DEFORESTATION IN PERU

How Social Investment for Coca Farmers Can Help Halt Deforestation

Figure 1: Drone photograph of deforestation in Peru © Jason Houston

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Executive Summary

Peru struggles with mass deforestation of its Amazonian rainforest, partly as a result of illicit *coca* production. This is dangerous as the Peruvian Amazon Forest is home to some of the greatest biodiversity on earth, as well as being a massive terrestrial carbon sink. It also sustains the hydrological cycle. In other words, losing the Peruvian Amazon Forest would have devastating consequences to the earth's climate, biodiversity and humanity. It is estimated that about 10% of the deforestation in Peru in the 20th century has been as a result of *coca* production. Although the UNODC have been trying to win the war on drugs by implementing alternative development policies, *coca* production does not seem to be decreasing. Other methods such as aerial spraying have proven to be both politically and environmentally damaging. The UNODC must focus on other policies, such as social investment and ensuring that aerial spraying is prohibited to avoid further deforestation and biodiversity loss as a result of *coca* production.

Foundational Science: Discussion & Analysis

Land use change is one of the nine planetary boundaries, which are boundaries that define a safe operating space for humanity in regard to the preservation of the Earth system (Rockstrom, 2009). These boundaries promote a safe space for sustainable development in a world centred around growth and prosperity (Rockstrom, 2013: 3). As the population grows, so does the need for natural resources to fulfil human needs and in turn the degradation of the environment (Foley, 2005). Land use (human purpose or intent applied to land cover) has, since 1850, accounted for about 25% of anthropogenic CO2 emissions (Lambin, 2001: 262; Foley, 2005). This shows that anthropogenic land use is negatively affecting the environment.

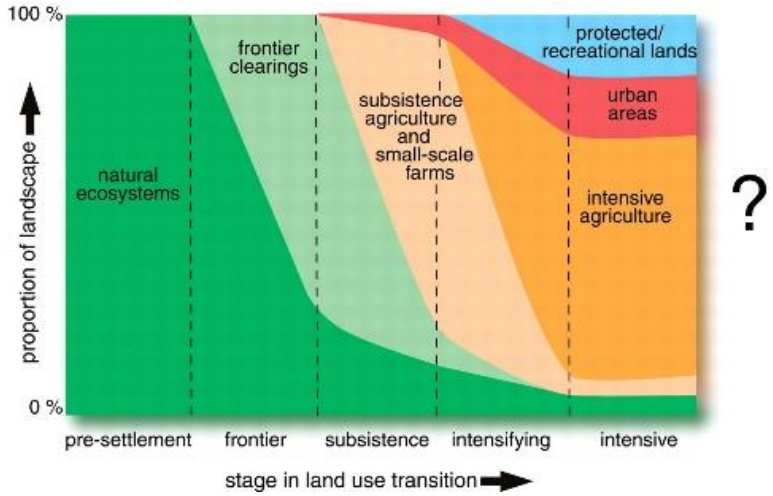

Figure 2: Land-use transitions (Foley, 2005)

According to Rockstrom, land use change is the percentage of global land cover transformed to cropland, and mainly happens through agricultural expansion and intensification (Rockstrom, 2009). Figure 2 suggests that this is true, demonstrating how natural ecosystems are disappearing with time, primarily as a result of agriculture. Land use change affects many parts of the environment, such as biodiversity, carbon sinks and the hydrological cycle. Land use change is one of five key causes of changes in biodiversity, as forests are home to some of the greatest biodiversity on earth (Sala et.al., 2000). Land use change also affects the amount of carbon in the atmosphere, as forests store about 45% of all terrestrial carbon (Bonan, 2008: 1444). Forests also sustain the hydrological cycle through evapotranspiration, the process of evaporation transpiring through leaves (Bonan, 2008: 1444). Forests account for two-thirds of leaf area of land plants and are therefore vital to the hydrological cycle (Bond, 2008: 7). Trees increase evapotranspiration, a needed phase in the hydrological cycle, allowing groundwater to be released back into the atmosphere (Bonan, 2008: 1447). Therefore, without forests, the hydrological cycle will lose a vital step in its cycle.

Deforestation in the Andean Forest, the forests of Colombia, Ecuador and Peru, has received added attention as it is home to some of the greatest biodiversity on Earth as well as being the largest terrestrial carbon sink (Pan et al., 2011: 989). One hectare of trees holds up to 50 times more carbon than a hectare of crops or grasses (Houghton, 2002: 155). Conservation of the Andean Forest is therefore essential, as terrestrial carbon sinks are important to keep carbon out of the atmosphere and keep the earth's temperature down. Warmer climate leads to extreme weather events such as floods and draughts; melting ice and rising sea

levels; and many species' extinction as they struggle to adapt to extreme temperature changes (European Union, no date).

In the Peruvian Andes Forest, deforestation as a result of production of *coca (Erythrocylon coca),* the precursor to cocaine, is one of the biggest environmental issues the country faces (Young, 1995: 7). Peru's Huallaga River valley is known to provide for about 60% of the world's illicit cocaine, demonstrating that cocaine production in Peru is widespread, however it is hard knowing how dangerous the situation truly is (Boucher, 1991; Young, 1995: 7). About 42.5% of the forest in the Huallaga River valley has been modified by people, predominantly after 1975 when *coca* became more valuable due to a global surge in cocaine usage (Young, 1995: 11). Since the early 1970s, it is estimated that close to 700,000 hectares of forests have been cut down as a direct and indirect result of *coca* cultivation (UNODC, 1992). In other words, 10% of the total deforestation in the 20th century in the Peruvian Amazon has been a result of *coca*, showing that it is a key cause of deforestation and must therefore be prevented in order to protect the remaining Peruvian Amazon (UNODC, 1992).

Assessment of Existing Governance

The US spent $125bn on the war on drugs from 1981 through 1995 (Clawson 1996: x). There have been many policies suggested and implemented, including eradication, alternative development and in-country enforcement. Research by the UNODC shows that antinarcotic projects can help conserve forests and biodiversity and it is therefore important to investigate these policy options in order to protect the Peruvian forests (UNODC, 2015).

Eradication can both be through ariel spraying or ground-based operations. This aims to limit the availability of drugs for shipment as well as raise the cost of production to discourage farmers from producing *coca* (Reuter, 2010: 112). However, this has been environmentally and politically contested. Politically it is unattractive as it targets peasant farmers, who are already among the poorest citizens (Reuter, 2010: 112). Environmentally it is thought to increase land use change and increase potential harm of biodiversity (Young, 1995: 9). Eradicating *coca* is proven to increase migration and in turn cause further deforestation (Salisbury et.al., 2011). In addition, there has been little evidence that suggests success. However, it is important to note that it is hard to carry out extensive and

holistic evaluation on this topic, suggesting that more research should be conducted before coming to a final conclusion (Reuter, 2010: 112).

Alternative development strategies are considered a softer policy option in order to decrease deforestation (Davalos et.al., 2016: 121). This option encourages farmers to switch to legitimate crops, or even to other livelihoods (Reuter, 2010: 113; UNODC, 2005). The thought is that by boosting alternative development, farmers can move away from illegal coca production to legal and controlled economic alternatives (Zech, 2016). On one hand, this is much more politically attractive than crop eradication as it provides resources to farmers, instead of simply removing their livelihood. On the other hand, farming families often struggle to trust their government enough to move away transition from *coca* production.

The UNODC's alternative development programme has worked closely with the Government and farmers for 25 years to provide alternative livelihoods for farmers (UNODC, no date). It has reached over 8,000 farming families that were previously dependant on *coca* production. This programme has worked towards forest management, protection of ecosystems, livestock raising and establishment of legal economies (UNODC, no date). The UNODC suggests that this strategy has been successful, as they have been able to help over 40,000 people, however in 2017 the land used for illegal *coca* production in Peru increased by 36%, suggesting that this programme has not been sufficient (UNODC, 2018). However, a lack of data as well as the varying assessment methods across countries and biases from governments when reporting levels of consumption and production of *coca*, makes it difficult to find and follow up with policy implementations (Reuter, 2010: 97).

Governance Recommendations

It is vital that steps are taken urgently to salvage the remainder of the Peruvian forest. Aerial spraying should be prohibited, as this is proven to only damage the environment further.

Recent findings suggest that investing in human capital and infrastructure (social investment) can prevent *coca* cultivation more efficiently, both economically and environmentally (Davalos, 2016: 122). Investing in human capital involves investing in education and health. Davalos (2016) argues that investing $5.55 in social investment per

inhabitant can prevent the cultivation of one new hectare of land. This is more beneficial both economically and socially than aerial spraying. Aerial spraying might prevent farms from increasing in size, however this effect is small and expensive, whereas investing in human capital is more economical and it creates a society with educated and healthy inhabitants.

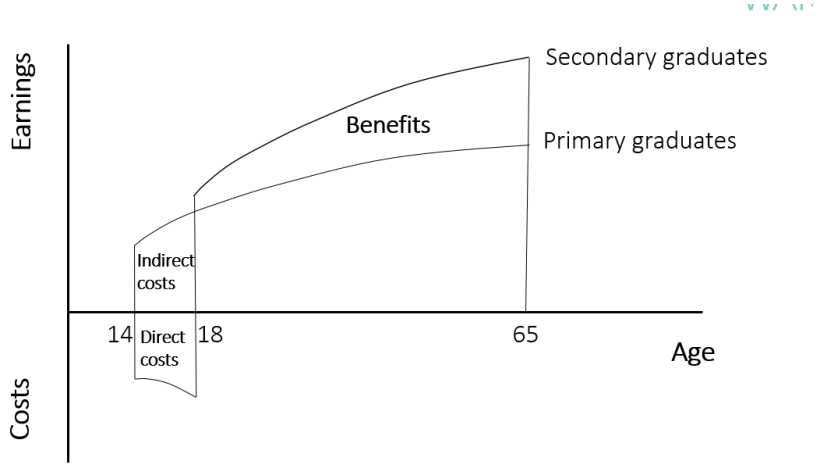

Figure 3: Relationship between investment in education and long-term earnings

Figure 3 shows that investing in education increases long-term earnings. Investing in human capital has a dual, interdependent purpose, greater health can raise the return on investment in education and vice versa. Investing in health will allow people to get better treatment when ill leading to increased work and school attendance, which in turn leads to increased earnings (Todaro, 2015: 389). In turn, education on health and hygiene will educate health personnel and teach the general population basic sanitation knowledge. Education also allows people to learn the skills needed to find a legal and well-paying job, keeping them away from illegal businesses such as *coca* production.

Mexico launched in 1997 the Progresa program that promotes education, health and nutritional status for poor families (Levy, 2006: 1). This scheme offers conditional cash transfers to poor families as well as family clinic visits, nutritional supplements and other health benefits for pregnant and lactating women and children under 5 years (Todaro, 2015). The money received is conditional on children's school and health clinic attendance and works as a substitute for the earnings families lose by not sending their children to work (Todaro, 2015). By the end of 2005, the program had helped 5 million families, almost 24% of the population (Levy, 2006: 2). This program has shown success in bringing families living

in extreme poverty out of poverty. It led to a decrease in child labour and dropout rate, as well as increase in childrens' health and school attendance.

By implementing a program similar to the Progresa program in Peru, the government and UNODC can work together to ensure that families will be supported changing their livelihoods from *coca* production. Therefore, it is suggested to heavily invest in the creation and implementation of a program that will support farming families in education and health, so that they can escape poverty and transition from *coca* production to alternative legal forms of labour alternatives. If this is combined with agricultural subsidies and investments in infrastructure, this could reduce illicit crop expansion (Davalos, 2016: 123). The infrastructure investment would involve investing in fixed capital such as roads, land, buildings and equipment (IMF, 2001). With a decrease in *coca* farms also comes a decrease in land use change.

This policy therefore recommends the UNDC implements this action plan:

1. Work with the Peruvian government to create a program with inspiration from the Progresa program that promises *coca* farming families conditional cash transfer to push them out of poverty and illegal production
2. Provide families that take part in the program with agricultural subsidies so that they have a legal alternative to *coca*
3. Invest in fixed capital such as roads and equipment so illicit *coca* farms are harder to keep hidden, and farmers are motivated to move towards legal agriculture
4. Prohibit the use of aerial spraying in Peru so that further environmental degradation is avoided

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