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The 3rd Jack Westoby Lecture

Dr Manoel Sobral Filho
Executive Director, ITTO

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"The Tropical Forests Dilemma"

Paper delivered by Manoel Sobral Filho, Executive Director of the International Tropical Timber Organisation (ITTO), at the Third Jack Westoby Lecture ANU Forestry Lecture Theatre, Australian National University

I would like to thank Professor Peter Kanowski and the Department of Forestry here at the Australian National University for inviting me to share with you some of my thoughts on what I have termed the tropical forest dilemma. I am honoured to address you in the 3rd Biennial Jack Westoby Lecture. Jack Westoby's writings have inspired me and, I am sure, countless other forestry professionals to strive for solutions to the challenges of forest-based development in poor countries, even if some of us, regrettably, find it difficult to achieve his very high standards. I am also pleased to be here in the Department of Forestry, which has produced so many outstanding foresters over the years, many of who have gone on to work in the tropics, and among them is my colleague in the ITTO Secretariat, Mr. Alastair Sarre, who incidentally has been of much assistance to me in the preparation of this address. ANU has also been a training ground for many overseas foresters, of whom Dr. Freezailah, my predecessor as Executive Director of the International Tropical Timber Organization, was one. It is well known that Australia's experiences in tropical forest management and conservation have provided important inputs to ITTO's work throughout the tropics, and now seems a good time to express my appreciation for that.

I suppose I have some claim to speak on tonight's topic, the tropical forests dilemma, if only because my home country, Brazil, contains the largest tract of tropical forests on the planet. I lived in the heart of the Amazon in the city of Manaus for 7 years, and I have also served for 13 years at ITTO. But I don't claim to have all, or even any, of the answers. My hope is that tonight we can engage in a dialogue on the wide range of issues facing tropical forests and tropical countries today and that somehow we can learn a little bit more about them in the process. Rather than answers, I have some questions to put to you.

I would like to start by presenting you with some information on two large forest states in Brazil and Canada – the state of Mato Grosso in Brazil, and the province of British Columbia in Canada – and posing my first question: which one do you to think is likely to still have most of it forest cover in 100 years time?

Both have about 40-50 million hectares of forest; Mato Grosso's is tropical rainforest, British Columbia's is temperate conifer forest. I chose these two political entities because their total land areas are comparable and they have a comparable percentage of land under forests – somewhere around 50%. But there are of course major differences, and these might be instructive. Compare, for example, annual log production: 3.1 million m3 in Mato Grosso and 72 million m3 in British Columbia (Table 1).

Table 1: Comparison of forest area and log production, British Columbia and Mato Grosso

	Total area (m/ha)	Productive forest (m/ha)	Annual log production (m/m^3)
British Columbia	95	49	72
Mato Grosso	91	40	3

But don't answer the question on future forest coverage right now; I will return to it later. Now I want to ask another simple question: the title of this lecture is the 'tropical forests dilemma', but do we, in fact, have a dilemma? Is there a problem with tropical forests?

The vast majority of you, I am sure, will say yes, there is a problem. Tropical forests are a valuable resource, and they are being lost at an annual rate of 10—15 million hectares. These two assertions, when put together, constitute a problem. If they are true.

Certainly, the tropical forest estate is decreasing in size. This is an undisputed fact, even though forest cover data are notoriously unreliable and the latest FAO figures, which indicate a 10% reduction in deforestation in the last 10 years, have been disputed in some quarters.

Nevertheless, estimates of 10 million hectares or more of forest lost each year, even if overstated, are much too high to ignore. Moreover, they don't take into account forest degradation and fragmentation, which are also occurring and which hasten decline and reduce forest values.

What about the assertion that the tropical forest is valuable? Here are some of the most commonly used arguments. Tropical forests are valuable because they provide valuable timber and non-timber products; they are

home to over 50% of earth's terrestrial biodiversity; and they are important for ethical and religious beliefs and for the maintenance of the traditional cultures of hundreds of millions of people. As forest is lost so too is cultural diversity, because forest-dwelling peoples are increasingly absorbed into the mainstream. Like biodiversity, cultural diversity adds to our quality of life and, in its own way, acts as a buffer against the danger of mass homogenization and all of us watching endless repeats of TV shows like "I Love Lucy". A final commonly used argument for the high value of tropical forests is that they provide life-sustaining services, such as climate, air and water purification and drought and flood control.

Most people are probably familiar with these arguments. But now let's look at arguments supporting the view that tropical forests are not valuable, or at least not valued in terms of society's willingness or ability to pay for the goods and services they provide:

(i) Natural tropical forests most often are not efficient producers of timber or of income from timber:

- Low yield/ha/year compared to plantations (eg 1-2 m3/ha/yr in natural forests vs 30-40 m3/ha/yr in plantations);
- Heterogeneity – this has implications for both sustainable forest management and marketing, because maintaining biodiversity becomes an extremely complex task and steady supplies of preferred species are difficult to ensure;
- Many other forests for timber production are supported by subsidies. Identifying these subsidies is often difficult, but a recent report by the World Resources Institute found that developed countries subsidize their forests and forestry to the tune of several billion dollars annually;
- Subsidised forests keep prices low. Therefore, the prices obtainable for tropical timber are too low to cover sustainable production costs.

(ii) Biodiversity is not remunerated by the markets: most often biodiversity becomes a cost – because of the extra management required to maintain it – rather than a cashable asset. Potential income-earning, biodiversity-based industries such as ecotourism and pharmaceuticals have not been realized in the tropics due to a lack of infrastructure and, in the case of pharmaceuticals, mechanisms to capture the value of the goods;

(iii) There is no financial remuneration for environmental life-supporting services provided by tropical forests, such as water catchment, climate regulation, and carbon absorption;

(iv) In large parts of the tropical world, forest conversion to other land-uses such as rubberwood and oil palm plantations as well as annual agriculture crops, including soy beans and cotton, is much more profitable. This is not a new phenomenon: as we have seen in Australia and many other developed countries, forests have been cleared for agriculture for centuries because agriculture is more profitable or a more economically imperative landuse. Even when too much deforestation leads to environmental problems, as I believe is the case here in Australia, considerable profits can still be made in the lag time between clearance and the appearance of the environmental problem.

All this adds up to one fact: in the face of economic pressures at the local level – where subsistence farmers must farm if they are to feed their families – and at the regional or national level – where governments must pay for basic infrastructure, schools, hospitals and so on – most tropical countries cannot afford to conserve tropical forest.

So at the moment, then, forests don't seem to be valuable enough. In an ITTO assessment of the financial resources needed to achieve sustainable forest management made in 1995, Alf Leslie concluded that "regardless of land use sustainability considerations, poverty is going to force or result in much of the tropical forest resources being lost."

Let's now step back and take a broader view. Our planet faces an increasingly uncertain future, particularly with respect to environmental changes. Many people are predicting rapid climate change; our diverse activities continue to impact on our water catchments, our agricultural lands and our atmosphere. What happens if we have an ecological disaster? Perhaps climate change will reduce Australia's capacity to grow wheat, or China's ability to grow rice. Apart from anything else, biodiversity is an insurance policy against unforeseen – and sometimes foreseen – ecological catastrophe.

Most people outside the tropics will therefore agree that we need to maintain most of the remaining tropical forests, because they contain half the world's

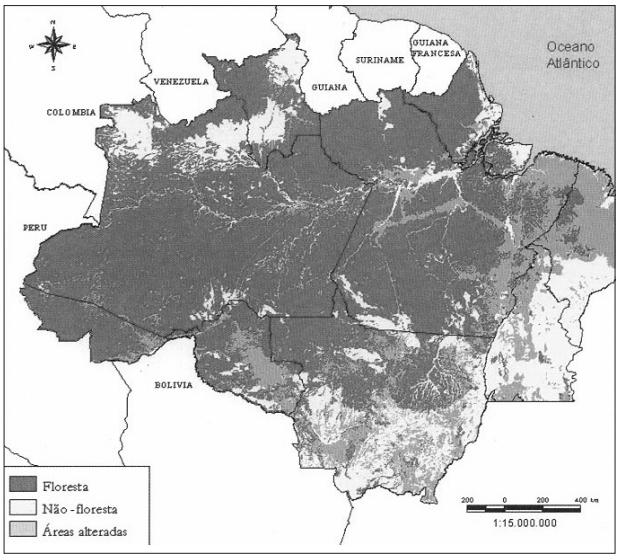

Figure 1: Forest cover, Amazonia

terrestrial biodiversity. A precautionary approach is surely needed: we should not destroy biodiversity before we even

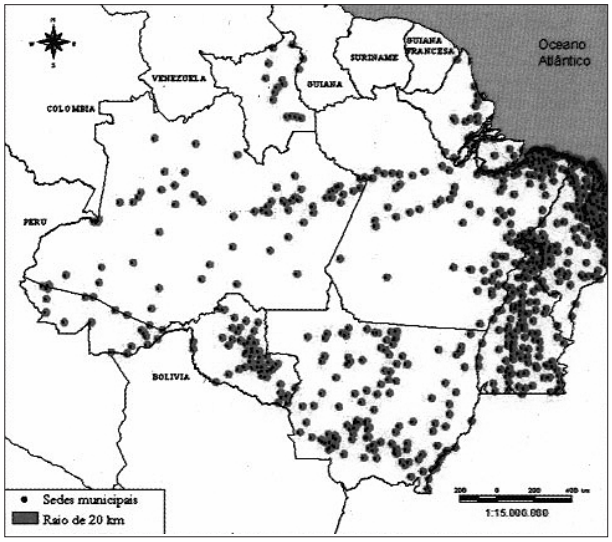

Figure 2: Municipalities, Amazonas

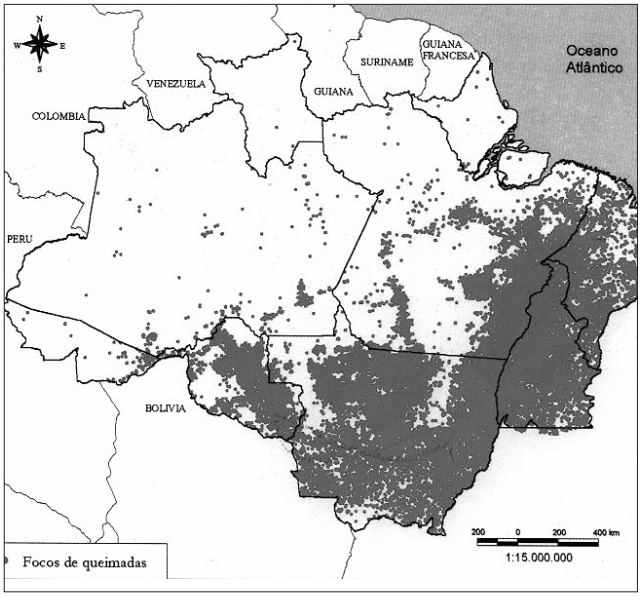

Figure 3: Fire hotspots, Amazonas

know what we've got, and we should leave open as many 'options' as possible, because the future is so uncertain.

Biodiversity is therefore globally important. Since most concern for its disappearance is apparent outside the tropics it seems fair that a large part of the financial burden for conserving it must also fall outside the tropics. The world wants and needs its insurance policy: it therefore needs to pay the premium.

My thesis, then, is simple: money can save the tropical forests. The question is: are those who are in a position to pay, willing to pay? Let's consider a case study that tests the thesis.

Brazil's Amazonian region comprises nine states covering about 500 million hectares, of which 360 million hectares are forests with potential for timber production. These are green areas in Figure 1 (dark grey in black-and-white). The yellow areas (light grey in b&w) are non-forest areas and the grey ones (mid-grey in b&w) show areas already modified by human activity, including deforested land.

Figure 2 shows the distribution of municipalities in the region. Figure 3 is a map prepared using satellite data showing 'hot' spots, indicating the use of fire for land clearing. People use fire to make forest land available for other uses which are or are perceived to be more profitable or immediately useful. You can see clearly the correlation in Amazonia between population density, forest burning and forest loss.

The largest Amazonian state is the state of Amazonas. It contains some 135 million hectares of magnificent tropical rain forest. For the last 33 years, the state government and population have shown no interest in promoting forest industries, agriculture or pastoralism.

This makes it an interesting case study. Do the local people want to remain poor? Of course not. The Amazonas authorities and the population they govern have chosen the conservation option almost by default because the state was granted tax-free status by the federal government in 1968. The state's central capital, Manaus, is now home to more than 400 industries, most importing and assembling parts into manufactured goods, including 90% of the electro-electronic consumer products traded in Brazil. The tax-free industry, which annually benefits from incentives and subsidies reaching US$3 billion, is the only development engine in the state. It is the major employer of the local people, who flocked to Manaus, now home to 60% of the state's two million inhabitants. Of course, forest conservation was not the original reason for granting tax-free status: the federal government wanted to establish a presence in its northern regions for security reasons. Nevertheless, the outcome has been the maintenance of the forest estate in pristine condition. Development has concentrated in Manaus, which is a prosperous and vibrant city. And the state government has not encouraged forest development, rural settlement, agriculture and pastoralism because it hasn't needed to.

Is the Amazonas case the ideal situation? Have we found the solution to conserving a substantial share of remaining tropical forests? It would seem so; the local government, the population and forest owners are happy and there is no outside threat to the resource. But Brazil is a poor country struggling to alleviate poverty and develop and the governments and people (tax payers) from the other states in the Brazilian Federation have decided they cannot afford the tax subsidies for much longer. In fact, the country's 1988 constitution states that the Manaus tax-free benefits will end in 2007. What will happen then? Manaus, in the absence of the tax shelter, cannot compete with the Brazilian industrial powerhouse states in the south, which also have 80% of the Brazilian market.

So we might expect that most of the industries will move out. I do not need to tell you that land-based development (forest industries, agricultural crops, livestock production) will inevitably soon be very much in the minds and plans of the government and people of Amazonas, as they are now in the neighbouring state of Mato Grosso. In the absence of the de facto forest conservation subsidy, the

challenge in both states is to create the conditions under which sustainable industries will be more competitive than the other land use options that require deforestation.

Mato Grosso is the second largest state in the Brazilian Amazonia. In the last ten years it experienced spectacular growth in its agriculture sector. It is now the number one producer of soybeans in Brazil, with 3 million hectares under this crop. It is also the second largest producer of rice and cotton and the fourth in cattle-raising. The Federal Agriculture Research Agency estimates that 40 million additional hectares are suitable for these land uses and the state is ready to expand the area under agriculture.

Of course, expansion of agriculture and livestock development requires land-clearing. And the Brazilian law stipulates that up to 20% of areas classified as forest land can be converted to non-forest ones. This percentage increases to 50% in areas classified as other wooded lands.

The state also has a thriving forest industry sector, although it is expanding at a much slower pace than agriculture because of much lower profitability and credit and finance constraints.

Table 2 shows the waiting time for government loans and gross revenue per hectare per year for land under sustainable forest management in comparison with land under soy bean crops.

Table 2: Waiting time for government loans and gross revenue per hectare per year, timber production versus soybeans

Land-use options in Mato Grosso, Brazil	Average waiting time for official credit	Gross revenue/ha/year US$
Timber production under sustainable forest management	18 months	30-50
Soybeans	2 months	300-400

So you see that sustainable forest management for timber production is handicapped even before it starts, and we can expect more deforestation in places like Mato Grosso.

This is not the only hurdle placed in front of sustainable forest management for timber production. Think, for a moment, about the sophisticated information and management systems that are required to run a sustainable forestry operation in the tropics – with its high levels of biodiversity and rainfall – so that biodiversity is not lost, catchments are not damaged, and so on. More than that, increasingly such operations are required to provide proof of their environmental standards. But clear the same land – destroy all the biodiversity and have a huge impact on the water catchment – and grow soybeans and you can sell the produce unfettered into every market in the world. Moreover, as long as your beans have all their original genes, you don't have Greenpeace breathing down your neck.

I hope that my views of the lack of competitiveness of tropical forest as a land use are not too discouraging. Because despite all this I believe that eventually a large share of tropical forests will be placed under sustainable forest management. In the ITTO study I referred to earlier, Alf Leslie estimated that tropical forest areas would decline to about 500 million hectares before deforestation runs its course. Although this number is little more than a guess, I reckon it is probably reasonable. Why, in the light of the preceding arguments? Because I am convinced that national governments will increasingly absorb the costs of maintaining these forests, even when they have other things on which to spend their money, such as hospitals and schools. Already, we see governments in many tropical countries putting funds towards the management and conservation of totally protected forest areas. Malaysia, a fast-growing economy, is a notable exemplar of this. This eventual permanent tropical forest resource will probably comprise:

- Conservation reserves and other totally protected areas;
- The lands of Indigenous people with low intensity use; and
- Production forests.

If this conjecture turns out to be even remotely true, it perhaps diminishes the tropical forests dilemma a little – from concern over the fate of today's tropical forest estate of about 1.2 billion hectares to concern over the difference between that and the eventual permanent forest estate of 500 million hectares. So we're down to worrying about what happens to 700 million hectares of tropical forests.

But the scenario in which 500 million hectares of tropical forests is 'saved' is not a 'do nothing' scenario, because it is predicated on the fact that tropical countries will develop. Their economies will grow and their poor will find employment. As a consequence, both governments and people will eventually take more interest in forest conservation and be able to pay for it.

ITTO believes that it can help the process of development by promoting the growth of a tropical timber industry. But I have spent the last little while trying to convince you that timber grown on a sustainable basis in natural tropical forests is not competitive with that grown in other forests, including the expanding global plantation estate. If production forestry is not competitive in its own right, it will have to be subsidized, either by payments for non-timber products or services, or directly.

So why even bother with it? For a start, if it is coupled to downstream processing it can generate considerable employment, and promote the development of infrastructure, both essential for development. It makes sense for poor countries with a large part of their land still covered by forest to develop a timber-based processing sector. For biodiversity's sake, it would be better to base

such an industry on natural forest rather than to clear the natural forest and establish plantations.

What is sustainable forest management likely to cost? In 1995, the ITTO Council realized that a priority list of actions was required if we were to achieve significant progress towards sustainable forest management. A list of seven key actions for countries was agreed. These were:

(1) Adopt a forest policy and apply legislation

(2) Secure the permanent forest estate

(3) Apply reduced impact logging

(4) Train the workforce in reduced impact logging

(5) Limit timber harvesting to the sustained yield capacity

(6) Raise public awareness that timber harvesting can be consistent with the sustainability of tropical forests

(7) Focus forest research on the analysis and use of existing data and knowledge

ITTO has undertaken several studies on the financial resource flows necessary to implement these actions and to achieve sustainable forest management in its producer member countries. In the most recent study, it was estimated that the implementation of sustainable management of natural tropical forests and the enforcement of the various regulations would require the strengthening of institutional infrastructure and development of skilled manpower, involving substantial additional costs. ITTO's studies estimated that in order to implement these priority actions, about US$2.2 billion per year would be required over an initial period of four years.

I should point out that this estimate was simply the cost of raising the capacity for good forest management to an adequate standard: it did not include the subsidies that will be needed to make such management financially viable. But under prevailing economic conditions, most ITTO producer member countries could not be expected to make even these minimal investments. This responsibility, as agreed at the Rio Summit, is supposed to be shared with developed countries, who have agreed to provide new and additional financial resources to assist in such efforts. After all, the benefits are global.

But ODA is, in fact, falling. At this point I would like to mention as an example ITTO's Bali Partnership Fund, which is fundamental to the Organization's ability to fulfill its mandate. The fund was established for the specific purpose of assisting producing members in achieving sustainable forest management. Regrettably, only about US$15.5 million has been made available to it since the Agreement came into effect in 1997, well under US$1 million for each ITTO producer member country. I cannot help contrasting this with the estimated US$360 billion dollars provided each year in government subsidies to farmers in OECD member countries. A couple of years ago this amount included an average US$19,000 subsidy for each full-time farmer in the USA and European Union and a US$21,000 subsidy for each farmer in Japan.

Despite being severely constrained by the lack of adequate funds, ITTO and its Members are making progress, mainly in the adoption of appropriate forest policies and legislation. However, there is a world of difference between the adoption of policies and legislation and their implementation on the ground.

A very specific priority area in which ITTO is increasing its efforts is the application of reduced impact logging techniques and training of the workforce in reduced impact logging. Although ITTO has financed a few projects designed to improve harvesting in producer countries, there has been no concerted effort to provide ongoing assistance. I want ITTO to support the establishment of one reduced impact logging training center in each of the producing regions. The planning of such centers is already under way in Africa and here in the Asia-Pacific region. Perhaps the Australian government and Australian foresters, including some of you here today, will be interested in participating in the funding and operation of such a center.

By improving logging techniques and practices, we will overcome many of the technical constraints hampering progress towards sustainable forest management in producer countries. But as I have been pointing out, achieving sustainable forest management is not really a technical question.

As long as sustainable forest management remains economically non-competitive, the prevention, control and monitoring actions needed to protect and secure tropical forests will demand resources far beyond those available in producer countries or multilateral or bilateral funding agencies.

But new and additional resources for the protection and management of tropical forests are in sight, and I will briefly refer to two developments. Both are particularly interesting because a large part of the potential funds that might be contributed will come not from governments but from the private sector.

One such opportunity is emerging through the ability of forest management to capture and conserve carbon; this may become bankable through the Clean Development Mechanism of the Kyoto Protocol. Most people here are no doubt aware of the latest developments in the negotiations on this. I have been told that a large research effort is under way in this university on carbon accounting and probably many people in this room are better informed about the negotiations than I am. I look forward to hearing the views of such people on the possibilities for the transfer of funds for the maintenance of tropical forests under the Protocol. In fact, some transfers have already been made (outside of the Protocol) between power companies in developed countries and plantation development and reduced impact logging projects in the tropics. Should such transfers increase under the Protocol and extend to funding conservation forests, they would offer an opportunity for developed countries to share more equitably in the payment for environmental services

provided by tropical forests while helping to make sustainable forest management financially feasible.

A second development has been initiated by Conservation International, a major international NGO and our partner in important transboundary conservation projects in Ecuador and Peru. It has established a new market-based tool for the conservation of forests and biodiversity by leasing nearly 100,000 hectares of pristine tropical forests in one of ITTO's member countries, Guyana. Through this new mechanism, dubbed a "conservation concession", Conservation International pays market rates for the area to be protected. Conservation International plans to use this new market mechanism to protect millions of hectares of tropical forest over the next several years. In a way, this mechanism is not much different to the one that has kept Amazonas State relatively free from deforestation over the last few decades.

In this lecture I have presented the tropical forest situation as a dilemma. The dictionary defines "dilemma" as a situation that requires one to choose between two equally balanced alternatives, most often unattractive ones. And our two equally balanced alternatives, as you probably can figure out by yourself, are either to accept continuation of deforestation and loss of much of the tropical forest resource, with the associated unsatisfactory loss in biodiversity and other services, or to assist tropical countries to create, develop and finance socio-economic opportunities which are consistent with maintaining their land under natural forest (Table 3). Unfortunately, this second alternative currently seems to be an equally unsatisfactory alternative to donors, judging by the resources that have been brought to bear on these problems to date. If my thesis is true that money – and perhaps only money – will save up

Table 3: The tropical forest dilemma

Alternatives	Unsatisfactory Aspect
Continue deforestation	Irreversible loss of biodiversity and life-supporting services
Subsidize sustainable forest management and/or pay for non-marketable values and services	Cost

to 700 million hectares of tropical forests, then we might expect most of those to be lost over the coming decades.

Most farming and forest subsidies provided by developed countries are seen by many as perverse, distorting the economy and often having negative environmental effects. While agreeing with arguments to remove forest and forest industry subsidies in developed countries when they distort prices and encourage excessive use of natural resources, I do support subsidies for sustainable management of production forests in the tropics in order to make up for their lower productivity (in regard to marketable timber), to compensate for lack of direct payment for their environmental life–supporting services, and to implement minimum impact logging, which is essential to maintain biodiversity. In my view, these are legitimate and desirable subsidies because it is in the global public interest to arrest the conversion of tropical forests to other land uses, by enabling people to use and benefit from a continuous flow of desired forest products and services without undue reduction of inherent forest values and future productivity and without undue undesirable effects on the physical and social environment.

Table 4: Comparison between Amazonas state, Mato Grosso and British Columbia

	Total Area (million ha)	Productive Forest Land (million ha)	Annual Forest Loss (ha)	Forest Products Exports (US billion $)	Government Support
Amazonas	150	135	less than 50,000	0.02	Strong govt support for urban industrial development
Mato Grosso	91	40	660,000	0.2	Strong govt support for agricultural development
British Columbia	95	49	0	10.6	Strong govt support for forestry

I think that most of you will have reached a conclusion by now with regard to the question I raised at the beginning of this presentation. Table 4 summarizes the situation. The British Columbian forest sector, with huge investments, huge exports, a low-diversity resource and government support will undoubtedly keep the majority of its forest cover in perpetuity, albeit perhaps with decreasing biodiversity. I regret to say that the future of the tropical forests of Mato Grosso and Amazonas is much less certain. It will depend in no small part on the willingness of the international community to play a role in remunerating tropical countries for the goods and services that arise from their sustainable management and conservation.

Thank you.