**Case Study 5. Amazonia and La Plata Basin: regional food and other insecurities**

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| **Abstract**  Amazonia is a vast region of northern South America which is characterised by its environmental wealth and diversity. About one third of the population living across the Amazon basin is medium- to seriously-food insecure. However, shortfall in national food production within the region is not the main cause of the food insecurity common across Amazonia. Indeed, most countries in the region are net exporters of food. Rather, the ubiquitous food insecurity in Amazonia is a result of unequal access across the population, due either to economic inability of many to purchase sufficient food for individual or family needs (or only the cheaper less nutritious foods), and/or inadequate food distribution networks to remote food-deficit regions of the country, which fosters food price rises. Large-scale agricultural ventures such as beef ranching, cropping, infrastructure development and natural resource extraction have also led to impoverishment and food insecurity for those driven from their traditional land or forest. Food insecurity ‘hotspots’ in Amazonia are predominantly associated with urban environments, to which many of those internally-displaced people have fled, in which low purchasing power leads to food access challenges. Moreover, a nexus of interlinked securities are under threat in Amazonia, not just food and nutrition security – water, energy, livelihood and health security, as well as regional stability are also compromised by human behaviour. La Plata Basin to the south of Amazonia is also discussed in the indivisible regional context. |

Key words: Bolivia, Brazil, Columbia, Ecuador and Peru; Amazon River and La Plata basin; environmental diversity; indigenous groups; forest products and bushmeat; sustainable ecosystem services; ranching and crops replacing rainforest; oils and metals extraction; climate change; inequality of food access; regional peace and stability

**5.1. Introduction**

Amazonia is a region of northern South America which is characterised by its environmental wealth and diversity. Divided largely into lowland forest and Amazonian flood plains, highland forest and cloud forest, it is drained by the Amazon River, the longest in the world. Amazonia is also synonymous with cultural diversity, with its 420 distinct indigenous peoples, 86 languages and 650 dialects (UNEP *et al.,* 2009). To those indigenous groups, the Amazonian environment has provided their main source of sustenance from time immemorial, and is of deep spiritual significance.

There is no universal definition of the Amazonian area. Each member country of the Amazon Cooperation Treaty Organization (ACTO) - an instrument of regional cooperation on Amazonian issues, comprising Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela - handles its own criteria (physical, ecological, political-administrative) for establishing a national definition of Amazonia. UNEP *et al*. (2009 *ibid*) uses ecological, hydrographic and political/ administrative criteria to define Amazonia, resulting in a composite map for the Amazon region - “Greater Amazonia” (8,187,965km²) (Map 5.1 below) and “Lesser Amazonia” (5,147,970 km²). It can be seen that the designation of Greater Amazonia often includes only a part of some countries.

Map 5.1. Greater Amazonia as depicted by UNEP



Image fromUNEP *et al*. (2009 *ibid*), reproduced courtesy of UNEP  
  
Rainforest is the most extensive of the Amazonian basin’s ecosystems, but inter-related rivers, lakes, wetlands and savannah also feature. However, Amazonia’s ecosystems, and hence the food security of their peoples, are under threat from large-scale human interventions regarding land use. These are transforming forest on a massive scale into grazing land for beef enterprises, large-scale cropping, infrastructure development and natural resource extraction – oil and metals. Climate change represents another threat. These threats are discussed by Ortiz *et al.* (2013), in an overview of food security in the Amazon Basin, this being a desk study of five of the countries which share the Basin – Bolivia, Brazil, Columbia, Ecuador and Peru. The Global Canopy Program and International Center for Tropical Agriculture were responsible for this study, as part of the Amazonia Security Agenda project. The study identifies the main food security threats to one or more of the indicators – availability/ distribution, access, stability and utilisation.

Whilst there is severe child undernutrition across Amazonia (ARA, 2011), not all population groups in Amazonia are subject to the same degree of threat to food security. For instance, as recorded for Brazil in 2004, whilst the national average of food insecurity was 21 percent, in the Amazon region of that country 35 percent of the population lived in a household with medium or serious food insecurity. Moreover, there are important differences amongst States within Brazilian Amazonia, those facing the most critical situation being Roraima (52 percent) and Marañón (50 percent) (Celentano and Veríssimo, 2007). As another example, in Bolivian Amazonia there is a range of levels of food insecurity vulnerability, the departments most at risk being Pando and Beni (Zeballos *et al.,* 2011).

UNEP *et al.* (2009 *ibid.*) estimated that in 2004, about one third of the population living across the Amazon basin was medium- to seriously-food insecure[[1]](#footnote-1). The food insecurity ‘hotspots’ in Amazonia are predominantly associated with urban environments, in which the lack of purchasing power gives rise to food access challenges. By contrast, in rural areas there are often opportunities for households to hunt or grow at least some of the food they need (or to grow the illicit crop coca to raise cash, this particularly being the case in Columbia, especially in Putumayo, Guaviare and Caquetádepartments).

Strategies to address food insecurity in Amazonia should focus not only on the majority of the urban food insecure, but also on the indigenous communities in rural areas (see photo below). This is in recognition that (unlike urban communities) they are partially dependent on forest products to sustain their food security, and are highly vulnerable to changes wrought in that environment which has sustained their livelihoods for thousands of years. Bushmeat consumption in the Amazon basin accounts for on average 63 kg/capita/year, with consumption being highly concentrated in low-income households (Nasi *et al.,* 2011)[[2]](#footnote-2). Targeting rural Amazonia with development assistance can also provide opportunities to increase productivity and profitability of licit crop cultivation, to help stem the increase in coca growing, and also to reduce urban drift.  
  


Photo 5.1. Traditional and basic living quarters on a river bank in the Amazon forest (photo from UNEP *et al*. (2009) *ibid*., with permission from UNEP, courtesy of Enrique Cúneo/ Diario El Comercio del Perú).   
  
The review by Ortiz *et al.* (2013 *op. cit.*) concludes that shortfall in national food production is not the main cause of the food insecurity identified. Indeed, most of the five countries investigated are net exporters of food, with the commodities grown being important for food security (rather than non-food cash crops), particularly bananas and corn (and fish in the case of Peru). Rather, the ubiquitous food insecurity is a result of unequal access across the population, due either to economic inability of many to purchase sufficient food for individual or family needs (or purchase only the cheaper less nutritious foods), and/or inadequate food distribution networks to remote food-deficit regions of the country, which fosters food price rises. Up to 60 per cent of people in the Bolivian Amazon, for example, are believed to be below the extreme poverty line, with income of less than US$0.75 per day, leading to serious food insecurity (Reyes and Herbas, 2011). Sub-optimal utilisation of food also plays a role, for instance through poor hygiene leading to intestinal parasites and infections.

These direct causes of food insecurity in turn have their aetiology in assorted factors, such as the land tenure/ ownership and land use systems prevailing, well-funded lobbyists and political decisions which favor powerful vested interests over the rights of local communities, weak national governance and corruption, inefficient marketing structures, population dynamics, effects of climate change, and cultural food consumption and purchasing practices. For instance, Ruiz *et al.* (2007) showed that in the Columbian Amazon, consumption patterns significantly influence food intake and diets. A demand-led rather than supply-led market orientation prevails in which many people preferred ‘exotic’ food over the cheaper food produced locally.

Large-scale farming of soya, oil palm or sugarcane, say, or large-scale ranching, do not necessarily threaten local food security, indeed may offer a better standing of living, but only if certain conditions are in place whereby local smallholder rights are not swept aside in the interests of profits for the powerful. Unfortunately, as pointed out by UNEP *et al*., 2009 *ibid*, many sectors of the Amazonian forest are cleared for market farming without the necessary permits or care for the environment (see photo below). It is the smallholder systems and their communities which are most vulnerable to quantum changes in their environment, which will likely affect their social and economic condition.   
  


Photo 5.2. Forest clearance to make way for irrigated rice in the Amazon rain forest. The colour of the incoming tributary on the left indicates eroded soil from even more unregulated forest clearance upstream (photo from UNEP *et al*. (2009) *ibid*., with permission from UNEP, courtesy of Conservación Internacional Perú/ Bolivia).

Researchers in Latin America have shown that Amazonia’s forests comprise vital natural capital, generating ‘ecosystem goods and services’ which underpin sustainable development, both within and outside of Amazonia. These include carbon sequestration and storage, cooling from evapotranspiration, freshwater filtration to control sediment and disease organisms, nutrient and water recycling, erosion control, moderation of extreme climatic events, maintenance of genetic diversity, transport highways for river-delivery of liquid fuels and other essential commodities to remote communities, hydropower generation, and supplies of food, medicines, fuel, timber and fibres.

Ortiz *et al.* (2013) *op. cit.* draw attention to the trade-offs between the development goals of economic development and poverty/ hunger relief, and environmental sustainability (with regard to soil erosion and water source pollution, attendant on deforestation and use of mining- and agro-chemicals, for instance). This underlines the importance of cross-sectoral cooperation in order to minimize the need to choose *between* the two imperatives – economic development and sustainability - for both can be simultaneously achieved, though often this is not currently the case. Studies are required to examine the risks, opportunities and trade-offs, and who will be the long-term winners and losers from alternative development scenarios.

**5.2. The regional perspective**

It follows from the above that a compelling case can be made for a regional perspective concerning food and nutrition security in Latin America and the Caribbean. International borders are rather meaningless, and have proven so over and over, when it comes to issues of food security, poverty and get-rich-quick ways of making money through illicit activities. Hungry people may not keep within their national borders, nor those who are poor or under threat from conflict in society.

Resource scarcity and depletion act as potential conflict multipliers. Food insecurity constitutes a threat to national and regional political stability, and spawns illicit activities. Columbia became a narco-state, and as a result refugees are still pouring into Ecuador. There is no doubt that many citizens of Amazonia not only have failed to benefit from national governments exploiting the bounty of the region, but they have had to bear the brunt of environmental damage caused during the process. Though economic studies suggest that Amazonian forests provide more value from their ecosystem goods and services than alternative uses of land, this has not translated into large-scale financial flows to those for whom the use of forests is fundamental to their sustainable livelihoods.

Equity and human rights issues have long beset the region. There are many legal disputes between companies seeking to extract natural resources and those who contest it in some way, with claim and counter-claim, and disparate narratives often going to court. Moreover, physical clashes between indigenous groups and non-indigenous locals are common as they are often in conflict over land, logging and mining rights (BBC News, 2013).

Disputes also arise between indigenous peoples and environmentalists on the one hand, and national authorities on the other. In May 2014 one such confrontation was reported in the media (BBC News, 2014a & b), regarding the plan of the Ecuadorian government to drill for more oil in the Yasuni National Park, with the intention of using revenues generated to fund infrastructure and development projects to relieve poverty in the area. The plan was challenged by *Yasunidos*, a peaceful human rights movement in Ecuador dedicated to defend the ancestral national heritage of the Park, which claimed that it would damage biodiversity. The petition was rejected, but the plaintiffs then vowed to take the issue to the Inter-American Commission on Human Rights. In 2013, Ecuadorian President Rafael Correa abandoned a six-year moratorium on exploration in a previously-untouched part of the Park, the so-called ITT block. This related to a conservation plan that would have had wealthy nations contribute to a trust fund that would have compensated the country for the loss of potential earnings. However, the initiative had attracted only a fraction of the $US3.6 billion it had aimed to raise. In the government’s view this left it with no alternative but to go ahead with the drilling, oil being the country’s main export, with the prospect of extracting the estimated 800 million barrels of crude oil that lay beneath the ITT block of the Park. The issue of ‘to drill or not’ in the Ecuadorian Amazon has split public opinion down the middle, according to polls.

Unless resources are exploited equitably and ‘sustainably’ there can be a downward spiral of the region’s productivity and economic bounty, with an aggrieved local populace a prey to armed groups who exploit them in another way, and release a spiral of violence.

At any given moment across the globe, refugees are streaming from areas which are plagued by conflict and scarcity (of resources and opportunity) to areas where these are perceived to be in relative abundance. Their arrival aggravates the pressure on resources of the host country (as seen in the Syrian crisis which started in March 2011, and threatens the national security of neighboring Lebanon and Jordan for instance, occasioning massive humanitarian aid from the international community).

In the case of Amazonia, as a sub-unit of Latin America and Caribbean, such a regional case has been made, as summarised by Mardas *et al.* (2013). It addresses the over-riding concept as already mentioned in Case Study 4 on Ecuador above, that food security is part of overall security, of a nation, region and the world itself that we all share. In a review summarizing six component thematic papers, the authors show that a ‘nexus’ of securities are under threat in Amazonia, not just food security, and that they are interlinked – water, energy, livelihood and health security are also compromised by human activity. Moreover, that unless threats to these securities are adequately mitigated and reversed, the threats will become national and regional realities ever harder to combat, with devastating multiple consequences for the communities involved.

There is also a multiplier effect inherent in these realities, due to climate change, climate to be considered another ‘security’ under attack by land use change and human activity in Amazonia. Climate change is manifest in increasing temperature, shifting rainfall patterns and more frequent and intense extreme climatic events, noticeable in the droughts, floods and fires which have afflicted the region over the last decade or so.

For instance, in 2005, large sections of south-western Amazonia experienced one of the most intense droughts of the last hundred years. The drought severely affected human settlements along the main channel of the Amazon River and its western and south-western tributaries, the Solimões (also known as the Amazon River in the some Amazonian countries) and the Madeira Rivers, respectively. River levels fell to historic lows and navigation along them had to be suspended. The drought did not affect central or eastern Amazonia, a pattern different from the El Niño–related droughts in 1926, 1983, and 1998 (Marengo *et al.,* 2008).

**5.3. La Plata Basin**

An example of the regional complexion of **water and energy securities**, for instance, is the La Plata River Basin to the south of Amazonia. The La Plata Basin is akin to the better-known Amazonia in terms of its biodiversity, and is a major hub of economic development in central and southern South America. The Basin drains about a fifth of the South American continent and extends over some 3.1 million km2. Five countries are covered by it – SE Bolivia, southern Brazil, the whole of Paraguay, most of Uruguay and most of north Argentina. With over 100 million inhabitants, close to fifty major cities (including the five national capitals), seventy five large dams and an economy that represents 70 percent of the per capita GDP of the five countries, the basin has enormous economic and social importance for the region overall (WWAP, 2007).

Yet 19 percent of the rain which falls in the La Plata Basin originates in Amazonia (supplementing that from the tropical Atlantic)(Sudradjat *et al.,* 2002). From Amazonia, 8 trillion tonnes of water vapour evapotranspires into the atmosphere each year (IPCC, 2007). Thus, Amazonia supports not only the communities within its boundary, but communities to the south also, through its ‘recycled’ water providing agricultural, domestic and industrial water security, and hydropower energy security. The total value of this Amazonian water is estimated to be tens of billions of dollars annually (Cranford *et al.,* 2011). Components of this value are estimated to include more than US$ 7 billion of annual crop production in Southern Brazil and nearly US$ 1 billion of the same in Paraguay, just two of the countries in the La Plata basin. The value of hydroelectricity production across the two countries which is dependent on rainfall linked to moisture transported across Amazonia is also billions of dollars. Moreover, these figures do not take account of the manufacturing or domestic sectors of any Basin country, nor do they capture Amazonia’s role in regulating rainfall in the Andean region, where large cities and populations depend on water from glaciers (which are already showing signs of the impacts of climate change).

Far-sighted local and national leaders across Amazonia need to take action now to prevent the widespread socio-political upheaval which affects Columbia, which country however has managed a remarkable fight-back over the last ten years. Until then it was a pariah state haunted by narcotics gangs, Marxist rebels and right-wing paramilitary death squads. Now the FARC rebels have far less power and less public support, and the country has transformed into a vigorous and largely peaceful land that attracts growing numbers of foreign investors, not to mention roughly 2 million international tourists a year. Still, there are problems there, giving rise to the refugees mentioned above. The trauma must be used as a warning though against what could happen elsewhere in Amazonia, and in La Plata Basin, if their Mother Earth qualities are allowed to deteriorate and the nexus of current securities allowed to fail.

**5.4. A blueprint for survival**   
  
Amazonia is arguably Latin America’s greatest natural capital asset, its bounty taken for granted for too long. An analogy may be made to a caring parent who is not appreciated by the children until that parent is dead. The Amazon and its life-giving environment is still alive, and must be kept alive for future generations, despite the symptoms of sickness now being ever more evident. For this to be assured, far-sighted multi-sectoral planning, nationally and regionally, is urgently needed, in response to, and twinned with, a far deeper understanding by planners of the risks incumbent on indiscrete development, and how these risks may be avoided or mitigated. There will be no second chance. If Amazonia continues on its downward path, regional food insecurity, poverty, social unrest, morbidity and death will surely increase. Should Amazonia, representing Mother Earth, fall, through neglect and inattention by humankind, the question will not be ‘whether’, but ‘when’ the price will be paid[[3]](#footnote-3).

A good start has been made to collate concerns of stakeholders (from governments, forest communities and the private sector) and devise a research agenda which would provide the evidence base for policy development to reduce poverty and food insecurity in Amazonia, through positive incentives for sustainable ecosystem management (Meir *et al.,* 2011). A capacity building project was funded from 2009 by the Ecosystem Services for Poverty Alleviation (ESPA) research program, funded jointly by DfID, and the UK’s Natural Environment Research Council (NERC) and Economic and Social Research Council (ESRC). Local community organization leaders from across Amazonia came together in a series of workshops (in Brazil, Columbia and UK) to voice their views on existing development approaches and their visions for ecosystem services for poverty alleviation in their communities and territories. A resulting position paper was presented at the United Nations Framework Convention on Climate Change 15th Conference of the Parties (UNFCCC COP 15) meeting in Copenhagen.

Participants at the first workshop noted that unsustainable and inequitable development in Amazonia was a political problem not a technical one, this being the platform of understanding used to develop a socio-ecological framework for the Political Economy theme of the ESPA program. A major challenge is to use data and their analyses to develop policy-relevant tools that integrate poverty and ecosystem services to inform the design of appropriate socio-environmental programs and foster political decision-making processes. This is in the cyclical interest of a sustainable Amazonia, being cared for by its clients who in turn take care of the Amazonia environment. Fortunately, there is considerable interest from Amazonian countries in the emerging climate policy framework ‘Reducing Emissions from Deforestation and Forest Degradation’, which would involve industrialised countries compensating developing countries for conserving and restoring forests.

There needs to be an element of regional governance of natural resource management too, with Amazon Basin-level accords on water governance, for example. ACTO has initiated a process of dialogue and design of a regional management program for water resources, together with UNEP, the Global Environment Facility (GEF) and the Organization of American States (OAS).

1. [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)
3. [↑](#footnote-ref-3)