THE ATBC GOES CARBON-NEUTRAL

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At its 2007 annual conference in Morelia, Mexico, ATBC members voted overwhelmingly in favor of a proposal to make the society's future annual meetings carbon-neutral. Why have we done this, and how will it work?

The "why" part is fairly obvious. Greenhouse gases are rising rapidly in the atmosphere (Fig. 1), and it would be irresponsible of the ATBC, as a leading scientific and conservation organization, to fail to reduce its emissions as much as possible and to offset its remaining emissions. Many scientific groups, institutes, and businesses are now going carbon-neutral—or are at least talking seriously about doing so. The ATBC Executive Council felt it was important for the society to be at the cutting edge of these efforts.

The "how" part is where things get interesting. The first question is, how much carbon emissions does an ATBC annual meeting produce? To determine this, the society undertook a formal carbon audit, which was assessed by the Edinburgh Centre for Carbon Management (ECCM), U.K., a well-regarded firm that specializes in this field. We used the Morelia meeting as a typical example. ECCM sent the Morelia-meeting organizers, led by Miguel Martinez and Mauricio Quesada, a long series of questions about how delegates would travel to the meeting, and how much energy would be used for hotels and meeting venues. The cost of the carbon audit (nearly $2300) was kindly paid for by the Mexican Secretariat of the Environment and Natural Resources.

Not surprisingly, the audit revealed that most of our carbon emissions are caused by travel to and from the meeting. Air travel accounts for 86% of all emissions, and if one includes automobile travel this figure leaps up to 99.8% of all emissions. On average, each participant in the meeting produces 1.33 tons of emissions (measured in CO2 equivalents). Overall, with nearly 800 participants, the Morelia meeting was expected to produce about 1070 metric tons of carbon emissions. In future years we should work to reduce these emissions through efficiency savings and the use, wherever possible, of renewable energy sources.

Offsetting Our Emissions

How do we offset our emissions, and how much will it cost? This is the trickiest part. Many options exist for going carbon-neutral, and some have been justifiably criticized. People now talk disparagingly about "carbon cowboys"—dodgy companies that happily take funds from wellmeaning organizations attempting to become carbon neutral, and invest them in dubious carbon-offset projects. Aside from such pitfalls, there is also a bewildering variety of options for entering the carbon market. For example, one can invest in the informal carbon market or buy moreexpensive certified carbon credits, and funds can be used for myriad different strategies to reduce carbon emissions—such as increasing energy efficiency or promoting wind- or solar-energy production.

But perhaps the most intriguing option for offsetting carbon emissions is in forestry projects, especially in the tropics. This is, of course, where the ATBC has considerable expertise (e.g. Bawa *et al.* 2004; Laurance 2006a, 2006b, 2007). We felt it was important to support innovative projects that promote tropical forest conservation, and we wanted to serve as an example to other organizations that are considering how to offset their emissions.

After much investigation, we reached two conclusions. First, carbonoffset projects in the forestry sector can be risky, especially in developing nations. One needs to ensure, for example, that the emissions reductions are verifiable and long-term in nature, and that "leakage" does not occur (i.e. reducing deforestation or increasing reforestation in one area does not simply result in increasing deforestation somewhere else).

Second, conserving tropical forests—either via afforestation or, even better, by protecting old-growth forests—can have enormous benefits for slowing global warming (Gullison *et al.* 2007, Mitchell *et al.* 2007). Tropical forests store huge amounts of carbon in their biomass, and forest destruction currently accounts for up to a quarter of all human carbon emissions today (Fearnside 2000, Fearnside & Laurance 2005). Moreover, by transpiring huge quantities of water vapor back into the atmosphere (Fig. 2), tropical forests contribute heavily to cloud formation; the clouds in turn reflect solar energy back into space, thereby helping to slow global warming, and they often contribute importantly to regional rainfall (Andreae *et al.* 2004). Finally, tropical forests have far more positive albedo effects than do either temperate or boreal forests. If the latter are cleared they tend to be covered by snow for much of the year,

and this reflects much solar energy back into space, whereas tropical forests are replaced by dark land-covers such as pastures and croplands that reflect little heat back into space (Bala *et al.* 2007).

The net effect of these three factors—carbon storage, evapotranspiration, and albedo—is that saving a hectare of tropical forest is likely to have far greater positive benefits for slowing global warming than does saving a hectare of either boreal or temperate forest (Bala *et al.* 2007).

Fig. 1. Tropical deforestation is a major source of greenhouse-gas emissions (photo by W. F. Laurance).

Of course, tropical forests perform other vital ecosystem services, such as protecting soils, reducing destructive flooding, and maintaining reliable stream flows, and they are enormously important for biodiversity conservation (Laurance 1999, Ozanne *et al.* 2003). It is for this reason that several influential studies, such as the widely heralded Stern Report in the U.K. (Stern 2005), have advocated tropical forest conservation as a vital and cost-effective strategy for slowing global warming (Mitchell *et al.* 2007). In any strategy to slow harmful climate change, tropical forests are the low-hanging fruit.

Fig. 2. By transpiring vast amounts of water vapor into the atmosphere, tropical forests help to stimulate cloud formation. Clouds, in turn, reflect much solar radiation back into space and thereby help to reduce global warming (photo by W. F. Laurance).

The ATBC Strategy

Among the available options for tropical carbon-offsets, we have chosen two that we regard as particularly promising. The first, located in the states of Chiapas and Oaxaca in southern Mexico, is a project known as *Scol Te* ('tree that grows'). It invests in forest and agricultural systems in rural communities, in order to increase terrestrial carbon storage. The main goal is to replace monoculture crops with sustainable agroforestry and to promote reforestation and afforestation. A nonprofit group called Bioclimate Research and Development, linked to the ECCM, administers the funds and verifies the practices of the participating communities. Emissions credits are sold at a price of $7.30 per metric ton of CO2 equivalents.

The other project is Rainforest Concern, whose activities focus on conservation of old-growth forests in Ecuador and elsewhere in South America. Funds administered by Rainforest Concern are used to purchase forested land, which is held and managed in a trust by local communities. Rainforest Concern has a long, successful track record. In Ecuador, for example, they are working to protect cloud forests in the Choco-Andean Corridor, to sustain natural water resources for local communities in the Intag region, and to increase reserve buffers in the Gran Sumaco area. Rainforest Concern and its local partners are responsible for ensuring the permanence of the forested land purchased, and therefore its long-term carbon storage. At $15.00 per metric ton, carbon offsets are more expensive under Rainforest Concern than the *Scol Te* Project, reflecting higher local costs in Ecuador. We believe, however, that the additional cost is warranted, because of Rainforest Concern's strong reputation, and because it is important for the ATBC to promote the key ecological benefits of protecting old-growth forests.

We currently plan to invest half of all ATBC carbon-offsets in the *Scol Te* Project, and half in Rainforest Concern. We may alter this in the future, as new forest-based projects become available, but we will remain strongly focused on the conservation and rehabilitation of tropical ecosystems. ATBC meetings vary from year to year in the meeting locations and number of participants, but we estimate that a contribution of $20 from each individual traveling from outside the host country, and $5 from each person within the host country, will be sufficient to offset our emissions.

At our 2007 annual meeting, contributions to the ATBC Carbon- Neutral Fund were entirely voluntary. Perhaps because of limited familiarity with this new program, only a third of the participants at Morelia

contributed to the fund, for which they received a green wristband.Fortunately, as voted upon by the ATBC membership, future contributions will be automatic, incorporated into the meeting-registration fee. Beginning next year at our 2008 annual conference in Suriname, the meeting-registration fee will include $20 for foreign participants and $5 for local Suriname residents, with 100% of these funds being used to pay for carbon offsets.

The ATBC is proud to be a leader in the use of carbon offsets to promote the conservation of tropical forests. We hope to serve as a model for other organizations and corporations that wish to offset their emissions while having major positive benefits for tropical ecosystems and biodiversity conservation.

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