Brazilian Dystopia: Development and Climate Change Mitigation

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ABSTRACT: The Amazonian Rainforest is an area of particular ecological importance to the world. And it is mainly its deforestation, rather than the usual combination of the carbonized energy and transport economic sectors, which make Brazil the world's fourth largest emitter of greenhouse gases. Brazil, with its political and diplomatic alliances with Russia, India, China and South Africa also occupies a prominent position in the complex negotiations with developed countries over the manner in which the "right to development" is defined and understood on the one hand, and then, on the other, balanced with ecological concerns. There are many such concerns but the focus of this article is climate change mitigation. The "dystopia thesis" concludes that humanity faces a plethora of imminent inter-related crises in complex feedback loops. It also concludes that these problems cannot be solved, or even sufficiently ameliorated, from within the context of capitalist reform, or at least not so as to avoid suffering on a colossal scale. This extremely broad, abstract theoretical conclusion, is examined empirically in this article in the particular case of the relationship between the Brazilian economy and the development of the Amazon on the one hand, and climate change mitigation efforts on the other. The examination provides further evidence for the dystopia thesis's most pessimistic conclusions. For our own well being, indeed our very survival, we must protect the Amazonian Rainforest; but we are not going to be able to do so with mechanisms functioning within the context of the present world political economy.

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INTRODUCTION

> "There are no environmental solutions to environmental problems, only social, economic and political ones."
>
> *Charles Secret, Friends of the Earth*

This article will examine climate change with a focus on Brazil, deploying a framework we call the "dystopia thesis." Climate change is, of course, not only Brazil's problem but the world's. The dystopia thesis predicts a dystopian future for humanity, with many different forms, shades and degrees of horror among the possible futures. Perhaps the worst of these possibilities is a global eco-catastrophe, arising from runaway global warming beyond the point wherein checking it is still a possibility. This is a global problem but Brazil will play a key role: either in climate change exacerbation or its mitigation.

The general argument of what we are calling "the dystopia thesis" will be summarized in the first section of the article but the principal focus will be upon how it applies to Brazil. There are a number of reasons for this. The dystopia thesis identifies a great many currently existing ills, as well as offering predictions. Brazil is afflicted by many of them. World socio-economic inequality is a key feature of the dystopia thesis and in the Brazilian case it is simultaneously a causal force and a humanly suffered result. Brazil wishes to economically develop; one could say that Brazil needs to economically develop, if only to mitigate some of the suffering accompanying the poverty of a sizable portion of its population (21.4 percent of its population lives below the poverty line and 4.2 percent are below the "extreme poverty line" according to the CIA World Factbook, 2013). But economic development and the exploitation of natural resources frequently comes into conflict with both local and global ecological imperatives, with global climate change being the most serious of these. This is true everywhere but it is particularly important because of the key role the Amazon Rain Forest plays in the world's eco-system. The second section of this article thus explains the ecological importance of the Amazonian Rain Forest and the absolute necessity of its preservation.

The third section of the article looks at the economic side of dystopia as manifest in the Brazilian case. It considers both some of the realities of development and the "right to development" discourse of many developing nations, including Brazil. Brazil's poor need the benefits of development; they need better health care and education to name but two. The rights of individuals to such can thus be argued as a nation's

"right to development", as conflicts with the necessity to preserve the rainforest are diplomatically negotiated with the richer countries of the North. We examine this discourse and the realities of global capitalism that underlie it. The latter ensure, first of all, that virtually unbridled exploitation of the forest does take place. Secondly, such structural realities ensure that the benefits of such development do not usually extend to the poor. And thirdly, that a more farsighted care and management of resources does not take place. In essence, there are structural causal forces producing Amazonian dystopia.

The next sections of the article deal with the drivers of rainforest destruction and the failures of capitalist solutions to these problems. The fourth section looks at the forest industry's ecologically sustainable forestry practices certification programs and their failures. The fifth section looks at an even more powerful driver of destruction than forestry: the cattle industry. This section includes an examination of the way the production and dissemination of scientific knowledge in relation to this industry is given a dystopian twist.

This article is in many senses a particularized application of the broader focus of what has been called "the dystopia thesis." This argument has been articulated by one of the co-authors of this article elsewhere (Potter, 2009, 2010a), including in the pages of this journal (Potter, 2012). However, for the benefit of most readers who are probably unfamiliar with this argument, the first section here provides a synopsis.

THE DYSTOPIA THESIS

> "If a path to the better there be, it begins with a full look at the worst."
>
> *Thomas Hardy*

The dystopia thesis asserts that our collective human future will be one of poverty, disease and eco-nightmare: it will be an extreme dystopian reality beyond the imaginations of the writers of fiction. This is because the realities of the scope of human suffering are more than any single mind can grasp. Dystopia is already here for perhaps as many as a billion people. It is here in the form of poverty in the extremes of famine and untreated treatable disease, infant and child mortality and in the incredible pain behind the disturbing statistics. It is here in the form of poorly paid dangerous and/or degrading work, including work done by children. It is here in all the various forms of pollution and is on track for getting worse. It is already here in war and terror and torture.

But just as we can see various forms of pollution getting worse, dystopia is still just emerging. We can see it in the growing numbers of unemployed and the alienated under-employed. We can see the inevitable financial crises coming and going while the cutbacks in governmental (virtually every developed countries government) welfare programs and spending on health and education continue unabated. We can see the effects of global climate change beginning to emerge in unusual weather patterns and the increased frequency of hurricanes, droughts and floods. We can see the beginnings of resource shortages where water is beginning to rival oil as a pressurizing factor in the lead up to wars. On the other hand, we have had to live with some risks for such a long time that we have grown accustomed to them; we have begun to believe they are no longer with us. But the probabilities of nuclear war, for example, have increased rather than decreased.

A constant in all of this is extreme socio-economic inequality. All the above problems are set in a context of structural causality. The world socio-economic political system directly or indirectly causes these problems or exacerbates them or prevents a serious viable long term solution to them being seriously attempted. Structural causality is why the dystopia thesis repudiates any notion of "capitalism with a human face." Unemployment and social inequality, for example, are not contingent features of capitalism. They are intrinsic to it. Unemployment rates may vary over time and from one country to another. They may rise or fall in relation to particular governmental policies. But the existence of unemployment is structurally built into the system; the existence of social inequality, and therefore poverty, is structurally built into the system.

The developing nations' need for their populations to have access to healthy diets, clean water, proper medical care and disease prevention, education and so on, their need for people to have the freedom to live happy fulfilled lives, will not become available through the current system's developmental practices. They develop not only in such a way as to have devastating environmental impacts but so as to ensure inequality and injustice are maintained. Humanity's desire for social justice is linked in a complex but necessary way to our collective need to protect the environment.

In this regard, the dystopia thesis broadly shares the Marxist perspectives upon ecology of such writers as John Bellamy Foster and Saral Sarkar.[4] It shares Foster's view that there is no third option; humanity faces

4 See for example Foster, John Bellamy. (2011). Capitalism and Degrowth: An Impossibility Theorem, *Monthly Review,* 62(8), 28-33, and Saral Sarkar. (1999). *Eco-Socialism or Eco-Capitalism? A Critical Analysis of Humanity's Fundamental Choices*. London: Zed Books.

a choice; it is either eco-socialism or barbarism. Or in our language here: eco-socialism or dystopia. But though Foster is correct that continual economic growth is necessary to capitalism we would disagree with Foster, at least in part, with regards to potential for different kinds of growth in alternative systems. The dystopia thesis, with its very pessimism, posits as a potentiality its dialectical opposite: a different kind of development, one in harmony with, rather than against, nature. Of course, there are resource shortages and other ecological limits to growth but the plunder of finite resources is not the only sort of development possible.

The dystopia thesis also rules out any sort of Kovelian conclusion (Kovel, 2002) positing socialism as inevitable because of eco-crisis. The only thing that is inevitable is crisis, both economic and ecological. The two are inextricable. Perhaps facing the imminent realities of horror might wake up sufficient numbers of people to act and stave them off. But not only are there no guarantees of socialist revolution but the probabilities of such are looking exceedingly unlikely. Still, such hope as there is, begins with an unflinching look at the harsh realities of our collective prospects.

It is difficult to perceive such realities when the utopian visions of an enlightened eco-capitalism are constantly being presented to us. The market itself, it is alleged, can save nature. We merely need "the creation of markets for the exchange of 'ecosystem services' in the form of Payments for Ecosystem Services (PES)" (Sullivan, 2009, p.19). PES is "an incentive-based, voluntary, and conditional conservation approach" that is intended to be "a more equitable alternative to regulation, by explicitly compensating landholders' opportunity costs" (Börner et al., 2010, p.1280). But the "payments for the environmental services produced by nature's labour do not go to the environment itself, but to whoever is able to capture this newly priced value" (Sullivan, 2009, p.20). The dystopia thesis is in agreement with those who argue that "any approach that simply encourages the market to put a price on the environment is inadequate as a response to environmental problems since this does not sufficiently orient business or society in general towards the environmental issue that we face" (Beder, 2006b, referenced in Andrews et al., 2010, p.616).

Carbon trading is a case in point. It is a key capitalist policy instrument to reduce global warming (Leimbach, 2003, p.1033). Actually, it has become a common practice which countries utilize so that their obligations under the Kyoto Protocol are met (Zhang et al., 2011, p.128). But this is merely an accounting solution (and usually a crooked one at that). It is simply paying for the right to pollute with the emissions put on someone else's books. It has

been shown to be wholly ineffectual in actually reducing overall emissions. In fact, some would go so far as to assert that contradictory to its intended aim, carbon emissions trading "is to promote global greenhouse gas emissions" (ibid.). For example, if a company's emission of CO2 is under its limit, there is a temptation to sell the remaining limit in exchange for a profit (ibid.). In the view of the Global Alliance of Indigenous Peoples and Local Communities (NOREDD, Dec.13, 2011), the recently negotiated market mechanism Reducing Emissions from Deforestation and Forest Degradation (REDD) is likely to result in "the biggest land grab of all time." Capitalism distorts human efforts to deal with problems, ultimately reducing all to the making of profits.

A further aspect of the dystopia thesis is the theory of structural mystification (Potter, 2010b). The relationship between knowledge and power is such that the institutional production and dissemination of knowledge produces its dialectical opposite: structural mystification. Structural mystification is the obfuscation of the production of knowledge and the restriction and/or prevention of its dissemination. Thus, for example, knowledges concerning climate change are produced and have a limited dissemination. A consolidation of such knowledge is continually challenged by a combination of real scientific endeavor illustrating the complexity of the subject matters on the one hand and media promulgated disinformation on the other, including, most importantly, the facts concerning the scientific community's consensus on the issue.

All of these points, outlined above and made elsewhere about the dystopia thesis, are made in a more specifically focused form in this article. The dystopia thesis does not forecast any particular doom to accompany its gloom; there are many forms of possible future barbarism and nightmare. But this article focuses upon only one of these possibilities. It focuses upon the probabilities of the very life being choked out of us in a climate change disaster. Climate change has many different facets and causal feeds into it but none are more important than damage to "the lungs of the world", the Amazonian Rainforest of Brazil.

GLOBAL WARMING AND THE ECOLOGICAL IMPERATIVE TO SAVE THE RAINFOREST

> "A Nation that destroys its soils destroys itself. Forests are the lungs of our land, purifying the air and giving fresh strength to our people."
>
> *Franklin D. Roosevelt*

The Amazon rainforest in Brazil is the only one of its kind; there are no other tropical forests left in the world that are comparable to its size, structure, and biodiversity. Through the photosynthesis of its millions of plants and trees the Amazonian Rainforest absorbs a huge amount of carbon dioxide (CO2) from the atmosphere and releases oxygen into the air. It is thus often claimed to be "Gaia's Lungs", a metaphor personifying the world's most natural and efficient filtration system of excess CO2 (Laurance, 1999, p. 96). Indeed, the lungs of the world have been, for the past few decades, inhaling Earth's increasingly excess amounts of CO2, principally attributed to the burning of fossil fuels by humans (ibid.). There is, thus, a growing consensus in the scientific community of the vital role of the Brazilian Amazon in containing what would otherwise be a damaging excess amount of CO2 in the very atmosphere which we all depend upon for our survival and well-being (d'Oliveira et al., 2011, p. 1490).

The Amazon rainforest also provides a second ecological service, to both the local population and to the rest of the world, with its repository of carbon in both biomass and soils, thereby reducing the effects of global warming (Fearnside, 2012, p. 71). The rainforest has taken in huge amounts of carbon stocks and much of this is contained in the trees. The practice of deforestation, mainly for pasture conversions and agricultural purposes (see section five) releases absorbed CO2 back into the atmosphere. While logging and forest fires emit CO2, deforestation remains the leading source of emissions in Brazil (ibid.). When deforested, the stocked CO2 is released back into the atmosphere as greenhouse gases (GHGs), in the form of CO2 and methane (ibid.). The turbulent spew of CO2 in the aftermath of deforestation causes an ecological devastation upon the climate. Fearnside (1996, p.21) emphasizes that:

> "[d]eforestation in Brazil already makes a significant contribution to the global load of greenhouse gas (GHG) emissions, and complete or nearly complete replacement of Brazil's Amazon forest by pasture would both contribute to global warming and greatly reduce evapotranspiration in the region."

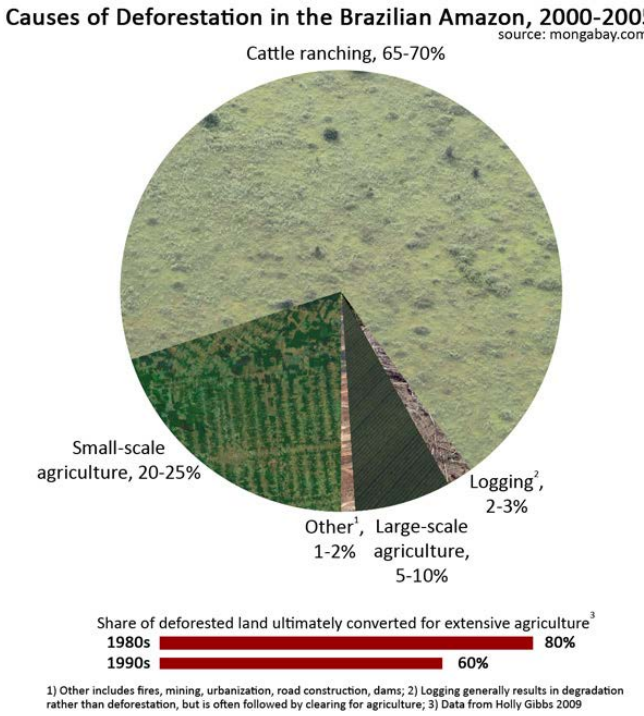
As well, Gerwing (2002, p.139) stresses that Brazil's, "local phenomenon of forest degradation could have global consequences to the extent that logging and fire reduce forest biomass and liberate previously sequestered carbon." Since tropical forests stock anywhere between 20-100 times more carbon per unit area than agricultural lands, the burning of tropical rainforests thus accounts for approximately 25 percent of the total global CO2 emissions (Brady, 1996, p. 5).

Other assessments claim 15-35 percent of global CO2 emissions from deforestation and forest degradation (Mazzei, Sist, Ruschel, Putz, Marco, Pena & Ferreira, 2010, p. 367). More recent estimates suggest that deforestation accounts for 10-15 percent of global CO2 emissions; perhaps this lower figure is a result of a reduction of deforestation in recent years through enforcing land-use regulations (Tollefson, 2013), but it should be emphasized that all of these estimates are just that: estimates.

The soil also has an important ecological role to play in the global carbon cycle, not only because it represents a storage medium for CO2, but that the soil itself actually contains more carbon than biomass (Jassal, 2005, p.177). The soil accumulates carbon from the atmosphere, which is transferred to the soil by plants through processes such as litterfall or root turnover, where the CO2 becomes part of the organic matter of the soil (Nitschelm et al., 1997, p.411, p.415). Aerts et al. (1992, p.187) found that root turnover contributes a significant amount of litter production in an ecosystem. Elevated levels of CO2 not only leads to an increase in biomass by speeding up the rate of photosynthesis but it also stimulates root growth, resulting in longer plant roots at a faster rate of growth (Rogers et al., 1996, p.230, p.240). Roots are able to transfer CO2 to soils at a greater radius and at a faster rate. Soil respiration is linked to root activity, as well as microbial activity in the decomposition of organic material (Søe et al., 2004, p.86). Furthermore, higher levels of CO2 have a stronger effect on root biomass than on leaf biomass (ibid., p.91). Studies have found that soil respiration increases under elevated CO2, which in turn is due to the increase of plant biomass production under it (ibid. p.91; Nitschelm et al., 1997, p.415). These findings indicate that soils are a very important sink for CO2. But when forests with a large stock of carbon are replaced by cattle pastures, they lose that carbon (Davidson et al., 2012, p.326).

The Amazon rainforest is precipitously being cleared for cattle pastures and agricultural ends, which have a ruthlessly destructive impact on the forest's rich biodiversity (Fearnside et al., 2009, p.1968). Fearnside (1995, p.53) notes that "[t]he great majority of deforestation in Brazilian Amazonia is followed by conversion of land to cattle pasture, either immediately or after 1-2 years of use under annual crops." In fact, more than 60 percent of deforested land ends up as cattle pasture (Butler, 2012).

Figure 1



Butler, R. (2013) http://rainforests.mongabay.com/amazon/amazon_destruction.html

The conversion of the Amazon rainforest to cattle pastures obviously negatively alters the biodiversity by drastically reducing the number of plants and animal species to a homogeneous existence (Rodrigues et al., 2013, p.988). But more surprisingly Fearnside (2001) argues that the deforestation of the Amazon forest actually yields very little economic benefit because the deforested areas that become cattle pasture have low productivity (p.173). The Amazon cattle ranchers use the deforested land wastefully in terms of animals per hectare, yielding a low level of investment per hectare (ibid., p.6). Cattle are rarely fed with energy-rich grains and protein; and fertilizers and the use of legumes are seldom used to improve pastures (Boucher, 2011, p.7). As a result, weed invasions tend to degrade many of the cattle pastures (Smith et al., 1998, p.9). In addition, employment levels in ranching are low and ownership is highly concentrated in a select few (ibid.). Even so, cattle remain an attractive option in the Amazon rainforest because developers can

gain entitlement to the land that is cleared (Butler, 2012). Some data indicates that agriculture and pasture made up over 80 percent of what drove deforestation in South America from 1990-2000 (ibid.). We further analyze this issue in section four of this article.

Besides clearing vast amounts of forest space for cattle pastures and agricultural purposes, much deforestation is to produce lumber for building construction worldwide and for luxury furniture. Fearnside (1995, p.61) maintains that:

> "...the value of Amazonian forests for 'ecological' uses such as biodiversity maintenance, carbon storage and water vapor supply overshadows by far both current and potential revenue from both timber and non-wood products."

The veracity or not of this assertion, however, is dependent upon effective international agreements and the willingness of developed countries to pay to protect a crucial global resource. We analyze the international situation and the North versus South tensions and contradictions in this regard in section three of this article.

While road paving is among the economic activities that simulates deforestation (Davidson et al., 2012, p.323), a key driver of deforestation comes from private investors who seek to maximize profits by supplying timber, soybeans, and beef to both global and national markets (Celentano et al., 2011, p.850). Thus, deforestation is largely attributed to the high demand for logs, sawn wood, and furniture in both the domestic and international markets. Timber extraction has become a major economic activity in the Amazon forest, especially in the last two decades (Smith et al., 1998, p.17). This is in part because the stability of the market for logs, sawn wood and furniture is higher than that for fruits and nuts (ibid.). Deforestation of the Amazon forest is thus a consequence of global economic forces (Butler, 2009). This point is further argued and analyzed in section four.

Forestry and wood harvests can be conducted in a variety of ways. Clear cutting is economically the cheapest but it is also the most ecologically damaging and wasteful. There are thus environmentalist pressures to engage in more ecologically balanced and responsible forestry practices. There are actually many certification programs to show the developed countries' ecologically conscious consumers that their luxury furniture or flooring purchase comes not from irresponsible Amazonian destruction but from careful, ecologically managed forestry harvest. Sec-

tion four of this paper examines this apparent positive step to protect the world's forests and the Amazonian forest in more detail. In particular it examines its failures and the reasons for them.

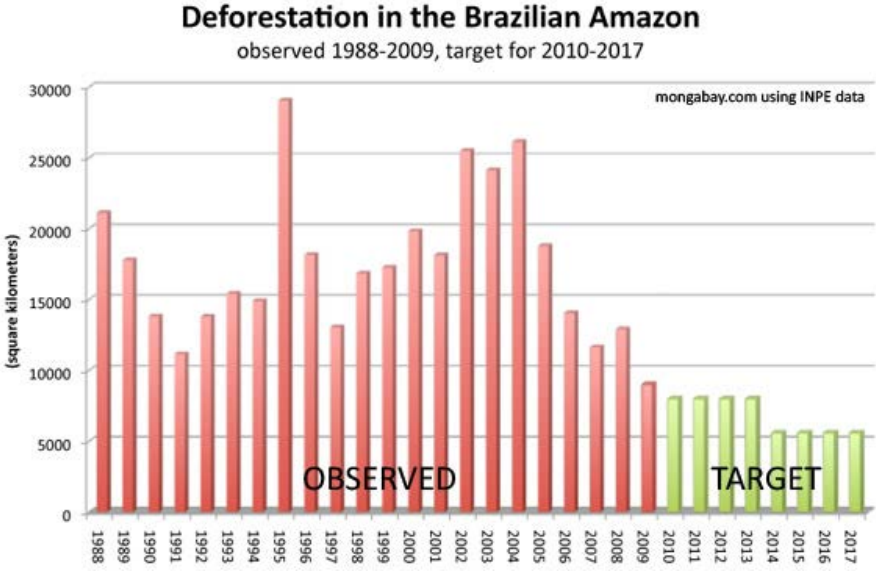
There are many such capitalist reformist environmental solutions. The Amazon rainforest could financially benefit Brazil through the sale of environmental services at the same time as it mitigates against global warming (Fearnside, 2012, p.71). Fearnside (ibid) explains that, "[e]nvironmental services in the Amazon rainforest are of global importance and can form the basis for substantial monetary flows to Brazil." Fearnside's view, however, we would argue is utopian. Projects intended to reward the environmental services (i.e. the storage of carbon) of Brazil's Amazon rainforest are increasing but their effectiveness in achieving what they are intended to do is doubtful. For example, Brazil has created the Amazon Fund, with the intention to decelerate deforestation by promoting sustainable economic alternatives to cattle ranching and farming (Ribeiro, 2012). Brazil's Amazon Fund functions by receiving donations from voluntary countries, such as Norway and Germany (Fearnside, 2012, p.77). A key factor in this, as in many such projects, is their voluntary nature. In practice, the ineffectiveness of the project discouraged potential donors from contributing (Ribeiro, 2012). There is also the REDD plan, whose limitations we discussed earlier. Other efforts include the Rainforest Conservation Fund (RCF), which has helped to create a 960,000-acre reserve in the Peruvian Amazon in February of 2012 (Enviroadmin, 2012). This is undoubtedly a positive development; but it is by no means adequate to the scale of the problem.

Deforestation is sure to cause irreversible damage to not only the Amazon forest itself, but also to cause an important loss of biodiversity, soil erosion, and crucially, climate change. Sustainable utilization of the forest is thus essential. Agro-forestry provides some hope as a way of combining development and environmental protection. It is, potentially at least, a sustainable system of growing trees and crops at the same time. Commercial agro-forestry, from plantations of bananas, oranges, and papayas to cashews, plays a somewhat effective role in slowing deforestation (Smith et al., 1998, p. 7). However, agro-forestry is rarely performed on ranches (ibid., p.9) and, as we mentioned above, and will detail in section five, ranching is the most significant driver of deforestation. Though it is practicable to boost agro-forestry on small-scale ranches, by fencing off pasture for the allowance of fruit trees to grow, there are constraints to agro-forestry (ibid., p.12). Inadequate market information, weak farmers'

associations, and a poor agro-industrial infrastructure are the main socio-economic constraints upon making agro-forestry a widespread viable sustainable management of the forest (ibid.).

A survey conducted by Smith et al. (1998) found nonetheless, that "a substantial proportion of farmers are incorporating timber species in their agro-forestry systems" (p.17). This indicates that, despite the constraints upon agro-forestry, some farmers are doing what they can do to sustain the forests. We are faced with an ecological imperative to save what is left of the Amazon rainforest through sustainable methods like agro-forestry; otherwise there will be nothing to save humanity from global warming. There are small signs of hope. We can see from Figure 2 below that some of the practices to decelerate deforestation have had some effect and we can also find some hope in Brazil's projections for a further deceleration.

Figure 2



Butler, R. (2008). http://news.mongabay.com/2008/1212-amazon_targets.html

DEVELOPMENTAL NECESSITIES: PEOPLE AND CAPITAL

> "The poor complain, they always do but that's just idle chatter.
> Our system brings rewards to all, at least, to all who matter."
>
> *Gerald Helliener*

The divide between developed and developing countries in relation to the issue of climate change mitigation is categorized by the Annex I/non-Annex I division in the United Nations Framework Convention on Climate Change (UNFCCC) (Heyward, 2007, p.519). According to the UNFCCC, Annex I nations are industrialized countries with high-income economies, mainly those who were members of the Organization for Economic Co-operation and Development (OECD) in 1992, plus some few other countries with economies in a transitional state. The Annex II category consists of the countries that are developing. This category is further split into two sub-categories. One group includes the developing countries that are most vulnerable to climate change; these are countries with low-lying coastal areas and those that are prone to desertification and drought. The second group includes countries that rely heavily upon income from fossil fuels and are vulnerable to the potential economic impacts of climate change (UFCCC, 2013).

The growing demand for an equal and unconditional right to development among the developing countries is on the rise (Sengupta, 2002, p.841-842). This demand has been emphasized as one of the basic human rights for all countries, so as to meet their basic needs by increasing productivity and economic opportunities. This is a simple proposition but it has profound implications. The slogan "right to development" contains problematic aspects for the distribution of benefits and entitlements (Lofquist, 2011). As we shall later argue, the slogan and surrounding discourse has significant implications for global ecology, as well as economy. The "right to development" lacks consensus among countries because the discourse is all about sustaining self-interests. The problematic of distribution represents the contradiction between ecological limitations to development on the one hand, and the basic capitalist concept of "never-ending improvement" on the other. This argument in practice, however, manifests itself somewhat differently. It pits the developing countries' needs for fundamental improvements to living standards against the unlimited further development of the already developed countries.

A fundamental feature of capitalism is the endless need for growth. Beyond this worldwide systemic necessity, however, is a more basic physical reality of human needs. This is manifest in a discourse of rights and entitlements, with developing nations understandably pushing for achievements with respect to adequate living standards. An "adequate living standard" is defined by the Universal Declaration of Human Rights (UDHR) as "the least amount of satisfaction of subsistence rights that are sufficient food and nutrition, clothing, housing and care when required" (Alfredsson & Eide, 1999, p.523). But as Lars Lofquist explains, "this does not imply that we must reject a right to a certain minimum level of well-being; it just means that this right cannot include claims for never-ending improvement" (Lofquist, 2011, p.251).

Climate change is not only an environmental problem, it is also a developmental dilemma. Its effects, as well as any efforts aimed at mitigation, will significantly impinge on developing countries with economies primarily based on natural resources such as agriculture and forestry. Climate change causes more damage to those who are already vulnerable and is therefore likely to further exacerbate poverty and human deprivation. The various negotiated protocols and agreements between nations are intended to reduce the effects of greenhouse gas (GHG) emissions. They are attempts to preserve and save future life from devastating consequences. But the negotiations and agreements are also about the preservation of individual nations' economic interests and balancing conflicts of interest with others. Of course, imbalances in global power relations come to the fore here.

There are, of course, alliances based upon commonalities of interest. Brazil for example, is a member of one of the leading groups in this debate, the so called BRIC nations (Brazil, Russia, India and China), later forming an even stronger alliance of shared interests and diplomatic strategy (BASIC is the acronym for them) when Russia was dropped in favour of South Africa. Climate change, it is argued by some, should be addressed as 'everyday behaviors' (Hochstetler and Viola, 2012, p.753) in which the right to development becomes a common and equal right but at the same time entails responsibility. The challenge for achieving climate change mitigation agreements lies in how to equally protect the right to development, while at the same time creating a binding plan to de-carbonize economic activities. Consequently, the debate of how best to address the issue is inevitably plagued by differences of national interests and of just what constitutes the right to development (Baer et al., 2008).

In theory, there were many opportunities for cooperation between developed and developing countries in implementing the right to development within the normative and institutional framework of The United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. The Kyoto Protocol set targets for GHG emissions reductions for industrialized countries (Annex I Countries) and also created the Clean Development Mechanism (CDM). The CDM is unique in light of its two-fold objective: mitigating climate change and contributing to sustainable development (Baer et al., 2008, p.80-85). Recently, the CDM has aided in promoting sustainable energy projects (Lee et al., 2013). But as argued earlier, it is a capitalist solution to a problem not solvable within the structural constraints of a world capitalist political economy.

The CDM has an accreditation system of defined Certified Emission Reduction (CER) credits. These are units of carbon dioxide reduction equivalent to one ton. The reduction of emissions in the developing countries and the accumulation of these CER credits can then be sold and used by industrialized countries to meet some of their emission targets as set by the Kyoto Protocol (UFCCC-CMD, 2013). To qualify for the CER credits project, developers must demonstrate the reduction in emissions that they implemented, compared to what would have occurred without these implementations (The Guardian, 2011). The CDM is the principle diplomatically negotiated way discovered so far, of balancing the various different interests of developed and developing nations with regard to climate change mitigation and development. It embodies the alleged possibility of sufficient reform and diplomacy to solve one of the world's most serious and pressing issues; its principles with regard to climate change mitigation are the very embodiment of hope for salvation through capitalist reform and self-regulation.

In Europe the CDM has been used with the creation of a mandatory trading scheme, called the EU Emissions Trading Scheme (ETS), which allows companies to buy CER credits to contribute to their own emission reduction goals (ibid.). Therefore, the CDM, and its CER accreditation system in conjunction with the ETS, would seem to have the potential for reducing emissions in the European nations at the same time as contributing to sustainable development in developing countries, and in particular fast growing countries such as Brazil. Except that it is isn't working! Pielke (2013) argues that the ETS has thus far failed pretty much entirely in its de-carbonization goals for Europe.

The CDM might have been more effective in countries like Brazil if the CDM and its CER system had included forest conservation and

measures to avoid deforestation to its protocol. However, the Kyoto Protocol excluded them from the CDM permit for a variety of political and practical reasons (Laurance, 2007, p.20-21). Most significantly, for the possibility of it really succeeding in its purpose, it would have needed to be a binding agreement rather than voluntary in terms of compliance. But the CDM is not a binding policy and, of course, it includes loopholes that discourage companies and countries from abiding by it.

The phrase "of course" in that last sentence signifies a dystopia thesis perspective upon this. The argument is that the really serious issues affecting humanity cannot be properly dealt with in the context of our existing political economy. Contesting forces of national and corporate self-interest dictate what finally gets agreed upon and acted upon in the global community. So, most countries end up with ineffectual voluntary policies that determine their "everyday behaviors" in the efforts to address climate change.

Brazil, for example, has pledged to reduce the GHG emissions between 36.1 percent and 38.9 percent by 2020 (de Motta, 2012). This is an admirable target. But it is also an unrealistic target. Brazil is one of the fastest growing economies in the world, along with China and India. According to the United Nations Development Program document, "The Unprecedented Rise of the South", Brazil is raising its living standards by expanding international relationships and anti-poverty programmes that are emulated worldwide" (UNDP, 2013). This is good. Yet by contrast, with respect to climate change, Brazil is the world's fourth largest GHG emitter. Most of Brazil's GHG emissions derive from agriculture, land-use change and forest management (Roman, 2010, p.1). Moreover, in international negotiations as stated earlier, Brazil occupies a distinct position as an active member representing the "South" and is a major actor within the coalition of the (BASIC) countries. The BASIC agreement included a possible walk-out of negotiations if their common basic minimum position was not met by the developed nations (Hochstetler & Viola, 2012, p.755-756).

Brazil's climate agenda has evolved around three issues: "stressing every country's sovereign right to development; opposing any suggestion that the Amazon rainforest be put under international control for its protection; and emphasizing the industrialized countries' historical responsibility and obligation to compensate for their emissions to date" (Roman, 2010, p.1). While this is fine on one level, and from our perspective of international fairness, quite reasonable, it has nonetheless produced an ecology destroying stalemate with the developed world, not

all of which were even Kyoto signatories and most of which have failed to meet their own emission reduction targets.

The Brazilian case of an emerging economy shows climate change policies characterized by contradictions. Such contradictions include the preservation of national interests and the implementation of unbinding and voluntary policies. The right to development has been manipulated as a means to an end by both developed and developing countries alike. The ultimate goal for all these countries is to maximize their production and economic opportunities well beyond the level of an adequate living standard. The "right to development" discourse has simply been exploited as an ideological tool of self-interested justification.

If the dystopia thesis generally is correct, then it could not be otherwise, in Brazil or anywhere else. The fundamental structural features of the global political economy not only condition economic decisions but also frame the discourse in which policies and values are diplomatically debated and agreed upon. There is thus from a long term environmental perspective, a wholly inadequate set of policies with built-in loopholes. The collective failure to properly act upon what is ecologically necessary for humanity's long term well-being is, for the near future at least, virtually guaranteed.

THE FAILURES OF MARKET SOLUTIONS: FOREST CERTIFICATION PROGRAMS

> "One of the great mistakes is to judge policies and programs by their intentions and not by their results."
>
> *Milton Friedman*

There is worldwide awareness and concern for the preservation of the Amazonian rainforest, just as there is a global demand for the products of its resource harvesting. The Brazilian population has its own surprisingly high public awareness of ecological issues generally and climate change in particular (Pew Research, 2010). There is thus pressure from both within and outside Brazil for protective measures. There is government legislation, driven both by international pressure and domestic motivation. The greatest weakness of these environmentally protective laws is the issue of compliance and enforcement. A great deal is left up to the voluntary efforts of corporations and citizenry. There are voluntary international targets for emission levels with respect to climate

change on the one hand, and local legislative measures and international codes of forestry management on the other. It is the latter that we shall discuss in this section as their failures illustrate perfectly the dystopian contradictions preventing real solutions to real, and recognized, serious problems, upon whose solution the future of humanity and a healthy global ecosphere depend.

The problem is that the most serious strategies attempted to remedy ecological/economic issues are such that the hoped for solutions derive from the very same mechanisms that caused and are causing the problems in the first place. The strategies are all market driven and/or dependent upon a kind of consumer voluntarism. One might think that a code of ecologically sound principles to guide forestry practices could do nothing but good. But as it turns out the story is far more complicated. There are a plethora of local and international inspection and sanctioning bodies with respect to forestry. That is actually part of the problem itself: different bodies, different regulations, different credentialization and certification practices. Internationally, more than thirty different such certification systems exist (http://www.accreditation-services.com/archives/certification_bodies). However, we shall focus on only one of these bodies the Forest Stewardship Council (FSC) as it embodies all the dilemmas of market driven solutions to issues affecting the global commons.

The FSC program

The following is from the website of a hardwood flooring company (Tulip Floors, 2011) located in Berkeley, California:

> "Despite the well publicized reports of clear-cutting of tropical and old-growth forests, it has taken a long time for government and industry bodies to coalesce around a common certification system. Part of the difficulty has originated with the timber industry itself, which has spent enormous resources propping up its own weak "certification" bodies. In the tropics, government bans against illegal logging are weakly enforced, with enormous corruption allowing illegal loggers to act with impunity. Fortunately, the last decade has seen FSC Certification come to the forefront as the most trusted and widely accepted independent certification system in the world. The Forest Stewardship Council (FSC) is headquartered in Bonn, Germany, and is an international non-profit organization that sets environmental and social standards of forest management."

The flooring company identifies more than one of the global problems we are aware of: corruption, weakly enforced legislation, the timber industry's own "weak" certification bodies and, of course, the crucial importance of ecologically sound forest management. This, they correctly imply, is absolutely necessary for any Brazilian (and world!) climate change mitigation efforts. Why does the company forefront such concerns so prominently on its website? Certainly most hardwood flooring companies do not. We may speculate upon the green political leanings of the company's ownership and management. They may well have quite altruistic intentions. However, such intentions can fit well with the bottom line in a capitalist economy. There is a niche market for ecologically sustainable products. Consumers aware of the ecological importance of the Amazonian Rainforest and other fragile forests eco-systems, are willing to pay more for a trusted certification that the products they buy have been produced in environmentally sound ways. What possibly could be wrong with that? Isn't that exactly what will solve the Amazonian (and other) logging operation deforestation problems? Well, it is certainly the most popular pseudo-solution offered us by the corporate powers that rule the world.

The very existence of a 'niche market' presumes the existence of a wider market place from which the niche market is differentiated. So if there are good "environmental and social standards of forest management", certified as such by the FSC as is the wood flooring of Tulip Floors quoted above, then it follows that there are uncertified wood products for sale elsewhere and that many or most of these products are a result of ecologically unsustainable practices.

As stated earlier, there are more than thirty certification organizations with no agreed upon common levels of certification or standards of practice. Perhaps, more importantly, over 90 percent of the world's forests have no certification process at all. In Brazil, where the FSC is the biggest forest management certification agency, only 1.4 percent of its forests are FSC certified. Further, as asserted in the USDA report Wood Market Update (2006) "...it is only an estimated 2% of the tropical wood produced in Brazil that is derived from certified forests." The report goes on to say that: "Some estimates show that over 40% of Brazil's tropical wood production comes from illegal logging". So, ecologically unsound practices are rampant and climate change be damned.

Why is this so? The situation expresses the essence of alleged market driven solutions to global problems: individual consumer choices will solve collective problems with collective costs. If you want to have a

conscience, a concern for the collective, you have to pay for it. So, for example, in addition to those consumers willing to pay more for "fair trade" coffee (coffee production, of course, being another of Brazil's concerns) there are far more people unaware of the problem that the "fair trade" products address and/or more people who are unwilling to pay that little bit extra as a partial solution to a social justice issue. It is the same with ecology. Some people are just going to choose the cheaper hardwood flooring (or furniture or any forest product) over the bragging rights that they personally are not contributing to ecological harm. Individual consumer choices, in theory, could be the driver to solve the problems if everybody made the eco-ethically responsible choices. But in a world riven with inequality, desperation and media conditioned greed, it seems more than unlikely that everyone will. Further, the dystopia thesis would argue that even if consumers came together in some amazing unanimity of environmentalist ethos, environmental harm, while perhaps being significantly reduced, would, nonetheless, continue to take place.

Why is this so? Well, let's look at the Brazilian case of forestry. Let's look at the FSC more closely. In the first place, it is not a direct inspection agency itself. It does not employ agents in the field. Rather it certifies the certifiers, those who actually (or perhaps only allegedly) examine the practices of the forestry companies. The FSC does not have just one level of certification – ecologically sound practices or not. Rather, it has a plethora of different certifications and certifiers. In part this is because of the complexity and scale of its worldwide operations; in part this is because of a grindingly slow bureaucracy. But it is also because the logging companies themselves have a significant position upon the FSC board! It is not at all surprising that abuses occur.

It is interesting that a non-profit organization dedicated to ecological concerns such as the FSC has spawned another non-profit organization dedicated to watching and reporting on it! The organization FSC Watch alleges that clear-cutting and harvesting of old growth trees can occur even if a wood product is FSC certified. Their allegations are numerous and seem pretty well founded as well.[5] The existence of such watchdogs is a ray of hope in the dystopian gloom of probabilities. It works toward the stripping away many of the illusions generated by the many self-policing, niche market driven solutions to deep ecological problems. Notwithstanding such hopes, the dystopia thesis posits a level of contradiction and complexity to the issues such that knowledge dissemination,

5 For a US example see: *FSC Watch,* 2008.

and the failures of political will, have their own dystopia force of causality. The next section will examine this argument through the example of the Brazilian beef export industry.

KNOWLEDGE, DYSTOPIA AND BRAZILIAN BEEF EXPORT

"Where's the beef?"
Walter F. Mondale 1984 Democratic presidential nomination campaign slogan

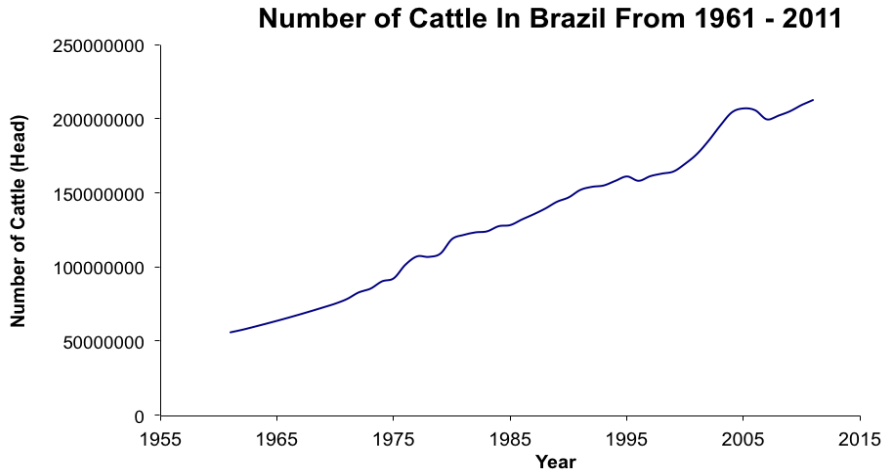
"It's the economy, stupid."
Former U.S. President Bill Clinton 1992 campaign slogan

Brazil was the world's largest beef producer and exporter until only recently being overtaken by the U.S (Rapoza, 2011). The United States' overtaking of Brazil in this economic sector was largely due to a weakened dollar; and the fact is, that Brazil has been the most significant producer and exporter of beef for quite some time. This, however, is not a very well-known fact to the environmentally concerned public, who understandably instead, focus their gaze upon deforestation because of logging. But Brazil's beef production and export sector not only has even more serious ecological consequences than does forestry but it illustrates very well one of the aspects of the dystopia thesis to do with knowledge, which we will look at in the latter part of this section.

Cattle produce CO2 and methane gas as natural animal functions. They thus contribute to the world's greenhouse gas emissions and global warming. But how much of a contribution do they make? The first and most obvious statement to make with respect to this, is that the more cattle that are raised, the greater is this contribution. A less obvious factor is that in contemporary livestock management the cattle are kept in relatively small areas proportional to their numbers; this leads to concentrated emissions of methane gas. These methane emissions, per mole, have a global warming potential of 3.7 times that of carbon dioxide (Lashof & Ahuja, 1992). Also contemporary practices frequently involve over-grazing with serious unintended consequences. Overgrazing leads to the hardening and erosion of the surface soil which not only makes the soil infertile and repellent of the precipitation that normally replenishes the groundwater, but it also releases the sequestered carbon into the atmosphere and destroys the soil's capability of absorbing

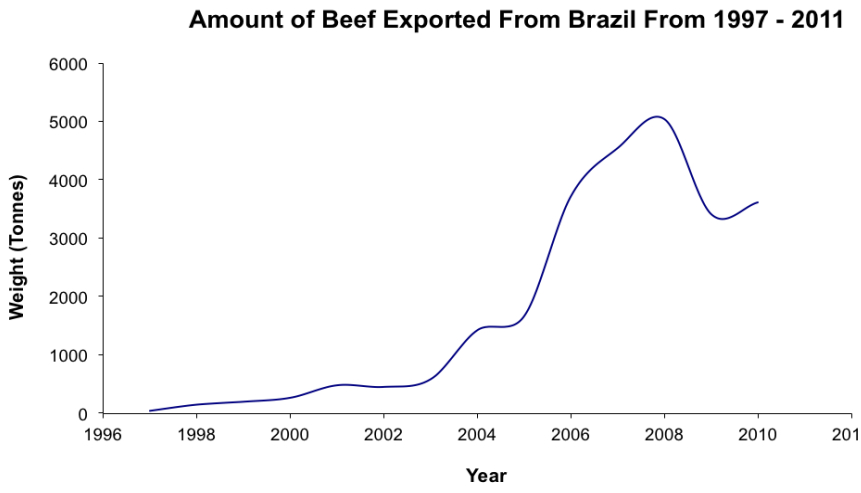
carbon. It is a rarely mentioned fact that soil is the biggest terrestrial reservoir and sequesterer of carbon. Soil organic carbon has a potential rate of sequestration of up to 3 billion tons of carbon per year (Fairlie, 2012, p.1).Finally, it must be observed that Brazil's cattle raising and beef export industry has expanded dramatically in recent years (see Figures 3 and 4 below) and thus is another significant Brazilian factor that is increasingly contributing to global climate change.

Figure 3



Source: FAO, 2013

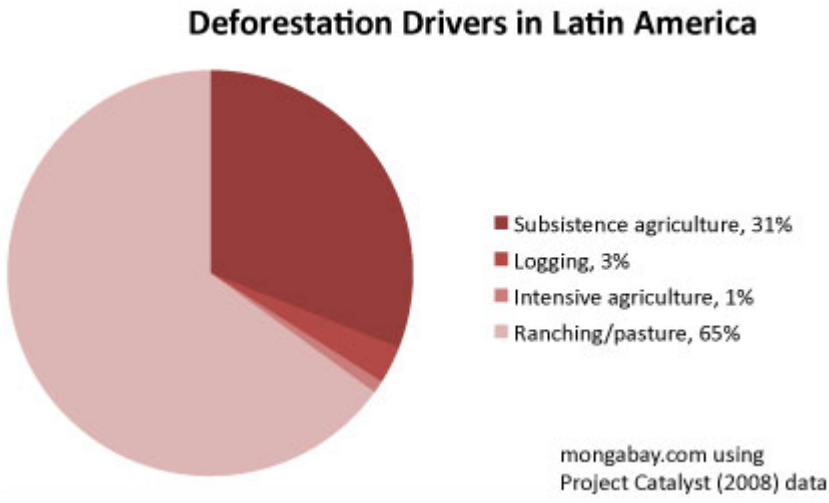
Figure 4



Source: FAO, 2013

Further as we can see from Figure 5 below, the expansion of ranching is the significant driver of deforestation.

Figure 5



Butler, R (2013) http://rainforests.mongbay.com/deforestation_drivers.html

The key economic concept pertaining to the North-South divide in terms of standards of living, development and ecology is that of production for export. Human beings are eating more beef than they used to; and perhaps that is true to some degree for Brazil as well. As Brazil develops, and its beef production is, of course, a part of that development, their standard of living increases and increased meat protein in people's diets usually goes along with that. But Brazilian cattle ranching and beef production, and most importantly, its relatively recent huge expansion, is export driven. One could say (though, of course, with some qualification) that the North-South divide with respect to Brazilian beef, is that it is produced in the South but consumed in the North. It is, thus, certainly not only Brazilians that benefit from Brazilian development. They are a part of a global economy of unequal exchange. And in beef production, just as in the forestry industry, there are serious ecological consequences, including the focus of this article, emissions and climate change.

A key component of the ecological situation is that forestry and logging combine in their environmental impact. Land is deforested to enable the expansion of cattle ranching. So, there is a double impact, so to speak; gas emissions from the increased numbers of cattle themselves, and from the deforestation that indirectly arises from the expansion of the beef production industry.

This is where the dystopia thesis's assertions about knowledge come in. The dystopia thesis argues that knowledge and production are dialectically interrelated with the obfuscation of knowledge production and the restriction of its dissemination with an accompaniment of confusion, mystification and failures of understanding. As said earlier, the label given by the dystopia thesis to the dialectical opposite of knowledge production is "structural mystification" (Potter, 2010b). The complexities of the relationships between knowledge production, knowledge consolidation, knowledge dissemination and the generation of mystification as are promulgated in this abstract theoretical articulation are, in part, illustrated concretely in the empirical Brazilian case. Omission of the effects of land use changes in estimates of life-cycle greenhouse gas (GHG) emissions can lead to serious underestimates. This is particularly true for cattle raising. But changes in land usage may or may not be included in estimates of so-called "carbon footprints." Carbon footprint is a term that the educated layperson interested in environmental matters is quite familiar with. But few are aware its calculation is not standardized and thus may be subject to both legitimate scientific disputation on the one

hand, and that more crassly motivated on the other (Wiedmann & Minx, 2007; East, 2008; Finkbeiner, 2009; Peters, 2010; Pandey et al., 2011).

Scientific misunderstandings, or arguable errors over methodologies, or more fundamental debates, are not very well intellectually appreciated by the public. The public very largely has the mistaken belief that science is principally about certainties; when, of course, checking and re-checking measurements, questioning methods of measurement and critical inquiry and debate are much more its hallmarks. But knowledges need consolidation amongst the scientific specialist community before they can be publicly consolidated as knowledges and harnessed to a political will on a related issue. By consolidation, we mean, generally accepted. For example, while there is scientific consensus about climate change generally and its anthropomorphic origins, public consensus about the issue is still far away. This is not only because of the media misrepresentation of the status of scientific debate and its over-representation of the climate change deniers, a condition that much has been written about even by journalists, but because of the legitimate debates of specialism's (climate change, as we know, encompasses many different issues in many different disciplinary specialism's) about details. This leaves the public somewhat confused, and ripe as it were, for misdirection, as this too is misrepresented in the media.

Thus, we have the Brazilian situation where land use changes driven by the economic imperatives of meat export may or may not have a critical indicator with respect to their effects upon climate change taken into account. But yet this indicator is crucial. Cederberg et al. (2011, p.1773) argue:

> "The carbon footprint of beef produced on newly deforested land is estimated at more than 700 kg CO2-equivalents per kg carcass weight if direct land use emissions are annualized over 20 years. This is orders of magnitude larger than the figure for beef production on established pasture on non-deforested land."

They further (ibid.) argue that:

> "While Brazilian beef exports have originated mainly from areas outside the LAR, i.e. from regions not subject to recent deforestation, we argue that increased production for export has been the key driver of the pasture expansion and deforestation in the LAR during the past decade

> and this should be reflected in the carbon footprint attributed to beef exports. We conclude that carbon footprint standards must include the more extended effects of land use changes to avoid giving misleading information to policy makers, retailers, and consumers."

But misleading information in this, as in many cases, is the norm rather than the exception. The reason for this is apparent if we consider the Brazilian situation elucidated above. It derives from an apparently reasonable compartmentalization of facts and empirical data. But holistic analysis is really required here (and, of course, in many similar situations). The production increase in beef for export has obviously been an economic driver in pasture expansion (not the only one, but the most important one in this context) and hence in deforestation. What is crucially being obscured by the lack of a holistic understanding is actually the dominant feature of causality with regard to cattle ranching and deforestation. The world geo-political economy is actually the causal force leading to the double negative environmental impact of Brazilian beef production and export, and of the developed world's consumption.

If one follows the logic of this case through, it seems to be the case that in the North-South debate concerning who should foot the bill for the trade-offs between development and environmental protection, the North, far from being generously indulgent by being willing to allow some compensation for Southern climate change mitigation, along with some latitude to Southern economic development, is actually wanting further Southern subsidy for their own rather glutinous consumption.

CONCLUSION

> "An alarmist is defined as a person who alarms others needlessly. Yelling "fire!" in a crowded theatre when there is no such fire is clearly alarmist. Pointing out an actual plume of smoke is not."
>
> *Anonymous*

Ambassador Pablo Salon, one of the Bolivian hosts of the 30,000-strong World People's Conference on Climate Change and the Rights of Mother Earth in Cochabamba, presented a six step path to move forward from the current climate talks deadlock (pwccc.wordpress.com, 2011):

1. Agreement on the size of the gap (12-14 gigatonnes of C02e)
2. Recognize that developed countries will need to take a larger share of the reduction.
3. Agree on parameters for sharing the burden, based on historical responsibility and capacity of the parties.
4. Have developed countries' emissions peak immediately.
5. Represent every countries' target in terms of gigatonnes, defined as reductions from domestic emission levels and without the use of 'offsets'.
6. Agreement on legal actions for parties that do not fulfill their obligations under the Kyoto Protocol (for a second commitment period) and under the Convention.

The dystopia thesis would be clearly understood by many who attended the Cochabamba conference. The six points outlined here by Solon show a clear way we can embrace a dystopian view, and come up with a meaningful political response. Something like these six steps is crucial for the welfare of the planet. Many people recognize this. But the steps have not been taken and show absolutely no signs that they are going to be.

The dystopia thesis is alarming in its degree of pessimism concerning humanity's future. It provides, among other things, a very long and varied global list of problems and future crises. It is not, however, the large number of such, or indeed, even the severity and seriousness of any single one of them, which is most alarming. In this regard, the focus of this article, global warming, must rank up there in contention for the top position of the most worrisome danger humanity is facing. No, what is most alarming is not the potential harm (our self-elimination as a species?) but rather the prognosis for possible avoidance. The worst outcomes, whether with respect to global warming or any of the other dystopian projections into the future, cannot be avoided without fundamental change to the world socio-economic political system.

Global warming is by definition a global problem. Its effects will ultimately be effects that are felt by everyone. However, they will arrive differentially. For example, many small island nations may well literally be under water before the populations of the developed world experience much more than 'weird' weather patterns, occasional mild inconvenience at home and the more frequent witnessing of multi-variable catastrophes afflicting others – hurricanes, floods, droughts, etc. – unless they happen to have the misfortune to be one of the others in question. Further, global

warming, while on one level can be understood as having global causation, on another, its causality is highly differentiated between parts of the world as well. The developed nations have and continue to have the greatest contribution to greenhouse gas emissions. There are a number of forests in the world, all of which are important. But as we emphasized in section two of this article, the Amazonian Rainforest has a particularly crucial role in maintaining the earth's climate equilibrium. Brazil's deforestation thus is far from simply being a Brazilian problem, and as we argued, cannot have an isolated Brazilian solution.

Both Brazil's population and its government have a degree of environmental awareness and concern. But however environmentally progressive a government Brazil elects in the future, it will not be sufficiently so, that it will produce, all on its own, the legislative and enforcement measures to effectively protect the Amazon. The "right to development" is not merely a discourse; it is a very real human need and driven by poverty and suffering as well as capitalist greed. And this is the truly alarming dystopian problem that we can see in Brazil's particular case, as well as globally. Brazil is situated in a global political economy that not only drives development but drives it in such a way so as to not address the problems of the poor and also to not address the problems of the environment. It is not the argument of this article that the predictions of the dystopia thesis are our inevitable future, just our probable future. No, we believe it is actually necessary for the resolution of our humanity's problems to (simply as a very first step) recognize not only their urgency but their broad fundamental structural causality.

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