Additional Benefits

This initiative has been designed to go beyond long-term carbon capture, supplying benefits in addition to the carbon absorption.

Climate Benefits

- Carbon is captured and stored throughout the lifetime of each tree.
- Carbon is stored in wood products created from the harvested timber.
- Evaporation from trees cools the landscape – an important service at a time of rising temperatures.

Social & Economic Benefits

- New, sustainable sources of income for local farmers (carbon, crops and timber).
- Trees provide shade and nutrients for crops which promotes growth and increases yields.
- A long term plan for sustainable land use.

Ecosystem & Conservation Benefits

- Using five different native Amazonian tree species promotes biodiversity in plants and animals.
- Agroforestry can decrease logging of natural forest by providing alternative and sustainable sources of timber.
- Trees protect crops from wind damage.
- Tree roots help to hold the soil together, preventing rainwater run-off which can pollute rivers and wash nutrients out of the soil.

Additionality

Normally, agroforestry is too costly for most local farmers in this area to use. Oriel's support provides the start-up funds needed to execute the project, demonstrating that the carbon captured and stored is 'additional' to that captured and stored under usual circumstances.

Human induced climate change threatens ecosystems, productivity and the global economy. The world's most vulnerable people and ecosystems will suffer earliest and most severely from these impacts.

Carbon offsetting can help to mitigate climate change and foster sustainable development. Oriel College is partnering with the CREES Foundation to set up a carbon offsetting initiative to support farmers in the Peruvian Amazon.

The CREES Foundation will work with local communities to plant bananas together with native trees (known as agroforestry) on deforested land. While the trees grow they capture and store carbon, removing it from the atmosphere, and also provide shade and nutrients to the bananas which promotes crop growth and increases yields.

Sale of the carbon, crops and timber, funds the project and provides the farmers with sustainable sources of income. The initiative has been designed to go beyond long-term carbon capture: it has additional social, economic, ecosystem and conservation benefits.

Oriel College and other potential partners in this scheme are helping local communities in Peru to improve their livelihoods, develop sustainably and enhance biodiversity.

CREES FOUNDATION

UNIVERSITY OF OXFORD

Carbon Offsetting Through Community Agroforestry Initiatives

CREES Foundation & Oriel College, Oxford University

To find out more go to
www.crees-foundation.org/carbon
or contact
carbon@crees-foundation.org

Oriel's Carbon Offset Plan

The potentially damaging effects of human-induced climate change on ecosystems, productivity and the global economy have been well documented by the Intergovernmental Panel on Climate Change. These impacts will most affect the world's most vulnerable people and ecosystems.

Tropical deforestation and degradation contributes about 20% of global carbon dioxide emissions. Planting trees in deforested landscapes can contribute towards mitigating climate change while driving sustainable development.

As part of its wider carbon emissions reduction plan, Oriel College will become the first of Oxford's colleges to offset their carbon footprint by supporting Peruvian farmers in the world-renowned Manu Biosphere Reserve.

To do this, Oriel have partnered with the CREES Foundation who will work with local communities to set up agroforestry plots (crops planted together with trees) on deforested land to capture carbon from the atmosphere. Professor Yadvinder Malhi, Jackson Senior Research Fellow of Oriel College, visited the project site in summer 2009 to assist with its design.

CREES Foundation

The CREES Foundation is a charitable organisation, based in the UNESCO Manu Biosphere Reserve, committed to using sustainable practices to protect the balance of life in the rainforest.

By initiating conservation research, environmental education, natural resource management and community capacity building, the CREES Foundation aims to bring economic, social and environmental harmony to the Manu region now and into the future.

How is the carbon calculated?

Oriel College's annual carbon footprint = 80 tonnes of carbon (tC)

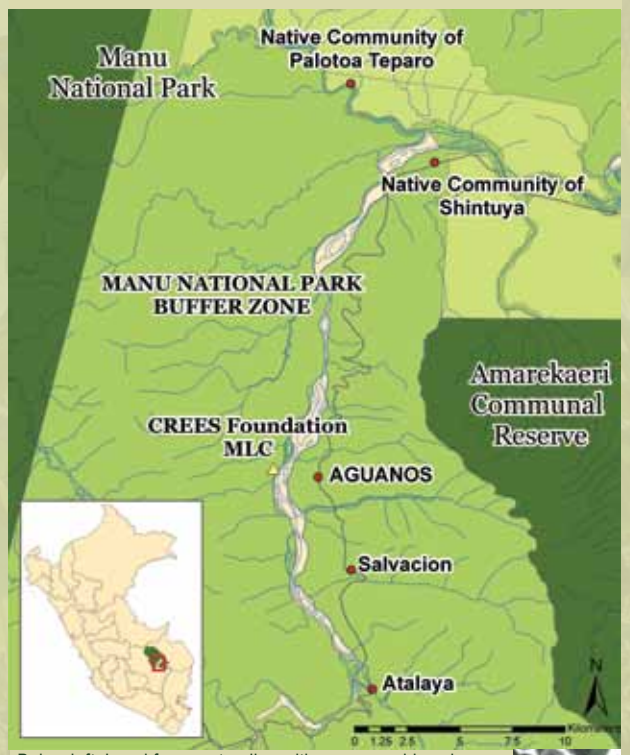
The biomass of one tree is calculated using estimates of its trunk diameter (D) and wood density (ρ), in the formula:

$(AGB)_{est} = \rho \times \exp(-1.499 + 2.148\ln(D) + 0.207(\ln(D))^2 - 0.0281(\ln(D))^3)$

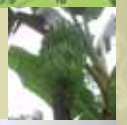
Average carbon captured by a tree each year = (½ biomass of tree)/ age of tree

This agroforestry project is calculated to capture 8tC per hectare per year (with a planting density of 190 trees per ha). Therefore at least 10 ha of land need to be planted. A generous buffer of 50% is added to cover any unexpected shortfall.

Above: The Alto Madre de Dios river.
Below: The agroforestry project will be based around the Aguanos and Salvacion on the banks of the Alto Madre de Dios river.



Below left: Local farmer standing with one year old pashaco tree (the main softwood species selected for the project).
Below right: 12 year old pashaco trees, with banana plants growing among them.
Right: Manu bananas are valued for their quality.



Project Location

The UNESCO Manu Biosphere Reserve is a world renowned location for biodiversity, with 1,300 species of butterflies, 800 species of birds, 160 species of mammals and an estimated 25,000 species of flowering plants. Among them are some of the world's most endangered and highly sought after species, including the cock of the rock and blue headed macaw.

The reserve covers an area the size of Wales and is divided into several distinct zones, each with a specific level of protection. This offset project will be based in the Cultural Zone of the reserve, around the settlements of Aguanos and Salvacion.

Project Description

The CREES Foundation will work with local rural communities to reforest areas of land through agroforestry. This will involve establishing plantations of banana and native fast-growing, softwood and slow-growing, hardwood trees.

These systems can capture a significant amount of carbon and also provide additional economic, social and environmental benefits for the local area. Softwood trees will be interspersed with the banana plants, providing the shaded conditions that bananas thrive in. Hardwood trees will be planted around the perimeter of each plantation, acting as a wind barrier.

The native tree species selected are legumes, which capture nitrogen from the air and enrich the soil, promoting crop production. Bananas can be harvested continuously once the plants are established and the native trees will also be harvested after 15 years (softwoods) and 40 years (hardwoods), providing an income for the farmers. The cycle of planting, growth and harvest then repeats.

Carbon is captured from the atmosphere as the trees grow, creating a higher carbon landscape, and is stored in wood products created from the timber. Finance raised through the sale of the carbon credits will help to fund the set-up, monitoring and maintenance of the agroforestry plots.