Amazonia, greatness beyond perception

*Dr. Sueli Angelo Furlan*

Mauro do Nascimento

**The real Amazonia**

What is or what are the current realities of Amazon rainforest? The largest humid tropical rainforest in the world is not merely the exuberance of its forests and waters. The region is suffering from a wide range of aggressions that result in changes that are both perceptible in the environment and in the structure and living conditions of local communities.

We can identify these contrasts by analysing two scenarios illustrated by the following journalists:

“The geography viewed from the window of my car is made up of monotonous and desolating features.” [...] “The vegetation is scarce, mostly consisting of pastures and soybean plantations, spotted with dry skeletons of large nut trees lying on the fields.” [...] “The dead landscape is the result of a century of predatory occupation of this western portion of the Amazon.” (VARANDA and VARANDA, 2009, p. 57)

The text above contrasts with the vision of Roquete Pinto, reporter of the Comissão Telegráfica do Marechal Rondon in 1917, who stated: “Skirting the margins of the great rivers, or adorning the springs, the forest, everywhere, it grows and dominates; it comforts with its shade and fruit; frightens with its forms” (VARANDA and VARANDA, 2009, p.58).

What has changed? Why has it changed? How do we protect this immense social and environmental heritage? The answer to these questions opens the debate on what has been happening to the Amazon Rainforest over the last few decades. It also demands some financial alternatives or potentially less impacting production models, such as timber and non-timber forest extractivism and agroforestry systems.

**Forest or forests?**

Amazonia corresponds to the areas drained by the Amazon rivers (Negro and Solimões), Araguaia-Tocantins, Orenoco, Essequibo and others, which are among the largest hydrographical basins in the region. In summary, the set of forests has the following characteristics:

1. Humid tropical rainforest occurs below an altitude of 1500 metres.
2. Thermal amplitude does not exceed 2oC.
3. Number of sunlight hours between the longest and shortest days barely varies.
4. Minimum annual rainfall is 1500 millimetres in at least 130 days a year.
5. Relative air humidity is, in general, above 80% for most of the year.

It is known as the following:

* Biological Amazonia – Mostly Amazonian forested lowlands and Amazonian biome; includes all forest typologies and represents 49% of Brazil.
* North Region – Territory of six of the seven northern states (Rondônia, Amazonas, Roraima, Pará, Amapá and Tocantins) covering 44% of Brazil.
* Legal Amazonia – A concept created in 1953 by the Federal Constitution of that period, includes the same six states of the North Region plus the strip of the state of Mato Grosso, covering 59.78% of Brazil.

Biological Amazonia can also be sub-divided into the following seven forest sub-provinces: Atlantic Coast, Jari/Trombetas, Xingu/Madeira, Roraima/Manaus, Northeast/Alto Rio Negro, Solimões/Western Amazonia and Southeast. The Amazonian region is chiefly characterised by its forest cover. On the one hand, this fact has attracted the attention of explorers who want to transform it into a source of wealth. On the other, it is considered the greatest hindrance of capitalist economic development in the region.

It is important to remember that Amazonian dominion is, at the same time, one of the last large and rich minimally populated areas in the world and one of the most complex and vulnerable ecosystems of the planet, which “makes its development a mystery and a challenge for overseas and national sciences” (BECKER, 1996). Ecological problems and poverty that were configured in the territorial outline of Legal Amazonia are not the result of the development level, but of the adopted model. It is therefore essential to find a development style that is desirable. (FERREIRA & SALATI, 2005, p. 28).

**Forest exploitation**

Exploiting the richness of the Amazon rainforest is a challenge. Vieira *et al.* (2005) present loss of biodiversity figures of the Amazon rainforest caused by deforestation. The numbers are truly significant and shocking. For example, between 1,175,850,000 and 1,437,150,000 trees were cut down; in the case of birds, an estimated 43 to 50 million individuals were affected; and there are between 914,550 and 2,116,530 affected primates.

These figures were obtained by multiplying species densities by the total deforested area. Calculations were based on total deforested areas in 2003/2004 in a total of 26,130 square kilometres, and estimates considered that in Amazonia there are approximately 40 thousand plant species, more than a thousand bird species and 14 genres of primates, with up to 14 species of primates registered per kilometre.

However, these are not the figures that are widely published and the population in general only sees the “estimated loss of forest in Amazonia, which is shown using satellite images and measured in square kilometres. What is not known is the measure of natural resources that are lost per square kilometre of destroyed forest” (VIEIRA *et al.*, 2005, p. 154).

Obviously, it is impossible to see and quantify the environmental issue of the Amazon region merely from the perspective of deforestation. It is actually part of a far more complex process and includes social, economic and political issues, both in the local and national and international contexts.

It is also impossible to consider preservation alternatives for the Amazon without firstly solving social and economic issues of other Brazilian regions, as the Amazon cannot be considered an alternative to alleviate social pressures of other regions, as occurred recently in Brazilian history.

It is important to develop employment and income generation alternatives for the Amazon population. However, if this is done in a manner that only serves as a migratory flow generator, it will only multiply and worsen the social and environmental problems of the region that have been troubling the local population and the country for a long time, especially deforestation, field burning and violence in rural areas.

**Threats to the Amazon Rainforest?**

Deforestation has remained quite steady in recent years (Figure 1), with oscillations that almost reached 30 thousand square kilometres in 1995, and dropped drastically in the two following years. It remained stable during the end of the 1990s and beginning of the following decade, and reached a peak in 2004 of more than 25 thousand square kilometres. In subsequent years, there was a new period of decline that was concluded in 2008, after which deforestation rates rose again. “The deforestation rate of the Brazilian Legal Amazonia in 2007/2008 estimated by the Inpe was 11,968 square kilometres,representing an increase of 3.8% in relation to the 2006/2007 rate, of 11,532 square kilometres” (INPE, 2008, p 22).

Surveys of 2012/2013 showed that accumulated forest degradation during that period (August 2012 to February 2013) reached 1091 square kilometres (MARTINS, *et al.,* 2013). These figures drop, but they are significantly high and cumulative. For comparison purposes: the municipality of São Paulo (the most populated city in Brazil) covers an area of 1523 square kilometres. That is, in six months, an area that is almost the same size as the municipality of São Paulo was deforested in Amazonia. Can that be considered a reduction? Year after year a little more is taken, a little more is degraded!

According to the Action Plan for Deforestation Prevention and Control in Legal Amazonia (*Plano de Ação para a Prevenção e Controle do Desmatamento na Amazônia Legal*) (BRASIL, 2004), the following facts are determinants of deforestation:

1. Cattle raising is responsible for around 80% of the entire deforested area in Legal Amazonia.
2. Availability of cheap land with favourable conditions in terms of topography, soil, climate, vegetation and, above all, transport infrastructure favours deforestation.
3. Illegitimate land regulation transactions, fragile legitimacy control processes of land deeds and political, electoral interests favour the action of land grabbers (*grileiros*) of public territory.
4. Legal and clandestine timber extraction has enabled the entrance of deed falsifiers and land grabbers, who fell trees to establish ownership of land. Unsustainable timber exploitation is almost 90% of all timber extracted from the Amazon rainforest.
5. The implementation of roadways that are routes of entry and enable deforestation to reach even deeper areas of the region.
6. Amazonia has been used by the Federal Government to create rural settlements that also serve as “escape valves” of social injustice in other regions of Brazil.
7. Conservation units and indigenous lands are, to some degree, the only alternatives to ensure the existence of large continuous forest areas. The problem is that most of these areas have led to difficulties in their implementation or maintenance.
8. The most worrying finding taken from a study presented by the GT is related to the bad use of recourses, or actual waste, of a considerable part of the riches of Amazonia, considering that more than 25% of total deforested area in the region, around 165 thousand square kilometres (figures of 2004), is abandoned or underused and many times in a state of degradation.

The list of studies that evaluated the effects of human occupation in Amazonia is immense and, due to conditions of the Amazon region in terms of size, complexity of ecological and social interactions, it is almost impossible for a single individualized study to present and evaluate all the problems caused by exploitation of Amazonia. (Figure 2)

**Are there any feasible exploitation alternatives for Amazonia?**

Current economic exploitation models of Amazonia have resulted in a wide range of problems. It is essential to emphasize and value the activities that conciliate exploitation of natural resources and social justice with financial feasibility and chiefly, with the preservation of nature. Three already known methods that have been adopted in a variety of ways and intensities are summarized below:

**SAFs – Agroforest Systems:** a traditional agricultural method developed centuries ago, if not millenniums ago, if we consider that this system was used by native inhabitants of the region prior to arrival of the settlers. Ab’Saber (2006, p. 100) describes a SAF (Agroforest System) as the best alternative for maintaining the biodiverse forests of Amazonia. This proposal does not eliminate deforestation, but tries to reduce it as much as possible and stimulate polyculture especially through the cultivation of new native elements, such as açaí, peach-palm and cupuaçu, and traditional crops, such as cocoa, nuts, guaraná and cassava, in addition to wood extracts.

**Extractivism of Non-Timber Forest Products – PFNM:** extractivism is considered the archaic form of exploiting nature and therefore must be replaced with another form that ensures development of the region. Evidently, according to current standards in terms of production, price and structure for commercialization, there must be a change of scenario for Amazonian extractivism that transcends precarious production conditions, low income for producers, activity abandonment risks and the option for less conservationist practices. There is a list of non-timber forest products (PFNM) that basically comprises fruit, seeds, fibres, latex, oils and resins, bamboos and medicinal plants.

The variety of native species that can be extracted from the forest is huge (Table 1) with a wide range of uses that include everything from food sources to direct consumption (fruit) or processed goods (palm hearts) and even as building material, straw for roofs of houses, and the consecrated and promising use in medicine, with the added possibility of discovering important medicinal products.

In spite of these benefits, the exploitation of PFNMs is not immune to problems. As it mostly consists of items that are directly obtained from nature, with little or no technology, these products are subject to natural variations of their own species. Then there are other conditions, such as the impossibility of standardizing material; supply regulated by environmental and biological conditions of each species; problems with suppliers (communities) – which are generally barely or badly organized −; sales and chain supply problems due to the action of intermediaries and distances; absence of health controls and inspection, which reduces hygiene quality; scales of production that do not always meet the needs of the consumer market; and, lastly, the bureaucratic hindrances due to difficulties in obtaining licenses or costs for creating management plans.

Forest management: to guarantee the most appropriate use of forest products, especially timber that, due to its low cost, is normally used extensively in civil construction, as presented in the timber manual published by Institute of Technological Research of São Paulo (IPT), titled *Madeira: Uso Sustentável na Construção Civil* (Wood: Sustainable Use in Civil Construction)(IPT, 2009). The institute focuses on the option of purchasing certified timber to preserve the stock of wood in the forest, which is an important observation considering that the civil construction industry is the largest consumer of tropical wood in Brazil. In this case, the origin of wood must be given the same attention as quality and price.

The environmental situation of the Amazon region is quite problematic. Unrestrained deforestation, biodiversity at risk, impoverishment of the population and, above all, some insecurities in terms of the social, economic and environmental future considering that current public policies for the region do not clearly specify whether the priority will be social and environmental issues or economic development based on agriculture for commercial exploitation.

Today, it has been acknowledged that there are known production alternatives for Amazonia that do not cause environmental degradation and simultaneously allow employment and income generation for the communities, and that other forms of production (soybean, biofuel, etc.) should not be shunned insofar as they are established in the most ecologically appropriate areas and according to strict guidelines and control.