Brazil Nut Market Participation - Disincentives in Madre De Dios

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Abstract

Brazil nut harvest permeates centuries of traditional and rural communities throughout the Amazon and now partakes in an important discussion for a sustainable preservation of the Amazon. Given the amount of Brazil nuts being harvested, if the Brazil nut trees are not being regenerated, the rate of mortality will exceed new growth. Over time, this will degrade the brazil nut trade and the trees will be lost, as many before them. Additionally, the forest would lose its economic value exposing the forest to more deforestation or illegal extractive activities. Along with the difficulties related to replanting, brazil nut harvesters face price instabilities and cost increases further contributing to disincentives for concessioners. Concessioners replanting brazil nuts is a valuable component for the ecological preservation of the rainforest, it is also important for their long-term economic stability. The brazil nut market in Madre de Dios constitutes a significant component of the population's income and thus is important to understand and protect the practice not only for sustainable development but for the economic prosperity of the region as well. For these reasons, this study investigates challenges concessioners face and to examine potential to increase replanting in Brazil nut concessions.

Introduction

The Amazon rainforest is the world's largest reservoir for biodiversity, soil protection, as well atmospheric and hydraulic regulation. With rapid deforestation rates, the economic commodification of the rainforest presents great threats to the current state of our environments, communities, and ways of life. Gold mining and the timber trade, both illegal activities, are the key economic drivers of the Peruvian Amazon. Additionally, plant cultivation in the Amazonian rainforest also contributes a great economic value. Substantial slash and burn agricultural activity in the region contributes to soil eroding crops, inhibiting sustainable and long-term opportunities for development. Much of this economic activity is responsible for climate change acceleration, wildlife habitat destruction, soil erosion, along with numerous irreparable consequences for our planet.

The economic history of Madre de Dios, a region on the eastern border of the Peruvian Amazon, has always been dominated by natural resource extraction. Brazil nut trading drives a large part of the economic life of its population (Collinsan, Burnet, Agreda, 2000). A recent study calculated that approximately 27,000 people (38% of the population) in Madre de Dios depend directly or indirectly on the brazil nut trade (Collinsan, Burnet, Agreda, 2000). The trade is third, following gold mining and timber for the greatest economic activities of this region.

These Brazil nut trees, given the scientific name *Bertholletia excels*, grow wild in the Amazon River Basin attaining heights of 49 meters and more with crowns of 30 meters or more in diameter. Brazil nuts fruit during the peak flowering season of October, November, and December, following the end of the wet season (Moritz, 1984). Additionally, the fruit vary in weight ranging from 0.5 to 2.5 kilograms containing 10-25 seeds. Ideally, the fruits are gathered immediately in order to minimize insect or fungal attacks and to prevent animals such as agouti from carrying seeds away (Mori and Prance, 1990b). Once the nuts have been collected and opened, the seeds are removed from their shells and they are traded as kernels and find their use mostly as confectionary ingredients or as whole health foods. Brazil nuts may also be transformed to oil used in cooking and lubrication. The bulk of production is exported, with less than approximately 3 % used for domestic consumption (Collinsan, Burnet, Agreda, 2000). In Peru, concessions for harvesting Brazil nuts were launched in the Madre de Dios Department in the year 2000 and account for approximately one million hectares of forest. These concessions describe forest land owned by the government, used by locals to harvest Brazil nuts under the conditions to plant Brazil nuts. The concessions are typically located outside of protected areas where there has been confirmed to be a paradoxical situation of on paper enforcements not followed in practice. To provide an example for this paradox, the very requirement for replanting is typically not followed.

In terms of markets, the brazil nut is highly sensitive to supply and demand. Supply is strongly inelastic due to the time required for Brazil nut trees to mature and produce, although typically, production meets demand. Demand for Brazil Nuts is quite elastic as they are quite easily substitutable. A seasonal market exists as well in accordance with the months of November and December following Thanksgiving and Christmas holidays mostly for the UK and North America. Brazil nut trading costs tend to be increasing as a consequence of extraction and of the destruction of the Amazon. issues with production including limit


supply chain disruptions as w
inefficient storage. This study
understand the obstacles brazil nut concessioners are currently facing in order to open discussions for solutions.

Methods

A total of six concessioners had been surveyed confidentially. The responses were analyzed collectively and used to understand cost variability, concessioners' responsibilities as well as reforestation practices.In order to address the barriers and challenges confronting concessioners in Madre de Dios, diagnostic surveys were conducted amongst concessioners in the Allegria region. The survey was composed of 17 subpart questions including topics ranging from expenses, labor, governmental requirements, obligations, and reforestation. Questions as well as interview protocol were supervised by Johana Reyes Quinteros, community social psychologist based in Alliance for a Sustainable Amazon. The created survey was complimented by literature reviews as to draw further understandings regarding the market, harvest as well as reforestation practices. An analysis of income was also done using correlation co-efficients in order to investigate a relationship between concession size and income generated form brazil nuts.

Results

Of the six concessioners surveyed, two were originally from Madre de Dios. All others had come from different regions within Peru including Arequipa and Cusco with the intention to work in the Brazil Nut harvest. The length of time each concessioner has had their concession averages 25 years, ranges from ten to fifty years. The harvest season as **stated** by the concessioners surveyed begins in December and may end as late as the end of April. During this time, the concessioners

work with family although, 50% **stated** to additionally require contract workers during the harvest season between 1 to 6 workers, typically depending on the size of the concession and on production. The responsibilities mentioned off-season for concessioners include inventory, payments

for; IRENA and SUNAT, government and private payments respectively, maintenance of the trails and concession, reforesting as well as patrolling concession for illegal activity. In terms of making the demanded payments and reforesting, only one concessioner felt they had facility completing these requirements, demonstrated in Figure 1.0.

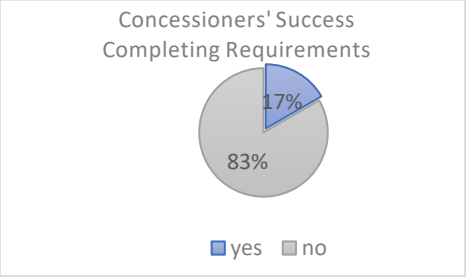

Figure 1.0 Concessioners Ability to Complete Requirements

Brazil nut Reforestation

Most of the concessioners attempts at replanting Brazil nut trees failed due to other animals ridding the trees, or as a consequence of little to no monitoring of the young plants. Four of six concessioners do not plant regularly and as many as half have never planted in their concessions. Considering falling trees which on average, the concessioners lose approximately three trees a year there may be significant consequences from. The concessioners surveyed all expressed a great absence of support and education towards reforestation and germination of Brazil nuts. With regards specifically to germination, only one of the concessioners surveyed knew how and practice Brazil nut germination. It is worth mentioning that this concessioner is affiliated with the Alliance for a Sustainable Amazon which offers a brazil nut germination education program. Four of six concessioners mentioned they leave the reforestation to happen naturally, or rather by the agoutis who bury the brazil [illegible] concessioners who [illegible] germinate Brazil nuts will to learn and stated that they would, if they knew, reforest that way in their concession. One concessioner importantly mentions how reforestation is the most crucial aspect of a concession; how reforestation is necessary for the long-term success of the brazil nut harvest but also to maintain the natural beauty of the forest for future generations. When it comes to planting, the concessioners each mentioned the importance of the government to set more precise requirements. To exemplify, reforesting is noted as a concessioner's obligation, but the government does not specify how many, offer services to do aid in doing so or supervise if concessioners are even replanting at all. Thus, all concessioners demonstrated an interest in learning the germination process and feel as though the government should not only impose clearer regulations but to also have a more active presence in the supervision of concessioners, particularly regarding reforestation.

Microeconomic Factors

The concessioners surveyed were asked to assign a percentage for how much brazil nut harvest profits account for their annual income. This information was compared to the size of the concessions in hectares to illustrate the relationship between concession size and income generated from Brazil nut harvesting. Figure 2.0 depicts this relationship.

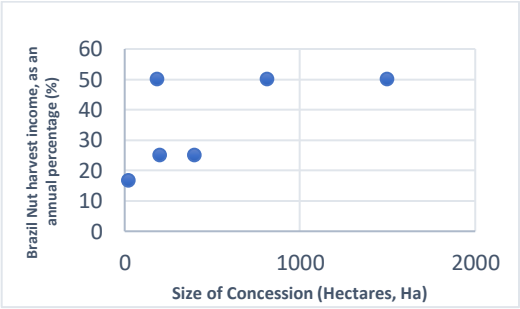

Figure 2.0 Income Generated by Brazil Nut Harvest – Concession Size. r=0.645

Although this information was collected from a small sample size, using correlation coefficients, a moderate correlation can be noted between the size of the concession and how much of the concessioners' annual income is a result of Brazil nut profits (r=0.645). This implies that increasing costs, price variability and market changes will have a greater effect on concessioners who have greater land.

Importantly regarding costs, each concessioner expressed growing costs for equipment, tools, living expenses as well as for those who contract, wages. Every concessioner describes these increases to affect them strongly. At times, the costs double or triple compared to just the previous year. In addition to this, Brazil nuts do not have a stable market price. This is expressed as a great challenge for the concessioners as it permits strong variations in income and unreliable profits. To add, the concessioners collectively state that as costs increase, the value of their products simply do not. As a result, concessioners mention their incomes suffering greatly from this loss. Finally, competition was another concern amongst the harvesters. One Brazil nut concessioner surveyed mentioned the entrance of foreign produces in Peru creating an additional challenge for local harvesters.

Discussion

In terms of what this information points towards, this diagnostic survey does provide insight for the future of brazil nut concessions. Firstly, seeing as concessioners mostly do not replant and annually lose trees, if concessioners then do not replant and leave reforestation of the forest only to natural regeneration, it is likely the mortality rate of the forest at a certain point will exceed the rate of emerging trees. Importantly, every concessioner surveyed expressed the value of reforestation, and as mentioned, voiced an interest in learning germination of Brazil nuts. Learning Brazil nut germination can therefore constitute a realistic, attainable, and effective solution towards maintai
integrity of the forest, pr
trees as well as to promo
Germination does not only have environmental advantages. The process can also benefit concessioners directly by lowering their costs as they avoid buying new trees. In the long term, germination will also ensure greater production. If we are to create solutions for environmental issues, we need to provide economic benefits as well, the two concepts are in this way greatly tied together. The germination of Brazil nuts thus exemplifies a small part of a sustainable economic solution to reforestation, development, and conservation and more directly, a strong advantage for concessioners regarding their long-term success.

Thus, the brazil nut trees are crucial to rainforest protection as they act as obstructions to deforestation as they require environmental regulation as well as contribute to little or no environmental impacts. They therefore provide an economic solution which offers biodiversity and ecological preservation. The trade has also come to play a central role in the inhibition of further impoverishment of this isolated province. Importantly for the fight against deforestation, for well- being and sustainable agriculture along with several more advantages, the brazil nut trade is undeniably environmentally and socially optimal for the prosperity of this region.

In all, from this group of concessioners, there is a clear concern for the increases in cost and a strong will to reforest and to germinate. The concessioners know that germinating new plants will reduce their costs as well as greatly benefit them in the long-term. Lastly a common theme notable as a part of each interview, was the thought and concern for not only the concession but for future generations. Maintaining the nature of the forest is understood to be a strong priority for the concessioners thus not only for the

livelihood it generates, but for conserving the forest legacy.