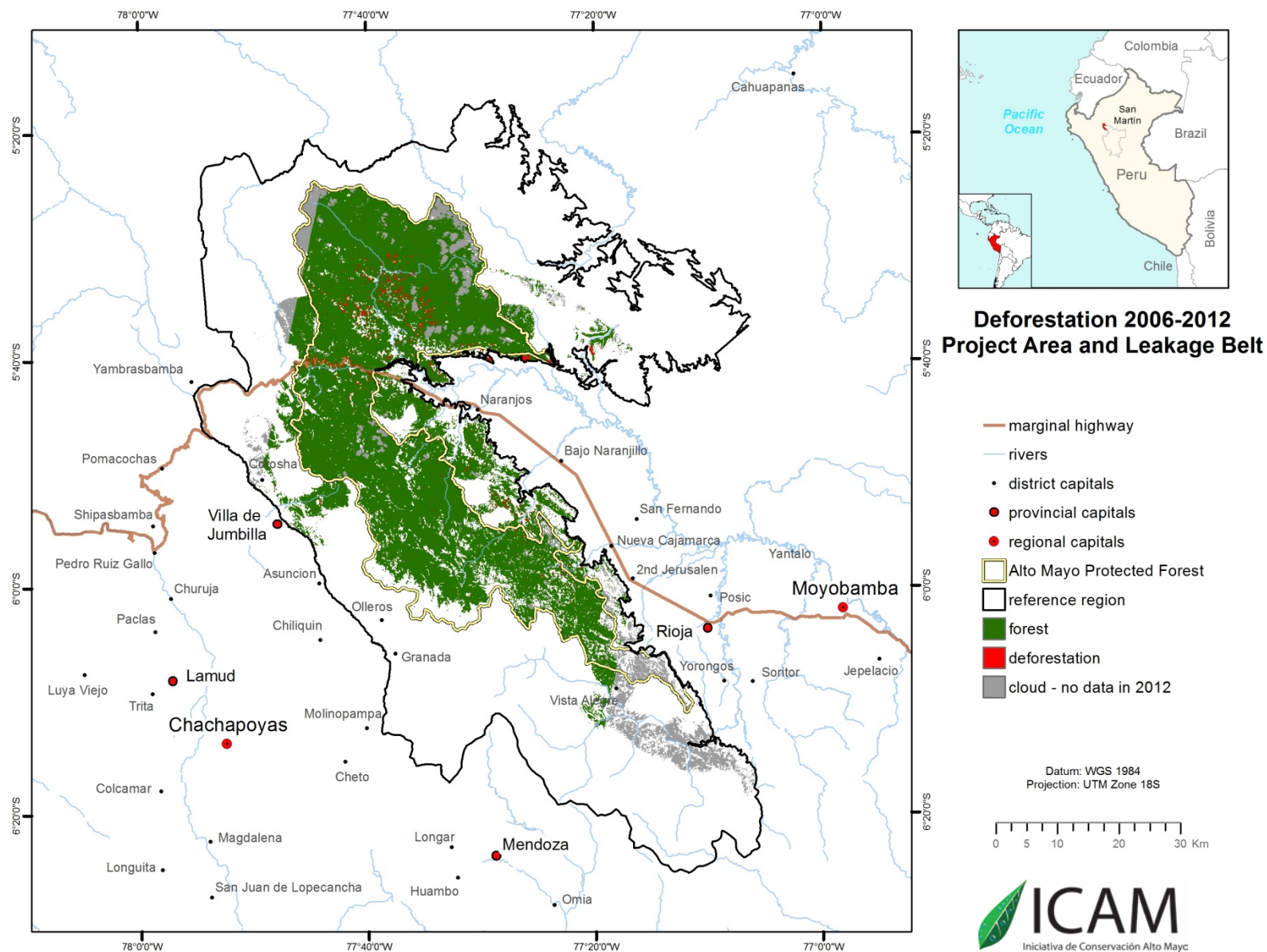


Figure 4. Deforestation map 2006-2012. It shows the observed changes between forest and non-forest classes within the project area and leakage belt.

3.3 Description of the Monitoring Plan

As of the date of validation and verification no regional, national or jurisdictional monitoring system of land-use and land-cover change was in place. Therefore, the project proponent was responsible for implementing the land-use and land-cover change component of the monitoring plan for the project area and leakage belt. The analysis covered the monitoring of forest land converted to non-forest. In order to assure a high quality analysis the monitoring plan closely followed the methods, rules, and procedures specified in Conservation International's standard change detection methodology (See Sup.Inf_Meth_03a-c).

The land cover and change maps were produced following the technical steps described below and detailed in Sup.Inf_Meth_03a-c, including quality assurance procedures. Accuracy assessment as described in steps 2.4 and 2.5 of Part 2 of the AMCI Methodological Annex was performed. The estimated accuracy of the final 2012 classification was 93%, above the minimum accepted accuracy of 80%.

1. Landsat and ASTER images with minimal cloud cover were acquired online from the United States Geographical Survey and Japanese Space Systems websites. Multiple images were used in the verification to fill areas obscured by clouds, as listed in MR Table 1.a:

MR Table 1.a. Data used for monitoring LU/LC change analysis

Vector (Satellite or airplane)	Sensor	Resolution		Coverage (km ²)	Acquisition date (DD/MM/YY)	Scene or point identifier	
		Spatial	Spectral			Path / Latitude	Row / Longitude
Landsat 5	TM	30m	0.45 - 12.5 µm	185 x 172 km	8-Sep-06	8	64
Landsat 5	TM	30m	0.45 - 12.5 µm	189 x 172 km	1-Aug-07	9	64
Terra	ASTER	15m	0.52 – 0.86 µm	60 x 60 km	12-Jun-12	2092999786	
Terra	ASTER	15m	0.52 – 0.86 µm	60 x 60 km	12-Jun-12	2092999779	
Terra	ASTER	15m	0.52 – 0.86 µm	60 x 60 km	12-Jun-12	2092999774	

2. All of the images used in the analysis were atmospherically corrected and orthorectified.
3. The ASTER images were mosaiced to create a single 2012 image that covered most of the project area and leakage belt. The ASTER images were down-sampled to 30 meter resolution using cubic convolution, so that they would be spatially comparable to Landsat imagery.
4. The images were classified in two-date image stacks (2006-07/2012) using decision tree analysis (ERDAS-See5);
 - a. Map classes include: 1=forest, 2=non-forest, 4=water, and 5=cloud.
 - b. Training sites were selected to represent both change and non-change areas.
 - c. Training sites included numerous sub-classes for each land-cover and change class, to incorporate the full range of spectral variability within the image.

5. The final classification was filtered in ERDAS using a neighborhood majority filter 3x3 (corners unchecked). Then the map product was processed using Clump (4-way) and 0.5-hectare Eliminate.
6. Areas of change from forest to non-forest were extracted from the final 2006-2012 land-cover change map and overlaid on the forested area from the original 2006 classification to create the updated 2012 land-cover map. Thereby minimizing the amount of erroneous transitions and reducing the map agreement error.
7. Areas of cloud in the 2006 land cover map were permanently excluded from this analysis, while areas covered by cloud in 2012 were temporally excluded until the next monitoring period.

The final product was validated with high resolution images acquired from the Rapid Eye satellite constellation (MR Table1.b.). A total of 190 points were randomly sampled across two portions of the study area where cloud-free imagery was available for both the land-cover product and validation dataset. The areas that were chosen represent the areas with the more land-cover change over the monitoring period. The overall accuracy of the 2012 map product, that was used to update the 2006 classification, was 93% and the accuracy of each land-cover class was over 89%. The accuracy assessment included a total of 28 points in areas that represented change from forest to non-forest over the monitoring period.

MR Table 1.b. Data used for validating the LU/LC change analysis

Vector (Satellite or airplane)	Product	Resolution		Coverage	Acquisition date
		Spatial	Spectral	(km ²)	(DD/MM/YY)
Rapid Eye4	3A	5m	0.44 - 8.5 μ m	77 km ²	8-Jun-11
Rapid Eye4	3A	5m	0.44 - 8.5 μ m	77 km ²	8-Jun-11
Rapid Eye4	3A	5m	0.44 - 8.5 μ m	77 km ²	8-Jun-11
Rapid Eye1	3A	5m	0.44 - 8.5 μ m	77 km ²	19-Jun-11
Rapid Eye1	3A	5m	0.44 - 8.5 μ m	77 km ²	19-Jun-11
Rapid Eye1	3A	5m	0.44 - 8.5 μ m	77 km ²	19-Jun-11
Rapid Eye3	3A	5m	0.44 - 8.5 μ m	77 km ²	27-Aug-11
Rapid Eye3	3A	5m	0.44 - 8.5 μ m	77 km ²	27-Aug-11
Rapid Eye2	3A	5m	0.44 - 8.5 μ m	77 km ²	23-Dec-11
Rapid Eye2	3A	5m	0.44 - 8.5 μ m	77 km ²	23-Dec-11
Rapid Eye3	3A	5m	0.44 - 8.5 μ m	77 km ²	26-Apr-12

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

The baseline carbon stock changes in the initial (pre-deforestation) forest classes in the project area during the monitoring period are shown in MR Table 02.a. The baseline carbon stock changes in the single final (post-deforestation) non-forest class considered by the project during the monitoring period are shown in MR Table 02.b. The total baseline carbon stock changes in the project area during the monitoring period are shown in MR Table 02.c. Note that, areas covered by clouds in the 2012 land cover map have been temporarily excluded from this monitoring report and therefore the numbers in the MR Tables 02.a, b and c differ from those shown in VM Tables 15.a, b, and c, respectively.

MR Table 02.a. Baseline carbon stock changes in pre-deforestation (forest) classes in the project area during the monitoring period (2012 cloud free)

Project year t	Baseline carbon stock changes in initial (pre-deforestation) forest classes in the project area						Total baseline carbon stock changes in initial forest classes in the project area	
	ID_{icl}	premont	ID_{icl}	cloud	ID_{icl}	dwarf	annual	cumulative
	$ABSLPA_{icl,t}$ ha	$Ctot_{icl,t}$ tCO ₂ -e ha ⁻¹	$ABSLPA_{icl,t}$ ha	$Ctot_{icl,t}$ tCO ₂ -e ha ⁻¹	$ABSLPA_{icl,t}$ ha	$Ctot_{icl,t}$ tCO ₂ -e ha ⁻¹	$\Delta CBSLPA_{it}$ tCO ₂ -e	$\Delta CBSLPA_i$ tCO ₂ -e
2009	21	399	2,371	520	0	88	1,240,422	1,240,422
2010	9	399	2,256	520	0	88	1,175,949	2,416,371
2011	3	399	2,078	520	0	88	1,080,968	3,497,340
2012	1	399	1,978	520	0	88	1,028,303	4,525,643

MR Table 02.b. Baseline carbon stock changes in post-deforestation (non-forest) classes in the project area during the monitoring period (2012 cloud free)

Project year t	Baseline carbon stock changes in final (post-deforestation) non-forest classes in the project area		Total baseline carbon stock changes in final non-forest classes in the project area	
	ID_{fcl}	= non-forest	annual	cumulative
	$ABSLPA_{fcl,t}$ ha	$Ctot_{fcl,t}$ tCO ₂ -e ha ⁻¹	$\Delta CBSLPA_{ft}$ tCO ₂ -e	$\Delta CBSLPA_f$ tCO ₂ -e
2009	2,392	93	223,176	223,176
2010	2,265	93	211,329	434,505
2011	2,081	93	194,158	628,663
2012	1,979	93	184,653	813,316

MR Table 02.c. Total baseline carbon stock changes in the project area during the monitoring period (2012 cloud free)

Project year t	Total baseline carbon stock changes in initial forest classes		Total baseline carbon stock changes in final non-forest classes		Total baseline carbon stock changes in the project area	
	annual	cumulative	annual	cumulative	annual	cumulative
	$CBSLPA_{it}$ tCO ₂ -e	$CBSLPA_i$ tCO ₂ -e	$CBSLPA_{ft}$ tCO ₂ -e	$CBSLPA_f$ tCO ₂ -e	$\Delta CBSLPA_t$ tCO ₂ -e	$\Delta CBSLPA$ tCO ₂ -e
2009	1,240,422	1,240,422	223,176	223,176	1,017,246	1,017,246
2010	1,175,949	2,416,371	211,329	434,505	964,620	1,981,866
2011	1,080,968	3,497,340	194,158	628,663	886,810	2,868,677
2012	1,028,303	4,525,643	184,653	813,316	843,650	3,712,327

4.2 Project Emissions

The ex-post actual carbon stock changes in the initial (pre-deforestation) forest classes in the project area during the monitoring period are shown in MR Table 03.a. The ex-post actual carbon stock changes in the single final (post-deforestation) non-forest class considered by the project during the monitoring period are shown in MR Table 03.b. The total ex-post actual carbon stock changes in the project area during the monitoring period are shown in MR Table 03.c.

MR Table 03.a. Ex-post actual carbon stock changes in pre-deforestation (forest) classes in the project area during the monitoring period (2012 cloud free)

Project year t	Ex-post actual carbon stock changes in initial (pre-deforestation) forest classes in the project area						Total ex-post carbon stock changes in initial forest classes in the project area	
	ID_{icl}	premont	ID_{icl}	cloud	ID_{icl}	dwarf	annual	cumulative
	$APSPA_{icl,t}$ ha	$Ctot_{icl,t}$ tCO ₂ -e ha ⁻¹	$APSPA_{icl,t}$ ha	$Ctot_{icl,t}$ tCO ₂ -e ha ⁻¹	$APSPA_{icl,t}$ ha	$Ctot_{icl,t}$ tCO ₂ -e ha ⁻¹	$\Delta CPSPA_{it}$ tCO ₂ -e	$\Delta CPSPA_i$ tCO ₂ -e
2009	2	399	324	520	7	88	169,413	169,413
2010	2	399	324	520	7	88	169,413	338,827
2011	2	399	324	520	7	88	169,413	508,240
2012	2	399	324	520	7	88	169,413	677,653

MR Table 03.b. Ex-post carbon stock change in post-deforestation (non-forest) classes in the project area during the monitoring period (2012 cloud free)

Project year t	Ex-post actual carbon stock changes in final (post-deforestation) non-forest classes in the project area		Total ex-post carbon stock changes in final non-forest classes in the project area	
	ID_{fcl}	= non-forest	annual	cumulative
	$APSPA_{fcl,t}$ ha	$Ctot_{fcl,t}$ tCO ₂ -e ha ⁻¹	$\Delta CPSPA_{f,t}$ tCO ₂ -e	$\Delta CPSPA_f$ tCO ₂ -e
2009	332	93	31,012	31,012
2010	332	93	31,012	62,024
2011	332	93	31,012	93,036
2012	332	93	31,012	124,048

MR Table 03.c. Total ex-post carbon stock change in the project area during the monitoring period (2012 cloud free)

Project year t	Total ex-post carbon stock changes in initial forest classes		Total ex-post carbon stock changes in final non-forest classes		Total ex-post carbon stock changes in the project area	
	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CPSPA_{i,t}$ tCO ₂ -e	$\Delta CPSPA_i$ tCO ₂ -e	$\Delta CPSPA_{f,t}$ tCO ₂ -e	$\Delta CPSPA_f$ tCO ₂ -e	$\Delta CPSPA_t$ tCO ₂ -e	$\Delta CPSPA$ tCO ₂ -e
2009	169,413	169,413	31,012	31,012	138,401	138,401
2010	169,413	338,827	31,012	62,024	138,401	276,803
2011	169,413	508,240	31,012	93,036	138,401	415,204
2012	169,413	677,653	31,012	124,048	138,401	553,605

4.3 Leakage

The total baseline carbon stock changes in the leakage belt during the monitoring period (2012 cloud free) are shown in MR Tables 04.a, b, and c.

MR Table 04.a. Baseline carbon stock changes in initial (pre-deforestation) forest classes in the leakage belt during the monitoring period (2012 cloud free)

Project year t	Baseline carbon stock changes in initial (pre-deforestation) forest classes in the leakage belt						Total baseline carbon stock changes in initial forest classes in the leakage belt	
	ID_{icl} premont		ID_{icl} cloud		ID_{icl} dwarf		annual	cumulative
	$ABSLLK_{icl,t}$	$Ctot_{icl,t}$	$ABSLLK_{icl,t}$	$Ctot_{icl,t}$	$ABSLLK_{icl,t}$	$Ctot_{icl,t}$	$\Delta CBSLLK_t$	$\Delta CBSLLK_i$
	ha	tCO ₂ -e ha ⁻¹	ha	tCO ₂ -e ha ⁻¹	ha	tCO ₂ -e ha ⁻¹	tCO ₂ -e	tCO ₂ -e
2009	0	399	591	520	0	88	307,052	307,052
2010	0	399	654	520	0	88	339,702	646,754
2011	0	399	774	520	2	88	402,571	1,049,325
2012	0	399	849	520	9	88	441,965	1,491,289

MR Table 04.b. Baseline carbon stock changes in final (post-deforestation) non-forest classes in the leakage belt during the monitoring period (2012 cloud free)

Project year t	Baseline carbon stock changes in final (post-deforestation) non-forest classes in the leakage belt		Total baseline carbon stock changes in final non-forest classes in the leakage belt	
	ID_{fcl} = non-forest		annual	cumulative
	$ABSLLK_{fcl,t}$	$Ctot_{fcl,t}$	$\Delta CBSLLK_t$	$\Delta CBSLLK_f$
	ha	tCO ₂ -e ha ⁻¹	tCO ₂ -e	tCO ₂ -e
2009	591	93	55,131	55,131
2010	654	93	61,000	116,130
2011	776	93	72,427	188,558
2012	858	93	80,051	268,609

MR Table 04.c. Total baseline carbon stock change in the leakage belt during the monitoring period (2012 cloud free)

Project year t	Total baseline carbon stock changes in initial forest classes		Total baseline carbon stock changes in final non-forest classes		Total baseline carbon stock changes in the leakage belt	
	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CBSLLK_t$	$\Delta CBSLLK_i$	$\Delta CBSLLK_t$	$\Delta CBSLLK_f$	$\Delta CBSLLK_t$	$\Delta CBSLLK$
	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e
2009	307,052	307,052	55,131	55,131	251,922	251,922
2010	339,702	646,754	61,000	116,130	278,702	530,623

2011	402,571	1,049,325	72,427	188,558	330,143	860,767
2012	441,965	1,491,289	80,051	268,609	361,913	1,222,680

The total ex-post actual carbon stock changes in the leakage belt during the monitoring period (2012 cloud free) are shown in MR Tables 05.a, b, and c.

MR Table 05.a. Ex-post carbon stock changes in initial (pre-deforestation) forest classes in the leakage belt during the monitoring period (2012 cloud free)

Project year t	Ex-post actual carbon stock changes in initial (pre-deforestation) forest classes in the leakage belt						Total ex-post carbon stock changes in initial forest classes in the leakage belt	
	ID_{icl} premont		ID_{icl} cloud		ID_{icl} dwarf		annual	cumulative
	$APSLK_{icl,t}$	$Ctot_{icl,t}$	$APSLK_{icl,t}$	$Ctot_{icl,t}$	$APSLK_{icl,t}$	$Ctot_{icl,t}$	$\Delta CPSLK_i$	$\Delta CPSLK_i$
	ha	tCO ₂ -e ha ⁻¹	ha	tCO ₂ -e ha ⁻¹	ha	tCO ₂ -e ha ⁻¹	tCO ₂ -e	tCO ₂ -e
2009	0	399	127	520	4	88	66,337	66,337
2010	0	399	127	520	4	88	66,337	132,674
2011	0	399	127	520	4	88	66,337	199,012
2012	0	399	127	520	4	88	66,337	265,349

MR Table 05.b. Ex-post actual carbon stock changes in final (post-deforestation) non-forest classes in the leakage belt during the monitoring period (2012 cloud free)

Project year t	Ex-post actual carbon stock changes in final (post-deforestation) non-forest classes in the leakage belt		Total ex-post actual carbon stock changes in final non-forest classes	
	ID_{fcl} = non-forest		annual	cumulative
	$APSLK_{fcl,t}$	$Ctot_{fcl,t}$	$\Delta CPSLK_f$	$\Delta CPSLK_f$
	ha	tCO ₂ -e ha ⁻¹	tCO ₂ -e	tCO ₂ -e
2009	131	93	12,235	12,235
2010	131	93	12,235	24,470
2011	131	93	12,235	36,705
2012	131	93	12,235	48,940

MR Table 05.c. Total ex-post actual carbon stock changes in the leakage belt during the monitoring period (2012 cloud free)

Project year t	Total ex-post actual carbon stock changes in initial forest classes		Total ex-post actual carbon stock changes in final non-forest classes		Total ex-post actual carbon stock changes in the leakage belt	
	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CPSLK_i$ tCO ₂ -e	$\Delta CPSLK_i$ tCO ₂ -e	$\Delta CPSLK_f$ tCO ₂ -e	$\Delta CPSLK_f$ tCO ₂ -e	$\Delta CPSLK_t$ tCO ₂ -e	$\Delta CPSLK$ tCO ₂ -e
2009	66,337	66,337	12,235	12,235	54,102	54,102
2010	66,337	132,674	12,235	24,470	54,102	108,205
2011	66,337	199,012	12,235	36,705	54,102	162,307
2012	66,337	265,349	12,235	48,940	54,102	216,409

The total ex-post actual net carbon stock changes in (i.e. above the baseline) in the leakage belt during the monitoring period are shown in MR Table 06. According to the methodology, if the cumulative sum of ΔCLK_t within a fixed baseline period is > 0 , ΔCLK_t shall be set to zero. Therefore no credits were discounted due to leakage during this monitoring period.

MR Table 06. Total net carbon stock changes in the leakage belt in the project scenario above the baseline during the monitoring period (2012 cloud free)

Project year t	Total baseline carbon stock changes in the leakage belt		Total ex-post actual carbon stock changes in the leakage belt		Total ex-post actual net carbon stock changes in the leakage belt	
	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CBSLLK_t$ tCO ₂ -e	$\Delta CBSLLK$ tCO ₂ -e	$\Delta CPSLK_t$ tCO ₂ -e	$\Delta CPSLK$ tCO ₂ -e	ΔCLK_t tCO ₂ -e	ΔCLK tCO ₂ -e
2009	251,922	251,922	54,102	54,102	197,819	197,819
2010	278,702	530,623	54,102	108,205	224,600	422,419
2011	330,143	860,767	54,102	162,307	276,041	698,460
2012	361,913	1,222,680	54,102	216,409	307,811	1,006,271

4.4 Summary of GHG Emission Reductions and Removals

The ex-post estimated net anthropogenic GHG emission reductions were estimated similarly to the ex-ante calculation using the equation below (adapted from equation 23 of the VM0015 methodology):

$$\Delta REDD_t = (\Delta CBSLPA_t) - (\Delta CPSPA_t) - (\Delta CLK_t + ELK_t)$$

Where:

$\Delta REDD_t$	<i>Ex-post</i> estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t ; tCO ₂ e
$\Delta CBSLPA_t$	Sum of baseline carbon stock changes in the project area at year t ; tCO ₂ e
$\Delta CPSPA_t$	Sum of <i>ex post</i> estimated actual carbon stock changes in the project area at year t ; tCO ₂ e
ΔCLK_t	Sum of <i>ex post</i> estimated leakage net carbon stock changes at year t ; tCO ₂ e
ELK_t	Sum of <i>ex post</i> estimated leakage emissions at year t ; tCO ₂ e
t	1, 2, 3 ... T , a year of the proposed crediting period; dimensionless

The ex-post estimation of total net GHG emissions reductions generated by the AMCI and the calculation of ex-post Verified Carbon Units (VCUs) generated in the monitoring period of 2008-2012 are summarized in MR Table 07.

MR Table 07. Ex post estimated net anthropogenic GHG emission reductions ($\Delta REDD_t$) and Voluntary Carbon Units (VCU_t)

Project year <i>t</i>	Baseline carbon stock changes		<i>Ex post</i> project carbon stock changes		<i>Ex post</i> net carbon stock changes		<i>Ex post</i> leakage carbon stock changes		<i>Ex post</i> net anthropogenic GHG emission reductions		<i>Ex post</i> buffer credits*		<i>Ex post</i> VCUs tradable	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cum.ve	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CBSLPA_t$	$\Delta CBSLPA$	$\Delta CPSPA_t$	$\Delta CPSPA$	$\Delta CPSPA_t$	$\Delta CPSPA$	ΔCLK_t	ΔCLK	$\Delta REDD_t$	$\Delta REDD$	VBC_t	VBC	VCU_t	VCU
	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e	tCO ₂ -e
2009	1,017,246	1,017,246	138,401	138,401	878,845	878,845	0	0	878,845	878,845	87,885	87,885	790,961	790,961
2010	964,620	1,981,866	138,401	276,803	826,219	1,705,064	0	0	826,219	1,705,064	82,622	170,506	743,597	1,534,557
2011	886,810	2,868,677	138,401	415,204	748,409	2,453,473	0	0	748,409	2,453,473	74,841	245,347	673,568	2,208,126
2012	843,650	3,712,327	138,401	553,605	705,249	3,158,722	0	0	705,249	3,158,722	70,525	315,872	634,724	2,842,849

*Ex-post buffer credits are calculated based on a 10% Risk Factor (RF) attributed to the project based on the VCS non-permanence risk tool

5 ADDITIONAL INFORMATION

The land cover and change analysis for this monitoring period was done based on the 2006 forest benchmark map. It was assumed that the rate of forest change was evenly distributed between the 2006-2012 period.

Areas identified as cloud in the 2012 land cover map were temporarily excluded from this monitoring period from both scenarios – baseline and project - and will be included in subsequent monitoring periods based on the availability of cloud-free images. Therefore the total baseline carbon stock changes in the project area during this monitoring period reported in MR Tables 02.a-c differ from the total baseline carbon stock changes in the project area reported on VM Tables 15.a-c of the AMCI Methodological Annex, respectively. Similarly, the total baseline carbon stock changes in the leakage belt during the monitoring period reported in MR Tables 04.a-c differ from the total baseline carbon stock change in the leakage belt reported in VM Tables 29.a-c of the AMCI Methodological Annex, respectively. The 90% Confidence Interval value of the carbon stock was applied to the average carbon stock of pre-montane forest, dwarf forest and post-deforestation land use, as the uncertainty of the carbon estimate was above 10%.

Non-CO₂ emissions from forest fires and animal grazing were not monitored as they were not included in the baseline.

During this monitoring period, no natural disturbances or catastrophic events occurred in the project area and leakage belt.