Re-inventing the model of use of Amazon rainforest wood in construction

Amazon rainforest is an important ecosystem in global scale that has been passing through an intense deforestation process. Logging of valuable wood starts the process and significant part of this extracted wood aims civil construction applications, for world’s market. Succeeded by episodes of left trees burning and biomass removal, these actions involves wide emissions of deforestation. In current exploitation, Amazon rainforest deforestation is an irreversible process. After “cleaning” area, cattle pasture and soy agriculture activities are introduced. The whole deforestation process can take ten years while restore a rainforest environment is a longer way.

Natural resources and human presence

Brazilian rainforest conversion releases 7.6 mi ha Ecuador: 7.6 mi ha Peru: 66.7 mi ha

Due to its dimensions and diverse natural conditions, Amazon rainforest has many forest vegetation types, lending to a huge biodiversity. This ecosystem provides local environmental services and integrates global cycles p. Brazilian population was around 20 million people in 2000 dependent on a regional economy based in natural resources obtained from rainforest.

Brazilian rainforest conversion releases 0.7 ± 1.4 GtCOe per year (x)

Brazilian greenhouse gas emissions per byometry in 2002 ± 10% around 60%

Impacts:
- Replacement of rich environment to simple one
- Biodiversity loss
- Solid and water impacts
- Air pollution
- Randit cycle changes
- Potential of large scale burnings
- Human illnesses due to environmental deterioration
- Terrestrial carbon turned into atmospheric carbon with global warming
- Climate change effects

Results per hectare:
- 10 tonnes of wood products 360 tCOe to -792 tCOe
- Impact in remaining ecosystems due to value for preservation, road and only immediate

To reach consumers, Amazon timber travels a lot within Brazil. It is sold to distribution places (cities or seaports) by fluvial or road transport based on fossil fuel. Another impact to consider—road freight —10 tonnes of sawn wood variation vehicle efficiency, road conditions, other 5 to 6 diesel liters /tonne 0.15 to 0.27 tCOe /tonne

Main goal:
- To give forest a proper value
- Amazon rainforest has natural characteristics that lead to a long-time timber extraction cycle and this is what determines the high-quality properties of its wood. Low monetary returns are an obstacle for forest preservation since its substitution for other activities are more profitable. Thus, maintenance viability would depend on economical attractiveness of preservation, equilibrating yields from rainforest products and services.

General actions

Inside forest and in global market instruments to assure forest conservation need to integrate some aspects:
- Discourage market acceptance for products from illegal extraction and deforestation
- Create a fair-price market for products from correct management
- Non-timber products value and environmental services regulation
- Land opportunity cost
- Carbon credits
- Improve logging and processes to achieve more wood product volume and reduce waste
- Improve application - choose the correct tree species based in wood properties
- Rainforest wood should be used in refined applications, compatible with its high-quality
- Silviculture wood may complement the demand in temporary or less noble uses like concrete mold, scaffold or ceiling
- Property regularization and land use regulation
- Provide information about correct attitudes for consumers and rainforest habitants (local traditional communities, indigenous, family farmers and rural employers)

Instruments to assure forest conservation
- Determine the high-quality properties of preserved wood
- To give forest a proper value
- Equilibrating yields from preservation, equilibrating yields from rainforest products and services.
- Determinates the high-quality properties of Amazon rainforest

Potential Moves

Preservation strategies should combine a-co-benefits of population-permanent income and opportunities, biodiversity conservation, watershed quality and reduction of greenhouse gas emissions.

Current Scenario

Ideal Scenario

Intact forest Extraction of high-value trees Fine episodes Land use change

Intact forest

Abandoned Forest Land

Reduces the biomass 35% [m] Low biomass 20% [m]

(1 year average growth in tropical planted forest)

BIOFS wood is extracted illegally [x]

Abnormal off-price, deforestation permission or transport authorization.

Conserved forest

Logging

Original biomass

Logging

Economic features for forest biomass with different values

Conserved forest

Logging

Deforestation Process

Debarked area ±6% deforestation evolution in 2004 among 1/4

±4% of Brazilian Amazon rainforest is deforested, approximately France extension.

These areas is concentrated in southern Amazon, predominated by open forest with lower biomass density compared to central areas. Gradually, the arc of deforestation reaches central forest where increases greenhouse gasses emissions per hectare.

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