# Conservation Carbon Offsets

Sustainable Travel International's Conservation Carbon Offsets meet the standards set forth by the Climate, Community & Biodiversity Alliance (www.climate-standards.org). They support reforestation and avoided deforestation in Africa and South America.

## ***Protecting Madagascar's Northeastern Forests***

Located off the east coast of Africa, Madagascar has been isolated from other landmasses for more than 160 million years. Consequently, most of Madagascar's plant and animal species have evolved in long isolation, and many are found nowhere else on the planet. Highly threatened, Madagascar has been classified as one of the world's 34 biodiversity hotspots. Covering just 2.3 percent of the planet's surface, hotspots face extreme threats and have already lost 70 percent of their original vegetation.

The Makira Forest Project, managed by the Wildlife Conservation Society (WCS), is located in the northeastern region of Madagascar known as the Maroantesetra region. Consisting of about 350,000 hectares (approximately 1,350 square miles), this area is one of the largest remaining patches of rain forest on the island. Within the forest, the level of species diversity is among the highest in the country including a number of critically endangered animals such as the Madagascar serpent eagle and at least two species of Malagasy lemurs including the Red Ruffed Lemur and the Silky Sifaka which are found only in Madagascar.

### *Challenge*

Decades of deforestation have left eastern Madagascar with only 8.5 percent of its forests. The Makira Forest represents the largest remaining contiguous forest in eastern Madagascar and is of utmost importance for long-term conservation especially in light of global climate changes. Makira is currently occupied by local ethnic and community groups that practice slash- and-burn agriculture on existing forest when they have outgrown the use of the lowlands for rice patties and seek new rice fields up river. Poaching for valuable hardwood species is also prevalent.

### *Response*

Makira has been recognized as a primary region for biodiversity conservation and retention of ecosystem services. STI's implementation partners at Conservation International (CI) have partnered with WCS and Madagascar's Ministry of Environment, Water and Forests (MEEF) to develop carbon-financing options to finance the protection of this contiguous lowland and mid-altitude rain forest.

The Makira Forest Project seeks to become a leading catalyst for sustainable natural resource management and biodiversity conservation. The proposed approach developed by WCS, CI and the Malagasy Government includes: 1) The study and creation of a new legally protected Conservation or Protected Area (known as a Site de Conservation) that encompasses habitat and species diversity representative of the Makira Area and guarantees long-term connectivity to other networks of protected forests, and 2) The stabilization of land-use through land-use planning activities development of a multiple use area with biodiversity being only one element of the management strategy.

### *Value for the Environment*

The Makira Forest Project aims to achieve the related goals of conservation, economic development and carbon sequestration. The project will work to reduce deforestation rates down to 0.07 percent, or the rate found in nearby national parks. An independent assessment by Winrock International indicates that 9.5 million tons of carbon dioxide emissions will be mitigated over the next 30 years through these forest protection activities.

Healthy, intact forests store carbon taken from the atmosphere and thus play a unique role in mitigating the harmful effects of climate change. Global deforestation accounts for approximately 20 percent of the annual emissions of greenhouse gases, so reducing this source of emissions while protecting

biodiversity provides a unique opportunity for governments and policy makers.

### *Value for Local Communities*

The largest benefit for the local community from this project will be empowerment to control and manage their natural resources in a sustainable manner. Specific activities that will directly reduce deforestation include training on permaculture practices that allow farmers to continually produce good harvests from the same land as opposed to cutting new fields every few years. Other projects include building improved irrigation infrastructure for the lowland rice growing areas. Additional income generation will occur through employment from the project and from ecotourism.

The project has also been empowering local communities the transfer of natural resource management rights from the government. This in turn allows the communities themselves to mange their forests and makes them responsible for enforcing forest-use rules. An active dialogue will be maintained with local stakeholders to help ensure protected area limits are proposed and accepted by local and regional authorities.

### *Value for Business*

With growing public concern for global warming, many leadership companies are taking a proactive stance regarding their emissions. This creates an opportunity for investors in the Makira Forest Project to market the positive biodiversity and economic development impacts together with its carbon benefits.

While under current Kyoto rules, this type of emissions avoidance is not yet creditable, companies currently participating in these voluntary markets will help shape the future regulation to encompass these multiple benefit approaches. Additionally, companies are able to communicate positive action to address climate change with concerned consumers, shareholders, and employees through clear, tangible commitments that reduce their greenhouse gas impacts in a cost efficient manner.

Previous investors in the Makira Forest project include Mitsubishi Group, NAVTEQ and the music group, Pearl Jam.

## ***Protecting Biodiversity in Tengchong, China***

### *Project Description*

The project site is located at the southern edge of Gaoligonshan Nature Reserve in Yunnan province, China. The area falls within the Mountains of Southwest China biodiversity hotspot which is twice the size of California. The hotspot is characterized by extremely complex topography, ranging from less than 2,000 meters in some valley floors to 7,558 meters at the summit of Gongga Shan. This region - a stunning panorama of forests, meadows, and mountains ranging from subtropical to alpine climates - is home to 16 different indigenous ethnic groups. It also harbors an extremely rich biodiversity.

The proposed project is a small-scale reforestation project under CDM. In the 30 year crediting period from 2007-2037, 467.6 ha of mixed forests will be established around the buffer zone and area adjacent to the Nature Reserve, using native tree species, i.e., flous taiwania (Taiwania flousiana), shiny-bark birch (Betula luminifera), Yunnan pine (Pinus yunnanensis), and Nepal alder (Alnus nepalensis). The project will generate approximately 150,000 tons of $CO_2$ benefits (offsets) over its 30 year lifetime.

The area that will be reforested includes areas currently under crop production and grassland, as well as abandoned croplands. Reforestation activities are scheduled to begin in July to August, 2007. The Gaoligonshan Nature Reserve and local communities have been actively involved in the design of the reforestation project and support the project.

The project has already completed CDM validation and is the first validated Small Scale A/R CDM project worldwide. It has also been validated by the CCBA (Climate, Community and Biodiversity Alliance) and has achieved Gold Level CCB certification (the highest possible level). The project is in the process of being registered with the Chinese Designated National Agency (DNA) and the CDM EB, and it is anticipated that the project will be formally accepted by the EB as a CDM project within a few months.

Sponsored by STI's implementation partners at Conservation International (CI) in conjunction with The Nature Conservancy (TNC), the project is co-implemented by the Carbon Sequestration Offices of Yunnan Forestry Department, Baoshan Forestry Bureau, and Tengchong Forestry Bureau. The project operating entity is a local forestry company called Sujiang Forestry Farm.

### *Addressing Additionality*

The additionality for the proposed small-scale A/R CDM project was assessed using the approved CDM methodology (i.e., Appendix B "Assessment of additionality"). The project provides additionality by overcoming three main types of barriers to reforestation activities: 1) investment barriers, 2) technological barriers, and 3) social barriers.

*1. Investment Barriers*

- Lack of access to credit: No credit mechanisms are in place for farmers to make long term investments in plantation forestry. Agricultural production is the main income source for local communities in the project area. Productivity is very low and the mean gross income (or GDP) per capita in the project areas is only US$ 228 with the lowest at US$ 75 in Lisu villages. Most local farmers live below the poverty level and are unable to afford the high initial costs of plantation establishment, because the income generated from wood and non-wood products occurs quite some time after the initial investment. The availability of carbon credits from the proposed project will provide income in a shorter period following the start of the reforestation activity, making it a financially viable option.
- Lack of funding for reforestation activities: It is not possible to obtain commercial loans from banks to reforest the project area, because the remoteness of the project area makes it economically unattractive. However, if the A/R CDM project is approved, local commercial banks will be willing to make loans available, and the Chinese Government will be willing to commit counterpart funding. The Forestry Farm is a financially independent accounting enterprise that does not receive any government subsidies. The existing forest resources that are allowed to be harvested annually through licenses issued by the government are quite limited. The revenues from timber harvest only cover the cost of the regeneration of the forests and the operation of the Forestry Farm, including salaries. In many cases the farm has to find other income sources for the forest regeneration on the lands where timber was harvested. In the absence of the proposed project and in the absence of outside funding, it is difficult for the farm to reforest the remote degraded lands.
- High costs: The total work days of the entire project process are 171,313, of which 49,012 work days are needed for site preparation and planting. The average cost for one work day is approximately 20 RMB; thus the total payment of the site preparation and planting is 1,000,000 RMB. The Forestry Farm will be fully responsible for the initial investment including the labor cost; of this, 30% of the investment will come from the annual revenue and 70% from the commercial bank loan. For the forestry farm, it is not possible to finance these costs without the proposed A/R CDM project.

*2. Technological barriers to reforestation*

- Lack of access to planting materials: Interviews with local communities showed that local farmers/communities lack access to quality seed sources.
- Lack of silvicultural and forest management technology: Through interviews it was shown that local farmers and communities lack skills needed to produce high quality seedlings and successful tree

planting as well as skills to prevent planted trees from being subject to fire, pest and disease attack. The project will address these concerns by providing technical support and capacity-building in reforestation, plantation management, fire management and related activities.

*3. Social barriers*

- Lack of organization of local communities: Individual farmer households and communities are too weak to successfully manipulate the chain from investment to production to market, especially for wood and non-wood forest products which take a much longer period than food production. In addition, the lack of organizational instruments also prevents them from overcoming the technological barriers mentioned above. Forestry farms have fewer institutional barriers but face important investment barriers (as discussed above).

The proposed project will specifically address (and overcome) the investment, technological and social barriers (see PDD for more details)

### *Generating Multiple-Benefits*

The environmental, social and health co-benefits of the project have been already been carefully evaluated by the CCBA (Climate, Community and Biodiversity Alliance). CCB standards are the leading tool for designing and evaluating multiple-benefit carbon forestry projects. To become certified under the CCB Standards, independent 3rd-party auditors must determine that the project satisfies fifteen required criteria, which demonstrate the project will help mitigate climate change, conserve biodiversity, and improve socio-economic conditions for local communities. The mandatory criteria further ensure that environmental and social monitoring programs are in place, no invasive plant or tree species are used, local stakeholders are appropriately involved in the design of the project, and there are no unresolved land tenure issues. The CCB Standards also address the key carbon-related issues of additionality, leakage, measurement & monitoring, and permanence. The proposed project has received a 'Gold' CCB rating, due to its exceptional ability to provide important social and environmental co-benefits, in addition to its ability to sequester carbon.

The main co-benefits identified include:

*1. Biodiversity conservation benefits:* The project is located within one of the world's biodiversity hotspots which provides key habitat for important rare and endangered wildlife. The proposed small-scale AR/CDM project will contribute to the conservation of biodiversity within this hotspot by:

- serving as a buffer zone for the Gaoligongshan Nature reserve;
- relieving the pressure of invasive weeds on the Nature Reserve;
- providing firewood to local communities (and thereby reducing pressure on adjacent forest); and
- minimizing disturbance to pre-existing vegetation, by using low-impact practices to establish the reforested areas.

*2. Soil conservation benefits:* The soils in the project area are primarily developed from granite and are highly prone to erosion due to their high sand and silt content. The reforestation project will help reduce soil erosion by stabilizing soils and providing vegetative cover.

*3. Sustainable development benefits:* The project will contribute to the sustainable development of local communities by:

- Providing incomes from wood and non-wood products for farmers and villages from the reforested areas (with an estimated 2,214 local farmers of 433 households projected to benefit from the project);
- Strengthening social cohesion within the region, by actively engaging individuals, communities, the forestry farm and the local government in the project, closely coordinating activites with local

stakeholders, and supporting networks for social and productive services, especially for the ethnic minorities; and

- Providing technical training and demonstration plots to local communities: Interviews with local communities indicated that local farmers/communities have usually limited access to quality seed sources and lack skills for producing high quality seedlings and for successful tree planting, as well as for preventing planted trees from being subject to fire, pest and disease attack. This is one of the important barriers of local communities in planting trees on their lands. In the proposed small-scale A/R CDM project activity, the local forestry agencies and farms will organize training for local communities to assist them in understanding and evaluating the issues of hosting the proposed A/R CDM project activity and in technical issues (such as seed and seedling selection, nursery management, site preparation and planting models, among others).

In addition to providing the significant co-benefits listed above, the project has been carefully designed to address issues of leakage and permanence, and to avoid potential negative co-benefits.

### *Project Risks and Countermeasures*

*Fire and pest risk:* Fires and pests are potential risks to the proposed small-scale A/R CDM project activity. However, the proposed project has been designed to alleviate these risks by providing technical and awareness training to local farmers/communities, strengthening patrolling and monitoring of the reforested areas, and building fire-breaks. Furthermore, the use of mixed plantations will help reduce fire risks and pest outbreaks.

*Site preparation:* To minimize the disturbance of vegetation and soils during site preparation, the project will limit the area affected (preparing only the sites where seedlings will be planted and using small holes 30-40 cm in diameter), retain as much of the existing vegetation as possible, and position holes along contour lines to reduce soil loss. As a result, the surface area disturbed by site preparation will be less than 1-2% of the total land surface.

*Fertilization:* Fertilizers will be applied directly to the small planting holes rather than being broadcast across the plantation, so that the potential risk of fertilization leaching into streams or groundwater is reduced to a minimum.

*Pesticides:* To avoid the contamination of soil, water, air and vegetation by pesticide application, the proposed project will use alternative, environmentally-friendly measures to control pests. These include the use of mixed species plantations, seed and seedling quarantine, and integrated pest management (IPM, especially biological control measures) to control pests and diseases. Therefore, pesticide application will be very limited.

### *Potential socio-economic risks and countermeasures*

*Cultural Resources:* There are no cultural relics and/or cultural reserves in the project area, and consequently, no damage to non-replicable cultural property will occur under the proposed project activities. The project does not involve any sites for local social gatherings or other spiritual activities; thus the project activities will not impact the normal local gatherings and religious activities.

*Ethnic Minority Groups:* Lisu is the only ethnic minority group involved in the proposed small-scale A/R CDM project activity. According to the social assessment report, the proposed project has been designed to ensure that there are equal rights for the ethnic minority group to access development opportunities. There are no foreseen negative impacts on Lisu communities.

*Economic risks:* The potential economic risks are that poor management of the plantations (such as the lack of adequate pest or fire control) will lead to project failure and result in financial losses to farmers. The proposed small-scale A/R CDM project activity will mitigate this risk by providing technical

assistance and training to farmers and communities on appropriate plantation management, by the forestry farm and the extension network of the forestry sector. The forestry farm is experienced in reforestation and forest management, and will also provide the technical assistance to the farmers/communities. The Shujiang forestry farm bears the risk of the project: if tree mortality occurs due to poor planting or site management the local communities will not incur financial losses because, under the contractual arrangement, their responsibility is simply to provide the land for reforestation.

### ***Carbon Measurement & Monitoring***

The project will use the CDM approved Small-Scale baseline and monitoring methodologies to determine carbon stocks and verify carbon offsets.

The project participants will determine any changes in carbon stocks by measuring and monitoring the project area that has been planted. The project boundary will be monitored and carbon sampling will take place within stratified sample plots. All sampling will be in accordance with the methods described in 4.3.3.4 of the IPCC GPG for LULUCF. This monitoring plan will be used throughout the project area and during the entire crediting period. If carbon stocks in some areas differ significantly from those in same strata, these areas will be assessed as a separate stratum. Please see the enclosed PDD for detailed information.

The project is designed to validate the carbon offset every five years with the support of trained local forestry staff. The planting activity will be completed in 2007. Thereafter, the project and permanent sample plots will be monitored every five years, i.e., 2012, 2017, 2022, 2027, 2032 and 2036, through the end of the crediting period. Please note that additional details on the monitoring and verification of offsets are available upon request.

The monitoring activity will be conducted by the Tengchong Forest Resources Management Office of Tengchong Forestry Bureau. Winrock International, a leading forestry organization in the area of carbon monitoring, and CI have collaborated to develop and convene monitoring training for the project participants that was held in 2006 in conjunction with the Yunnan Forest Bureau and other partners. The staff has been trained to measure and monitor carbon stocks, forest biomass and forest growth rates, and are very familiar with the appropriate methodologies and techniques. The Forestry Bureau has been leading similar work for 30 years and has been responsible for forest resource inventories and forest secondary resource inventories across the province. The bureau has a total of 10 staff and operates 12 management stations in Tengchong county, Yunnan province.

A DOE registered by CDM EB will be invited to conduct verification.

### ***Ownership***

As required by Chinese law, the operating entity must be a Chinese company or a Chinese holding company. In this project Sujiang Forestry Farm, an independent corporation, will be responsible for the planting, managing and forest tending. As included in the cooperative agreement signed by Forestry Farm and the local community, the Forestry Farm will own 100% of the carbon credits generated from the project, while the local people will own 100% of the timber and non timber products.

STI's implementation partners at CI have signed agreement with Sujiang Forestry Farm allowing CI to act on the behalf of the Forestry Farm to market carbon offsets developed in this project.