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REPLENISHING THE WORLD'S FORESTS: THE FUTURE OF THE WORLD'S TROPICAL FORESTS

By LOUIS HUGUET*

SUMMARY

The world's tropical forests cover about 1.9 billion ha as against 1.6 billion ha for temperate and nordic forests. Out of these 1.9 billion ha, about 40% is made of dry open forests and about 60% of dense humid forests (source FAO–UNEP).

At a global level the rate of destruction or degradation of these tropical forests has been estimated by a recent FAO–UNEP study as being within the range of 0.58% and 0.32% per year.

This same study reveals that in some critical areas, the destruction of tropical forests is alarming and has, or may have, disastrous consequences

The author submits that the main cause of tropical forests destruction is not commercial, export oriented exploitation, but the primitiveness of agriculture and grazing, and that many tropical forests could be saved, if agriculture and grazing were sufficiently intensified to alleviate the pressure exerted on land by poor and primitive farmers and shepherds.

RESUME

Les forêts tropicales du monde couvrent environ 1,9 milliards d'hectares contre 1,6 milliards pour les forêts tempérées et nordiques. Au sein de ces 1,9 milliards d'hectares, environ 40% sont représentés par des formations sèches et ouvertes et environ 60% par de la forêt dense humide (Source FAO–PNUE).

Au niveau mondial, le taux de destruction ou de dégradation annuel des forêts tropicales a été estimé par une étude récente de la FAO et du PNUE comme se situant dans la fourchette de 0,32 à 0,58% par an.

Cette même étude révèle que dans certaines zones critiques la destruction des forêts tropicales est alarmante et a déjà, ou pourrait avoir, des conséquences désastreuses.

L'auteur considère que la cause principale de la destruction des forêts tropicales n'est pas en général leur exploitation commerciale et orientée vers l'exploitation mais le caractère primitif de l'agriculture et de l'élevage et que de nombreuses forêts tropicales pourraient être sauvées si l'agriculture et le pâturage étaient suffisamment intensifiés, de façon à alléger la pression exercée sur la terre par les agriculteurs et les pasteurs pauvres et utilisant des techniques primitives. Mais, cela est plutôt un problème social qu'un problème technique.

RESUMEN

El bosque tropical mundial cubre cerca de 1.9 billones de hectáreas contra 1.6 billones de hectáreas del bosque templado y nórdico. De los 1.9 billones, cerca de 40% está constituido por bosques secos abiertos y cerca de 60% por bosques húmedos cerrados (fuente FAO—UNEP).

A término global, la velocidad de destrucción o degradación de estos bosques tropicales ha sido estimado, estar, por un reciente estudio de FAO–UNEP, dentro de un rango entre 0.58% y 0.32% por año.

*Directeur General — Centre Technique Forestier Tropical, France. Formerly Director — Forest Resources Division, FAO, Rome.

Este mismo estudio revela que en algunas areas críticas, la destrucción de los bosques tropicales es alarmante y que tiene, o puede tener, consecuencias desastrosas.
El autor sostiene que la causa principal de la destrucción de los bosques tropicales no es la explotación comercial, orientada a la exportación, sino que la agricultura primitiva y el pastoreo, y que muchos bosques tropicales pueden salvarse si la agricultura y el pastoreo fueran suficientemente intensificados para aliviar la presión puesta sobre la tierra por finqueros pobres y primitivos, y por pastores.

Myths, threats and expectations

To introduce my statement on the above subject, I would like to tell you a short story:

> "The chief of the forest service of Brazil was paying a courtesy visit to one of his colleagues, of an equally important but northern and developed country.
>
> During the conversation, the man from the developed northern country told his colleague from the southern developing country: "take good care of your huge Amazonian rain forest. It is the lung of the world. It provides us with the oxygen we breathe".
>
> After a moment of reflection, the man from the south seeing suddenly himself as rich in oxygen as the Gulf countries are in oil, replied: "if it is so, what royalty do you think we could charge you for each ton of oxygen we supply you with?"

This story is true. It has been told me by the owner of the so called world's lung. And many lessons can be drawn from it. Among them:

1. The rather paternalistic attitude of the rich towards the less rich and developing countries, which generally upset the latter.

2. The rather wide-spread and fully justified, idea that the world's forests are an heritage common to the whole mankind. But an idea founded, in that particular case, on wrong assumptions, namely:

   (a) The forest is exactly the opposite of a lung: it consumes carbon dioxide and produces oxygen.

   (b) A virgin or even untouched forest, whether tropical or temperate, finds itself in a state of balance which means that in terms of oxygen it consumes as much carbon dioxide as it produces oxygen. It is not a paradox to say that if one want any forest to produce more oxygen, it has to grow or to regrow, which simply means that it has to be cut.

Evaluation of Tropical Forests Size and Shrinkage

Numberless studies have been written and numberless conferences have been organized about the shrinkage of the world's tropical forests. Some people have even forecast that very few tropical forests will be left at the end of the present century.

In fact, they are referring mostly to the closed rain or humid tropical forests, forgetting the dry open tropical ones.

We now know that these forecasts were grossly exaggerated.

Thanks to a recent study made by two independent, and I believe objective, United Nations Organizations, namely the Food and Agriculture Organization (FAO) and the United Nations Environment Program (UNEP), we have, at last, more reliable information about the size, distribution, rate, causes of destruction or degredation of the world's tropical forests whether dry and open, or humid and closed.

I will firstly summarize the main statistical or quantitative finding of the above FAO and UNEP's study and will, then, look at the qualitative aspects such as patterns and causes of deforestation. I will, finally, reflect on the whole problem and, briefly, review what is currently done to try and make up for this deforestation.

FAO/UNEP's Figures about Tropical Forests Shrinkage

The figures which follow are taken from the above mentioned FAO/UNEP's study.

The global area of emerged land between both Tropics is of about 4.8 billion ha of which about 1.9 billion, namely 40%, is covered by forests. This finding is actually quit unexpected and impressive.

In fact, only the humid or rain forests located on both sides of the Equator are typical dense forests. They cover about 1.2 billion ha.

The other type of forests is made of dry, open forests located closer to both tropics in dry or even arid climates. They cover about 0.7 billion ha.

Two types or patterns of forest destruction or degradation of the original forest are distinguished by the FAO/UNEP study namely:

— firstly: permanent destruction in favour of equally important though different, land uses such as agriculture, dams, roads, cities, etc ...

— secondly: temporary destruction as a consequence of the well known shifting cultivation, according to which a secondary forest is allowed to regrow after one or two years of agriculture.

According to the study, **annually:**

— out of the 1.2 billion ha of the humid dense forests 4.1 million are **permanently** destroyed whereas 3.5 million are only **temporarily** destroyed.

— for the 0.7 billion ha of dry, open forests the corresponding figures are respectively 2.1 and 1.7 million ha.

On the whole, the **net** rate of disappearance of the world's tropical forests of **both types** (dry and humid) lies somewhere between 0.58 and 0.38% annually. In absolute terms the figure is between 11.3 and 6.2 million ha annually.

In these conditions, very theoretically, the world's tropical forests would still last about 312 years at the best or 172 years at the worst. But who would dare forecast what will happen in 200 years time?

The main conclusion of the above is that the rate of destruction is far less than what has very often been said in the press or during conferences.

Qualitative Aspects

However, if, at a **global** level, the shrinkage of tropical forests is less important than frequently vaticinated, in some critical areas the problem is serious and even dramatic. The main critical areas are: many arid forests (e.g. the Sahel arid forests), some

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mountain watersheds densely populated (Nepal, Andes), some bad, eroded, degraded, marginal lands (the Malagasy Republic), some islands (Haiti), areas of badly planned colonization, and exceptionally (I say exceptionally) overcutting for commercial purposes (for instance in some forests of Asia or in some tropical pine forests).

I have no particular sympathy for the transnational companies which are exploiting (the proper word is "creaming") the humid tropical forests to export their products, generally in the form of raw material, but I must say they are not, but exceptionally, the direct cause of forest destruction. This is because these companies are generally cutting only a small minority of commercial species and trees, whereas they leave standing a great majority of non commercial ones. However as they are, thus, "creaming" the forest, they may possibly impoverish them but they do not destroy them (it is true also that they may reduce the reserve of the world's genetic resources).

This view point is widely accepted by the specialists including those within FAO. However it is true that the logging companies act as pioneers, they build roads and open up virgin forest areas which poor farmers, squatters and landless peasants invade, clear and destroy or degrade for their temporary agriculture.

Having, in general, excluded the commercial, export oriented cutting operations as the main cause of tropical deforestation, let us now elucidate what are the real main causes.

We must now, again, make a distinction between the generally permanent destruction or change to land uses other than forest and the generally semi permanent destruction.

The generally permanent destruction occurs when the forest is cleared for cities, dams, roads, etc. . . . for permanent planned agriculture such as rubber or oil palm cultivation or grassland. I must mention that the total area thus destroyed annually is estimated to be 6.2 million ha, or 0.38% of the present area of the tropical forests of both types.

The least that can be said about these conversions is that they are justified as long as they are properly planned and managed. To take only one example out of the Tropics: the English countryside I crossed when I came from Oxford, was long ago covered by forests, but nobody would, now, dare to regret its conversion to an harmonious mixture of fields and trees.

More serious and less justified are the permanent destructions brought about by extensive grazing, wild bush or grass fires to which I will revert in a while. More serious but also more complex is the process by which primary or even secondary forests are, generally temporarily, converted to a complex of forest fallows, as a consequence of the well known shifting cultivation.

For the non specialists I will recall that shifting cultivation is a traditional method by which poor farmers clear and burn the forest and cultivate maize, cassava or any other crop during one or two years, then abandon the field, allow a secondary forest to regrow and come back a few years later to repeat the same process. According to this method the forest is used as fallow.

It must be observed that this method is not specific to the tropical countries and was still in use in some poor parts of Europe at the beginning of the present century.

To be brief and simple, in addition to the planned conversions to other land uses, the main (though not the only) cause of tropical forest destruction or degradation is the low output and primitiveness of tropical agriculture, its extensive nature and subsequent grazing and animal husbandry. Moreover, this primitive agriculture is practised by poor farmers or even landless peasants.

The problem is therefore twofold: how can we prevent or at least reduce the destruction caused by agriculture and how can we make up — through re-afforestation or other methods — for the forests which have been destroyed?

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How to Prevent or Reduce the Destruction of Forests by Primitive Agriculture and Grazing?

The reply is implicitly contained in the question. The cause of forest destruction is **not** agriculture by itself but the primitiveness or the backwardness of this human activity.

It is true that in most developing countries populations have grown considerably during the last decades, sometimes at the appalling rate of 3.3% per year, the consequences of which being an enormous pressure on the land and, consequently, on the forests. It may be that in some areas, for instance in the Sahel, the capacity of the agricultural land is below the food requirements of the present population. In these areas the only solution is to be found either in birth control or in emigration towards better endowed lands.

May I recall that emigration was, and still is, a solution to the excessive population density in many countries of Europe . . .

However, I submit that in most parts of the developing world the present agricultural production is far below the capacity or productivity of the land.

I submit that most tropical developing countries need a sort of **Agricultural Revolution** of the same type as the one which occurred during the 18th and 19th centuries, in Europe, first in Flanders, then in England and later back on the Continent. As everybody knows this agricultural revolution was characterised by the appearance of the enclosures, the disappearance of fallow, the association of cattle and agriculture etc. . . . In France, in spite of the fact that the population doubled, the forest area also doubled in less than a century because the output of agriculture was multiplied by 3 to 5, thus reducing considerably the pressure of the population on the forest lands.

My conclusion is that the main way to stop, or at least to reduce, the destruction of the tropical forests, whether humid or dry, is an intensification of the local traditional agriculture, grazing, animal husbandry, as present practised by generally poor farmers or landless peasants.

However, this revolution in tropical agriculture has still to be invented and spread amongst poor farmers.

Said in another way: the solution of the tropical forests problems does not lie, in general, in forestry but in farming.

The above considerations about the destructive role of poor farmers do not imply that we consider them as morally responsible. They are just the innocent authors of them, innocent because they are victims of an injust order, placed as they are in social, economic, moral conditions which compel them to behave as they presently do just to survive with their families.

They are in fact the pariahs of the developing countries societies.

Now there are other ways to make up for or to replenish the forests which have been destroyed, namely through management of these forests or through afforestation or reforestation.

Management or Replenishment of Tropical Forest

(a) **Management of tropical forests**

In the foresters' language (in English as well as in French) "to manage a forest" is to use it according to a rational plan intended to obtain from it, in a sustained manner, the maximum production of desired goods, and services (amenity, recreation), whilst preserving the quality of the environment.

Normally, a managed forest is not only properly used but also almost automatically protected against destruction and degradation as it is placed under the supervision and administration of a competent forest service or owner.

Many temperate forests are in one way or another thus managed and/or generally rather stable.

As to the tropical countries, and considering only the closed and humid forests, the above cited FAO/UNEP survey gives the figure of only 4.4% of managed forests, in relation with the total forested area, most of them being located in India which has a long tradition in forestry and whose forests are easier to manage as they are more homogeneous than the usual mixed tropical forests.

Efforts had been made in some former British territories and are still being made by my own Institute in the French speaking countries of Africa as well as in the tropical French Guyana to devise methods for managing mixed forests but, up to now, practical applications of our recommendations are extremely disappointing.

(b) **Afforestation and reforestation.**

The findings of the FAO/UNEP's survey are equally disappointing as to the rate of replenishment by planting, of the destroyed tropical forests. The plantation/deforestation ratio, which one could call "replacement ratio", is 1 to 10.5 for tropical America, 1 to 29 for tropical Africa and 1 to 4.5 for tropical Asia. Excluding Brazil, the ratio for tropical America is only 1 to 36.

My colleagues from Oxford's Commonwealth Forestry Institute have asked me to give some figures about the French speaking tropical Africa where my own Institute is operating.

I will just say that, in spite of the results of research and experiments and in spite of the fact that we have devised technical methods for reforestation of valuable species, the area planted is far below what is needed or could be expected.

Conclusion

As a conclusion I would not hesitate to say that except in some dynamic and well organized tropical developing countries, *forestry sylviculture, forest management, sustained yield* are almost empty words as they were in our respective countries a few centuries ago.

Very little is done to try and alleviate the pressure of farmers on forest land, the area of managed forest is extremely low and, at best, 10 ha of destroyed forest are replaced by only one hectare of plantation.

More research work has certainly to be done to improve our knowledge of tropical forests and to intensify agriculture, but I submit that we already know enough to considerably improve the situation.

Unfortunately it does not suffice to **know** in order to act or to transfer knowledge into concrete action in the field. This difficulty to move from knowledge to action is a feature of underdevelopment. The obstacles to an improvement of the situation are not, indeed, generally technical but social, cultural, religious, etc. . . .

However, to terminate my paper in a rather humble manner, I would say that developed countries to which most of us belong, also know what to do to improve their lot, not only in forestry but also in many other, and possibly more important fields: the only trouble is that they do not, for about the same reasons as the developing countries, put their immense knowledge or know how into practice.