Debt-for-Nature Swaps:
A Critical Approach

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I. Introduction

DNS involves an agreement between actors in a lending and borrowing country to reduce some of the borrowing country's debt in exchange for the support of a specific environmental project. In 1987, the first debt for nature swap in the world occurred between Bolivia and Conservation International. It involved the cancellation of $650,000 Bolivian foreign debt in exchange for $100,000 of local currency to be used towards protection of the Bolivian Beni Biosphere. In recent years, the number of private debt-for-nature swaps (DNS) in 3rd World countries has been increasing rapidly.

Debt-for-nature swaps have been described as a deal where everyone benefits: indebted countries receive debt relief and environmental conservation organizations receive funding for conservation projects. DNS is an important issue because it could potentially be a useful tool in development strategy, but do DNS agreements really benefit all of the parties involved? There is a considerable gap in the research on the impact these deals have on the people living in the communities in/around the impacted environmental areas. The majority of the research available to the public is largely in favor of DNS. At the same time, the information presented is often overly-simplistic. This paper argues that the impact and mechanisms of DNS are more complicated and require more detailed analysis before any conclusion should be reached about the potential benefits and use of the debt-for-nature swap.

This paper will examine the debt-for-nature swap debate, and from a political ecology perspective, explain the complexities of DNS.[1] Very few researchers have tried to evaluate DNS from a broader perspective by observing the effects of swaps at different

[1] Political ecology is a subfield of geography that pays special attention to ultimate and proximate causes within environmental-development contexts, examines the process of economic and social marginalization, and studies resource transfers within politicized environments.

levels (i.e. locally, nationally, and globally) while paying considerable attention to unequal power relations between and within First and Third world groups. Analyzing the mechanisms of DNS by using either cost-benefit analysis or persuasive "win-win" arguments without reflecting on the politicized environment in which the swaps are being made results in overly-simplistic evaluations of DNS that cannot provide policy makers with a model that fully reflects all available information. The field of political ecology is well suited to address the gains and losses incurred at different scales by development mechanisms like debt-for-nature swaps.

The paper begins by discussing the historical development of debt-for-nature swaps. It then moves on to explain the mechanics of the debt swap and how it works. Subsequently, arguments for and against debt-for-nature swaps will be presented followed by a section that attempts to juxtapose political ecology and sustainable development, with debt-for-nature swaps and how the debate has been framed. Two case studies, one of Madagascar in the late 1980s and the other of Ghana in the early 1990s will be briefly examined.[2] The paper will finish with some concluding thoughts about why DNS agreements could be a viable development option in the future.

II. Historical developments of Debt for Nature Swaps

The Rise of the Debt Crisis

The origins of the debt-for-nature swap lie in the genesis of the debt accumulation from the 1950's through 1970's. The oil shocks in the early 1970's more than doubled oil prices in a few months (Pearce & Adger, 1995) and sent the global economy spinning into recession. A select few countries, mostly oil rich OPEC countries in the Middle East,

[2] These countries were chosen because Sub-Saharan African countries have been studied less in regards to DNS than in Latin America (Walsh, 1987; Sun, 1988; Boza, 1993).

generated large budget surpluses as a result of the shocks. Many of these funds, or "petrodollars" as they are called, began to flow into European and American banks, which stimulated a lending boom. These banks from the global North were all too eager to lend out their new reserves and, at times, this led to irresponsible lending to needy developing countries in the global South.[3] Many of the investments made by ill-advised developing countries were not profitable and the subsequent revenues were not there to pay off the debt. The growing third world debt became difficult to manage in the face of rising U.S. interest rates and inflation and deteriorating terms of trade. Chart 1[4] below shows the rising debt of low and middle-income countries in millions of dollars between the years 1970-1990. Notice the sharp increase in total debt starting at the end of the 1970's and increasing throughout the 1980s.

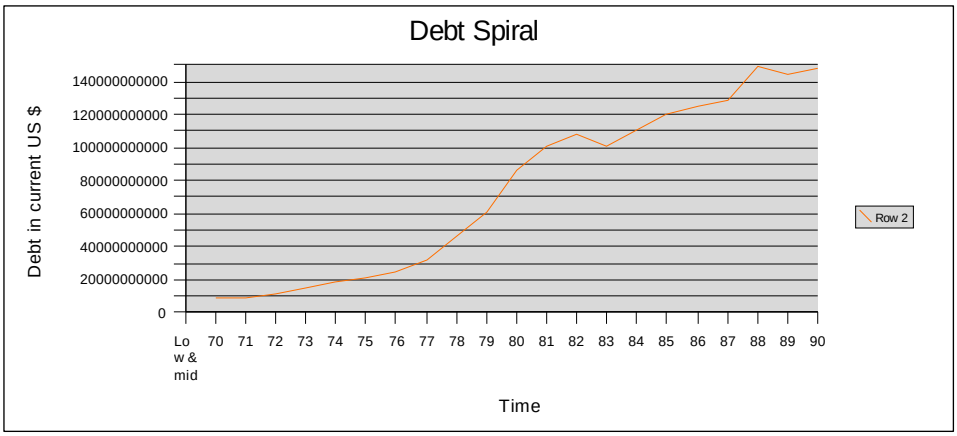


Chart 1

Growing debts in the Third World during the 1970s and 1980s also increased the portions of debt repayment that made up 3rd World government budgets. These

[3] Critics of the World Bank and IMF have also accused the U.S. of recommending large scale infrastructure and development projects that would put Third World countries into debt and make them more politically malleable.

[4] Source: The World Bank (http://0devdata.worldbank.org.clicnet4.clic.edu/dataonline/)

repayments removed scarce funds away from other need domestic investments in health, education, and the environment. When Mexico defaulted on its loan payments in 1982, it signaled to the world that many countries were in trouble with repaying their debts and several other countries (particularly in Latin America) defaulted shortly there after.

In response, many Sub-Saharan African and Latin American countries fell under the International Monetary Fund's (I.M.F.) structural adjustment programs (SAPs) to get back onto more stable economic growth paths. The SAPs promoted among other changes, fiscal responsibility via a balanced budget, high interest rates, open markets, and an export model in which increased agricultural production and cash crops were emphasized to generate revenue in 3rd World countries and in turn, reduce their external obligations to foreign creditors (Riddell, 1992). While these SAPs produced some benefits, many academics and policy makers are quick to point out that these programs caused economic hardships, violated national sovereignty, increased marginalization and inequality amongst local people, increased dependence on the global economy and susceptibility to volatile commodity prices, and increased significant pressure on the environment (Tabb, 2006; Bryant and Bailey, 1997). "In Sub-Saharan Africa during the 1980's, spending for health, education, and public services decreased by more than 40%" (Pearce & Adger, 1995: 53).

While SAPs increased agricultural production through increasing cash crops and tropical timber extraction in some countries, they increased the stress placed on farmer production, which had severe, negative environmental impact. However, the evidence of a strong correlation between structural adjustment programs and increased environmental degradation is mixed. For example, while the I.M.F. reduced 3rd World spending on

public services, the forgone money could have been used for capital-intensive projects that could have caused more harm to the environment[5].

While economic theory dictates that debt repayment is compatible with growth, the years following the debt crisis proved otherwise. Banks in the global North continued to loan to developing countries in the South who became more and more dependent on external funds to service previous debts. Some academics have referred to this as the "debt spiral" (Pearce & Adger, 1995).

The Arrival of the Debt-for-Nature Swap

With increasingly chaotic and unstable political and economic environments in the 3rd World, many people in the 1st World felt that there was a relationship between the environment and debt, while also acknowledging that most of the world's biological diversity is contained in the same countries that face the greatest financial burdens from foreign debt. With this relationship in mind and the existence of debt-for-equity swaps (in which debt is cancelled in exchange for equity in the business) and the United States' Brady Plan to rescue Latin America from its debt crises in the 1980s, the idea of the debt-for-nature swap was born. The introduction of debt-for-nature swaps fell in line with the growing worldwide rising interest in conservation in the 1980's (Hansen, 1989). Thomas E. Lovejoy, the executive Vice President of the World Wildlife Fund (WWF), is acknowledged as being the first person to propose the idea in 1984. DNS agreements, like their predecessors the debt-for-equity swaps, use the same model: a private sector actor, usually an international conservation organization, buys discounted debt (*to be discussed*

[5] In Thailand, for example, removing indirect irrigation subsidies helped reduce water logging and salinization but in Malawi and the Philippines, there was substantial evidence for resource overexploitation and increased emissions from SAPs (Pearce & Adger, 1995).

in section III) and in exchange they receive environmental investments in the indebted country.

The first swap that happened was in 1987 between the Bolivian government and Conservation International (CI). In the agreement, the government, collaborating with domestic non-governmental organizations, protected 4 million acres of forest and grassland in the Beni Biosphere Reserve, located in the Amazonian rainforest basin, with maximum legal protection. The swap also provide for the creation of three adjacent protected areas. The deal took eight months to complete, in part, because of the lack of open participation by organizations in Bolivia and some misplaced perceptions about DNS and how it would work. For example, many Bolivians originally believed that land from Bolivia was being transferred to Conservation International[6]. Another important note to make is although Bolivian government could have bought back its own debt on the secondary market, the money would not have stayed within the country (for environmental projects) without the DNS.

Debt-for-Nature swaps gained momentum and support in the public, especially through the media, when President George Bush (Sr.) included DNS in his "Enterprise for the Americas" initiative. Furthermore, the address was given just as the environmental agenda was receiving growing attention in the development realm. The growing perceived benefits of carbon dioxide reduction, recent advances in biochemistry (increased ability to measure forest gains/losses for example), better information, and increasing attention to biodiversity and green consumption increased the benefit of environmental conservation and the attractiveness of these debt-for-nature deals (Kull, 1996).

[6] To date, there have been no land transfers in any debt-for-nature deals.

Several countries have now participated in at least one debt-for-nature swap. These countries include: Madagascar, Zambia, Bolivia, Costa Rica, the Dominican Republic, Poland, Nigeria, the Philippines, Brazil, Panama, and Cameroon. Three international conservation organizations, all of which are based in the U.S., have been the most active in orchestrating these swaps: Conservation International (CI), The Nature Conservancy (TNC), and the World Wildlife Fund (WWF). Measured by either the face value of the debt or by the amount of funds to the conservation organizations, Costa Rica, Ecuador, the Philippines, and Madagascar, have been the countries most heavily involved (Deacon and Murphy, 1997).

III. The Mechanics of a Debt-for-Nature Swap

While most of the debt-for-nature swaps that have been conducted up to the present have been private swaps that typically involve 3 parties (an international conservation organization, a domestic conservation organization (C.O.), and a 3rd world country government), a few public swaps between 1st and 3rd world governments have also been carried out. Because most of the swaps have been private, this paper focuses primarily on these particular swaps.

The table below explains the debt-for-nature swap in step-by-step:

Step	***Details***
1. C.O.s want to protect the environment and see an added benefit of buying discounted debt on the secondary market.	The C.O. draws a plan and approaches governmental organizations to reach an agreement on the conservation program.
2. The C.O. verifies that the amount of debt relief will be sufficient for the envisioned projects.	

Step	***Details***
3. The debtor country's central bank and ministries of finance and environment must then approve of the deal.	The central bank converts the external debt to local currency.
4. Specific terms of the swap are established and the purchase price and redemption rate (percent of face value redeemed in local currency) of the debt comes from the secondary market price for debt[7].	The debt relief through the swaps is usually small in comparison to the overall external debt of a country. However, the funds for conservation may be much larger than what the host country had previously been spending in debt payments. For example, "in Costa Rica, interest from DNS is several times that country's national budget" (Deacon and Murphy, 1997). *See more notes below*
5. The debt process is carried out through the central bank of the indebted country. Specifically, the host country places the converted local currency bonds into an environmental trust fund where interest can be earned to fund conservation projects until the bond matures.	The fact that debt in secondary markets is bought at usually a small fraction of its face value indicates that commercial banks do not really expect to get their money back. The debt-for-nature deal is contingent upon the bank's willingness to sell the debts back at less than full value because they believe that the developing countries would otherwise not pay off their debts. However, "without tax deductions and a regulatory environment, there is little reason, except good publicity, for commercial banks to donate their debt to environmental groups" (Orchiolini, 1990).
6. The conservation projects are implemented.	These could include: environmental conservation, natural resource management, designation and management of protected areas, park personnel training, and environmental education programs and activities. Debt-for-nature swaps usually involve some form of land conservation, but conservation is not required as part of the agreement.
Summary: The average purchase price of	<u>Note on debt relief (step 4)</u>: It is important

[7] The secondary market for debt arose during the debt crisis that became evident in 1982 when Mexico defaulted on its loan payments and the U.S.'s 'Brady Plan' created the secondary market to reduce Latin American debt. For example, in 1991, $1 of debt in Columbia could be bought at roughly 67 cents in the secondary market, 47 cents in the Philippines, 46.75 cents in Morocco, 26.625 cents in Brazil, 6 cents in the Ivory Coast, and 5.5 cents in Peru where debt repayment was least expected by banks (Mahoney, 1992).

Step	***Details***
the developing country's external debt by the C.O. is 26% of the debt's face value. In nominal terms, $95.1 million of face value has been retired and $78.7 million has been put into conservation trust funds. *These numbers are current as of 1997. Source: Deacon T., Robert; Murphy, Paul. "The Structure of an Environmental Transaction: The Debt-for-Nature Swap." Land Economics Vol. 73, No.1. February, 1997. pp. 1-24.*	to note that after the debt is bought, the discount rate on the debt changes because the ability of a country to repay its new debt has now changed. Furthermore, for banks that do not sell the country's debt, the value of what they hold has now gone up on the secondary market because expectations of the debtor nation have now increased.

IV. The Debt-for-Nature Swap Debate

Arguments for DNS

Debt-for-nature swaps have been described as a deal in which everyone benefits. This idea originates from the concept that donor conservation organizations support DNS because it increases funds for nature and conservation Governments support DNS because it helps them manage their foreign debt, while banks develop a good reputation as well as receive some loan repayments they might not have otherwise (Resor, 2006). While these arguments may seem too simplistic, as will be explained later, the "win-win" situation claim can be very persuasive.

Proponents of DNS argue that DNS provides a long-term source of funding for conservation programs. In Ecuador, the budget for park and research projects doubled after two DNS agreements in 1987 and 1989. The support for a long-lasting impact of DNS also indicates that DNS may create strategic partnerships that offers new possibilities for $1^{st}/3^{rd}$ World networking (ability to raise funds in the future) and environmental conservation. This is important because environmental goods like biodiversity have characteristics of externalities and global public goods because

environmental impacts can very often be transnational; meaning some of the damage to environment caused by one country's production is felt outside of where it is done. This supports the need for a collective response.

While the reduction in debt is small, the fact that any debt is being retired is beneficial for the host country's government. Costa Rica, one of the leading participants in DNS, 5% of their external debt has been reduced through these agreements (Thapa, 2000). By protecting their natural environment to the extent they have, Costa Rica has created its own comparative advantage in ecotourism.

Orchiolini (1990) argues that international conservation organizations benefit the most from DNS because of the discounted rate on the debt that they are able to buy on the secondary market. In addition, the environmental groups argue that when poor countries improve their debt circumstances they increase their future economic potential, and become better clients for banks in the long run.

Resor (2006) supports the long-term results of promoting the establishment of DNS in the policy world to attract more attention to global conservation efforts. The most commonly cited example of this, as noted above, is Costa Rica, which has one of the most ambitious conservation programs in Central America and has used this process to create their own special identity. This type of unintended benefit generated by DNS is known as "additionality," which may increase or replace conservation expenditures in country's which participate in DNS. Increasing eco-tourism and "special interest tourism" through DNS also has a lot of potential to bring in future profits in developing countries, especially to remote regions within countries. On the local scale, many people will benefit from increased employment through nature-based tourism (a few examples,

park workers, guides, bus drivers, handcrafters and artists, airport workers, waiters, hotel managers). While cashing in on the growing public support for 3rd World environmental conservation is one of the main reasons proponents of DNS suggest it is a "win-win" situation, there are two more important nontraditional arguments in support of DNS.

Debt-for-nature swaps shift power away from governments towards domestic conservation organizations. Many political ecologists (Giordano, 2003; Sneddon, 2002) argue that the dual position of the government as simultaneous protector of natural resources and agent of growth/development leads to inherent contradiction in policy choices that the government must make. While there will often be trade offs between the government growth policy and conservation organizations, the latter structure has a more narrowly defined purpose and does not face the same inherent contradiction as the former.

Opponents of DNS claim that political and economic landscapes are unstable in many developing countries and this could cause DNS to fail. However, Resor (2006) argues that the difficulty of long-term collaboration prevents multiple deals from occurring even without changing political and economic landscapes. On the other hand, if borrowing countries are feeling pressured in a politically unstable environment, they may not be able to reject a DNS agreement even if the potential benefit to the country is very little[8] (Katzman and Cale, 1990). This critique allows us now to consider the arguments of DNS opponents.

Arguments against DNS

Many political ecologists often refer to the environment as being highly politicized; that is, control over the environment often reflects a power struggle between

[8] Very little evidence has shown that this type of reward system has encouraged environmental degradation.

different competing interest groups and the resulting outcomes are seen in different myopic narratives concerning the environment. The location and implementation of a DNS is no exception when it comes to a politicized environment. Debates about DNS often include issues of national sovereignty/green imperialism, political and social order, absences of local participation in environmental conservation, and class structure/unequal power relations. The following section discusses some common debates concerning these structural as well as practical problems that emerge in the highly politicized environment in which DNS deals take place.

Some critics of DNS suggest that the debts in many 3rd World countries are so large that these buyback schemes are of very little value (Occhiolini, 1990; Pierce & Adger, 1995; Mahoney, 1992). While this argument does not imply that DNS should not be implemented, it serves to raise questions about the validity of the "win-win" hypothesis by showing that one of the gains from DNS may not actually exist. By 1992, 17 countries had signed DNS agreements and while donors spent $16 million to buy back $100 million in debts, the nominal reduction barely touched these country's debt burdens. For example, when Bolivia spent $34 million to buy back $308 million in bonds in 1988, the price of the remaining bonds rose from 6 cents on the dollar to 11 cents on the dollar. As a result, the real value of the outstanding debt declined from $40.2 million dollars ($670 million at 8 cents on the dollar) to $39.8 million (362 million at 11 cents on the dollar) (Pierce and Adger, 1995, 54). In some cases, the expected payments have actually increased in debt-for-nature swaps. It is for this reason that Mahoney (1992) argues that it is the banks in the global North that mainly benefit from DNS. Although nominal values of debts may fall significantly in 3rd world countries which participate in DNS

agreements, real debt value may not fall very much at all because a country's expected payments rises as a result of the decreasing discount on its debt in the secondary market. In the long-term, this debt relief does not increase the ability for countries in the global South of getting future loans any easier (Mahoney, 1992). While it may be hard to argue the numbers that indicate that the face-value of debt is not falling in many countries, issues of conditionality on these loans bring up more complex arguments.

While the conditionality of debt-for-nature swaps may not compare to that of structural adjustment programs or other programs associated with debt relief, some DNS deals must be reviewed by multilateral financial organizations before they are approved. For example, in some cases, the host countries must be actively involved in making deals with their big creditors, in particular, the World Bank and IMF. In other cases, the host countries must open their borders to foreign investors on reasonable terms or restrict development in certain protected area in the debtor country (Passell, 1991; Orchiolini, 1990). This conditionality, in part, is imposed because of the fear of a lack of financial expertise in the swaps that could lead to mismanagement of conservation funds. However, this conditionality may be in danger of breaching national sovereignty. DNS agreements do not directly challenge issues of national sovereignty because land is not purchased by foreign players that might increase negative popular reaction to DNS (Deacon and Murphy, 1997). Instead, questions of national sovereignty and green imperialism have arisen in reference to DNS mainly because economic policies in general, and the ones proposed in DNS, are not neutral[9] (Riddell, 1992). The argument is that commercial banks in the Global North control the resources and set the terms while

[9] Green imperialism refers to the forceful imposition of western environmental views on developing countries.

the global South are rewarded by the North for doing what may not be in the best interest of the locals. Mahoney (1992) argues similarly that if 1st World environmental NGOs give money to 1st World commercial banks and 3rd World countries have simply given money to themselves, there has been no transfer from North to South. For those who believe that DNS violates national sovereignty, the agreements represent a movement co-opted by the financial ethic of the global North (Mahoney, 1992).

One practical problem that environmentalists worry about (for example, Deacon & Murphy, 1997) is the degree of environmental protection that is actually achieved in these agreements. Mahoney (1992) argues, "unfortunately, calling an expanse of natural, and possibly threatened, habitat a park by drawing a line around it on a map and issuing uniforms to a few rangers give it no more protection than it had before" (100). However, when C.O.s draw up debt-for-nature swap agreements, they often identify and attempt to improve these so called "paper parks," or parks that are solely parks because some one says so.

Only a few researchers have commented at any length on the role and impact of participation of local people in the debt-for-nature swap deals. Even fewer of these authors have pointed out that DNS may work to the detriment of local residents; however, this argument is an important one and deserves some attention. Some authors (Hansen, 1989) have specified that indigenous people could enjoy the immediate benefits of development, but they have not specified exactly how they will enjoy these benefits. Bryant and Bailey, two prominent political ecologists, claim that "many of these debt-for-nature swaps are instigated without due regard for the livelihood needs of the populations living in the designated areas" (1997, 141). Indeed, since these schemes usually involve a

policy of complete protection of an area, the local residents whose livelihoods are dependent on the exploitation of natural resources contained within the protected areas may be severely affected. The resulting potential for illegal activity (i.e. illegal cutting) by farmers and cultivators who do not have access to resources they traditionally used is high. Enforcement officers may encounter a growing resistance amongst local people resulting in direct conflict. If it is true that indigenous people are being marginalized from their own land, then 3rd world governments are being urged to do something that is not in the interest of their own local people. This is a structural problem that may be inherent with these debt-for-nature swaps programs.

One critique of DNS by Rhona Mahoney (1992), a feminist geographer, is that it commercializes life in the 3rd World by making people's homes part of a bank transaction. It merchandises resources by taking away from local heritage. This reaffirms the creditor's (the global North) political and economic domination over the debtors (the global South). Skeptical DNS environmentalists like Mahoney believe that the conservation projects are designed in ways in which locals will not benefit because the projects are intended for research and exploitative use, rather than local use.

Another issue commonly brought up by opponents of debt-for-nature swaps is the dependency that these deals create. This includes dependency on commercial banks in the global North (who do not have much incentive to make these deals in the first place), dependency on grants from foreign international conservation organizations, and/or dependency on the existence of private domestic and development organizations to implement the conservation programs in the host countries. There is a risk that by decreasing debt (even though the relief is small) the risk of defaulting on future loan

repayments may increase because 3rd World countries may feel like foreign agents will help them the next time. In economics, this is known as creating a moral hazard, which leads to poor market outcomes.[10] One Ecuadorian official once reported, "It is absurd to pay the debt…In a few years there will not even be any point in negotiating on the debt and swaps will become meaningless" (Greener, 1991: 168). By paying off the debt, DNS may be legitimizing debts that many 3rd World countries see as illegitimately acquired.

One last issue is the possibility of DNS agreements increasing inflation. By pouring more money in to smaller 3rd World economies, currencies may become less valuable because of the influx of foreign currency. This problem may be avoided by buying smaller amounts of debt and using interest baring bonds rather than liquid currencies (Occhiolini, 1990).

V. Framing the Debate

The idea of debt-for-natures swaps is rooted in the same paradigm as sustainable development. Some political ecologists (*See Lele , 1991*) make a point to decouple the ideas of economic development and environmental conservation. One common argument is that the use of sustainable development rhetoric leads to weaknesses in policy that is vague concerning the implementation of sustainable development. The second argument is that sustainable development focuses on reducing long-term dependency and that is what debt-for-nature swaps aim for as well. Yet, as noted above, opponents of DNS argue that reliance on First World commercial banks creates more dependency. At the same time, debt itself is an important source of dependency. The third argument is that power

[10] By reducing a country's debt through a debt-for-nature agreement, a country may incur more debt because they believe that their past debt is excusable and that they will not suffer from future irresponsible financial activities.

structures are often ignored under "sustainable development partnerships." The fourth argument and one to which this essay now turns its attention proposes a positive correlation between poverty and environmental degradation. In the context of debt-for-nature swaps, debt is discussed instead of poverty.

Many experts (Thapa, 2000) agree that debt is correlated with ecological problems, but the relationship is hard to prove. For example, Kahn and McDonald (1995) find a positive relationship between debt and deforestation, but do not suggest correlations within alternative environmental contexts. Their findings suggest that a 10% reduction in the total or relative debt service may reduce deforestation by 1.7 to 3.1%. Alternatively, a one billion dollar debt reduction could lead to between 51-930 kilometer squared decrease in deforestation depending on the country and rainforest (122). Pressure from loan repayments can increase pollution, harm the poor, and increase the depletion of a country's natural resources. Furthermore, the environmental Kuznets curve (named after 1971 noble prize winning Simon Kuznets) demonstrates a positive relationship between affluent countries and environmental conservation[11]. Following this logic, countries that have more debt decrease their fiscal spending on the environment, as they eventually grow, however, more money will be spent on the environment. Although, if poor countries were already not spending much money on the environment then the increased debt would not have had much effect on the environmental funds anyways. Clearly, high debt can cause unemployment and people may seek jobs depleting

[11]"A Kuznets curve is a graph with measures of increased economic development (presumed to correlate with time) on the horizontal axis, and measures of income inequality on the vertical axis hypothesized by Kuznets (1955) to have an inverted-U-shape. That is, Kuznets made the proposition when an economy is primarily agricultural it has a low level of income inequality, that during early industrialization income inequality increases over time, then at some critical point it starts to decrease over time" (http://economics.about.com/cs/economicsglossary/g/kuznets_curve.htm).

resources (fishing, cutting, etc.). However, political ecologists are quick to point out that there is much evidence against the feedback theory in which poverty increases environmental degradation which in turn increases poverty and perpetuates the cycle (Dasgupta, 1995; Gray and Moseley, 1995). There have been several instances in which the poor, who often are most aware of changes in the environment, have taken measures to protect the environment in which they live. “Moreover, a country repaying debt might not be able to afford high standards for pollution control but it also might be unable to afford goods whose production damages the environment” (Pierce & Adger, 1995, 93). In other wards, a country with less debt could produce more, which could potentially harm the environment more.

With such a complex relationship, it is hard to tell how debt-for-nature deals impact the environment. Pierce and Adger (1995) are skeptical: “Given that the connection between debt repayment and environmental degradation is tenuous at best, attempting to improve the environment by debt forgiveness would probably be futile” (54). However, in determining how much debt reduction could actually help the environment, it probably depends more on the debt-environmental degradation correlation in the specific country.

Different individuals in diverse countries value the environment each in their own way. Debt-for-nature swaps, like sustainable development, sometimes do not articulate between these esoteric environmental landscapes. For some people who value the environment for more intrinsic purposes, DNS might take attention away from more direct conservation efforts. For other people who value the environment differently, participation in DNS may actually lead to a loss if the spending on the environmental

trust fund exceeds the amount of debt relief. Some people believe that there are other projects, for instance malaria eradication or literacy that deserve more attention outside of the environmental realm. They may wonder whether there should be debt relief to improve health conditions among the poor or other critical needs. This argument is perfectly reasonable in the context of a poor developing country with scarce resources that have many critical unmet needs. Environmental support may end up distorting national priorities. Furthermore, a forgiven external debt in place of a new liability at home created by the DNS agreement may also be seen as a form of green imperialism. However, this author believes that countries have some environmental preference and therefore have some incentive, if not for moral reasons, to value environmental conservation among other items on the national agenda.

V. Case Studies

The argument for debt relief in Sub-Saharan Africa (SSA) is strong. In Madagascar, debt service in 1984 was $80.9 million (or about 32% of government spending) of which only $40.5 million was paid (about 16% of government spending) (World Development Indicators database). While political ecologists will often point out that these debts are not just and were not created under fair conditions, the case in point is that several SSA countries like Madagascar were vulnerable to Western debt relief programs like DNS.

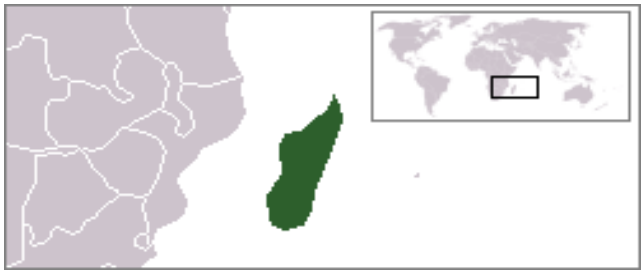
Traditional conservation in most Sub-Saharan African countries during the colonial era consisted of game parks set aside for the pleasure of white colonists. During the 1980s and 1990's, indigenous sustainable use of the environment became more taboo and was often considered "backward" (Riddell, 1992). As Sub-Saharan African countries

felt growing presences of capitalism and globalization during this time, income and social inequality grew while uneven power relations allowed the hands of a few elites to take control over the majority of the country's resources. In many SSA countries today, the environmental conservation programs and tourism industries highly resemble previous colonial structures in terms of who ultimately receives the most benefits (Brown, 1998).

Since the 1980's, more funding and attention has been given towards preserving "natural" African habitats and conservation of indigenous flora/fauna. Attention to the environment grew in Africa during this time as massive debts continued to accumulate. It was not before DNS arrived Africa in Madagascar in 1989. While there is not much literature on the African case studies described in this section, they provide some insight into the effects of DNS on a local level.

Madagascar

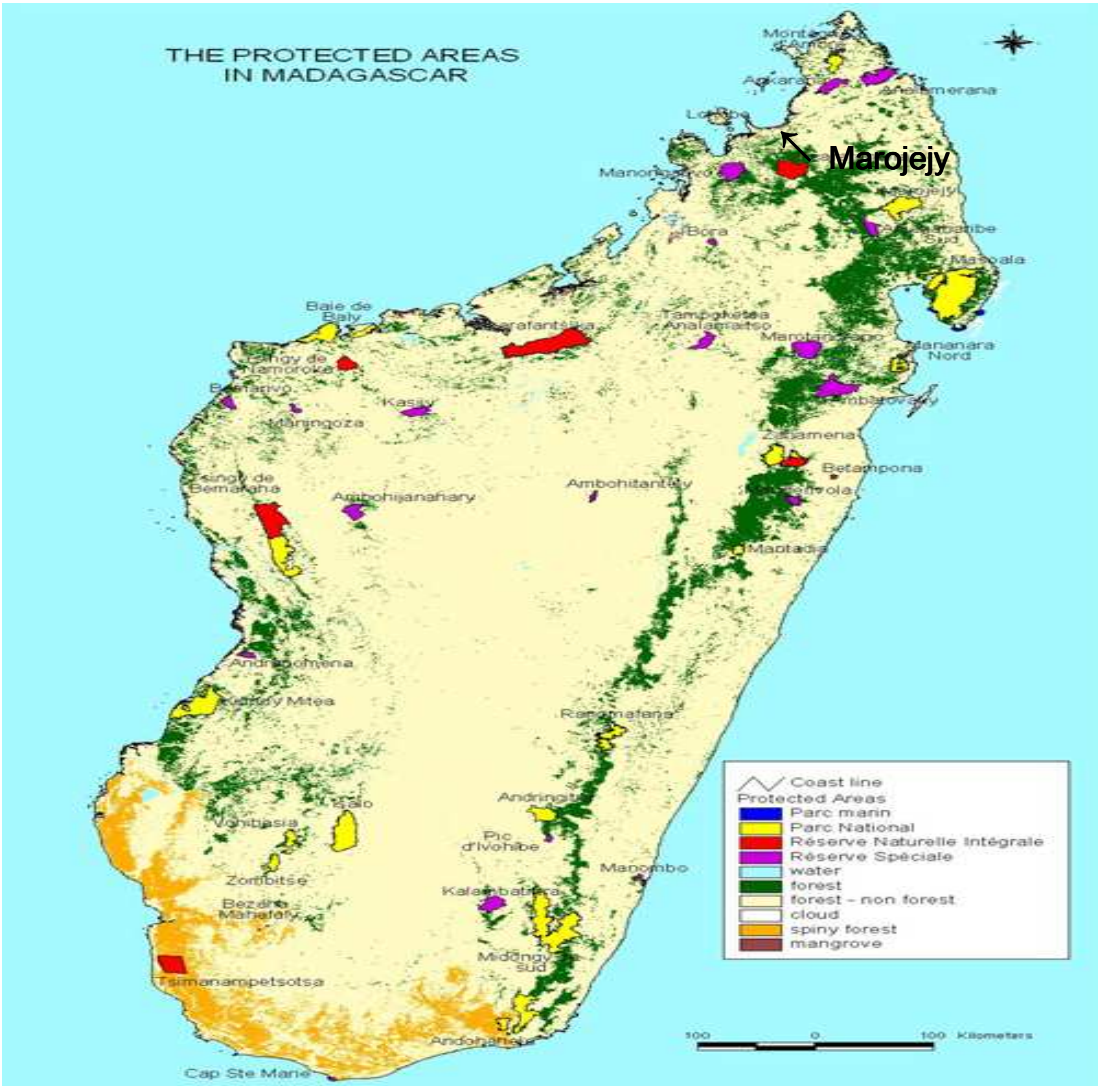
The first DNS to take place in Africa was also the first deal in which the United States Agency for International Development (USAID) facilitated and paid substantial sums to commercial banks. The Malagasy government donated over $3 million to USAID and the Malagasy Department of Water and Forests. The money from the debt relief in Madagascar was used to train, equip, and support over 400 park rangers, make new parks, promote environmental education programs, support rural development projects, and make satellite and aerial surveys of the country in an attempt to reduce illegal activity on government land.



The parks affected in the deal included Marojejy, Andringitra, Zahamena, Lukobe, Bemaraha, and the Manongarivo Special Reserve. Marojejy and Andringitra were the two main parks affected. Marojejy contains over 600,000 hectares of mountainous terrain and rainforests and is located on the Northern tip of the island (Mahoney, 1992).

Source for map above: http://en.wikipedia.org/wiki/Madagascar

Source for map below: http://en.wikipedia.org/wiki/National_parks_of_Madagascar



Andringitra ↗

There is an incredible amount of biological diversity in Madagascar, and Marojejy especially; with over 2,000 plant species and 10 lemur species (lemurs are only found in Madagascar). There is also a serious history of deforestation in the area (Kull, 1996). Andringitra contains 31,000 hectares of rainforest/savanna and mountainous terrain and is located in the southern end of the Central Highlands. While Andringitra is generally less threatened than Marojejy, illegal activity and pasture burning has been a constant problem.

The activities in these two parks strengthened enforcement and helped promote a variety of agricultural development projects. However, the Madagascar swap did not result in the success that policy makers had envisioned. As is often the problem, not enough attention was given to the enforcement of the swap. Landless peasants encroached on small land reserves and growing disputes between enforcement officers and locals resulted in conflict just as it had in the Bolivian-CI deal. In addition, Christian Kull (1996), a political ecologist that has devoted much of his work to studying Malagasy conservation, has noted that the public awareness projects implemented in the targeted areas added more on the government's plate, which was already over burdened with other structural issues.

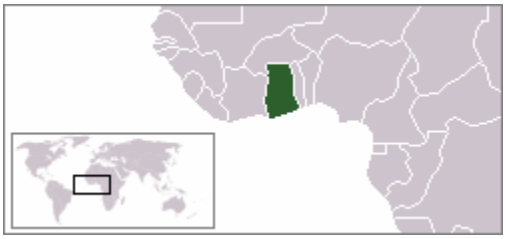
There may not have been enough attention given to the locals in the Madagascar deal, especially given the strong historical connection between the locals and the land in a world renowned biological rich country (Kull, 1996). It was not clear in any of the literature what local people gained from the swap. The national government benefited some from the debt reduction and the improvements in the Marojejy and Andringitra park regions. Increased conservation efforts may have raised awareness of the responsibility associated with conservation and resulted in future benefits. However, the overall evidence is only slightly positive that any progress was made in environmental conservation; especially given the amount of money in the deal.

The fact that the swap in Madagascar did not go as planned is problematic because there were no enforcement mechanisms of property rights. This is an important inherent problem with DNS. Agreements do not give enough credibility or attention to the possibility of failure (Hrynik, 1990). Private swaps must rely on reputation and repeat dealings for enforcement rather than strict contractual, binding legal terms. If conservation projects fail, that is, if local C.O.s do not implement the projects efficiently with the money allocated, international C.O.s will not work there any more because of a loss of confidence in the host country.[12] Meanwhile, the international C.O. is very limited in its options: it can generate negative publicity, it can ask the U.S. government for support (but support is not likely to be given because it is not in the interest of the U.S. government to do so), or they can sue the debtor country. Similar to the U.S. government, host country governments do not have much interest in favoring international C.O.s in favor of local NGOs or their own government policies. In addition, host country

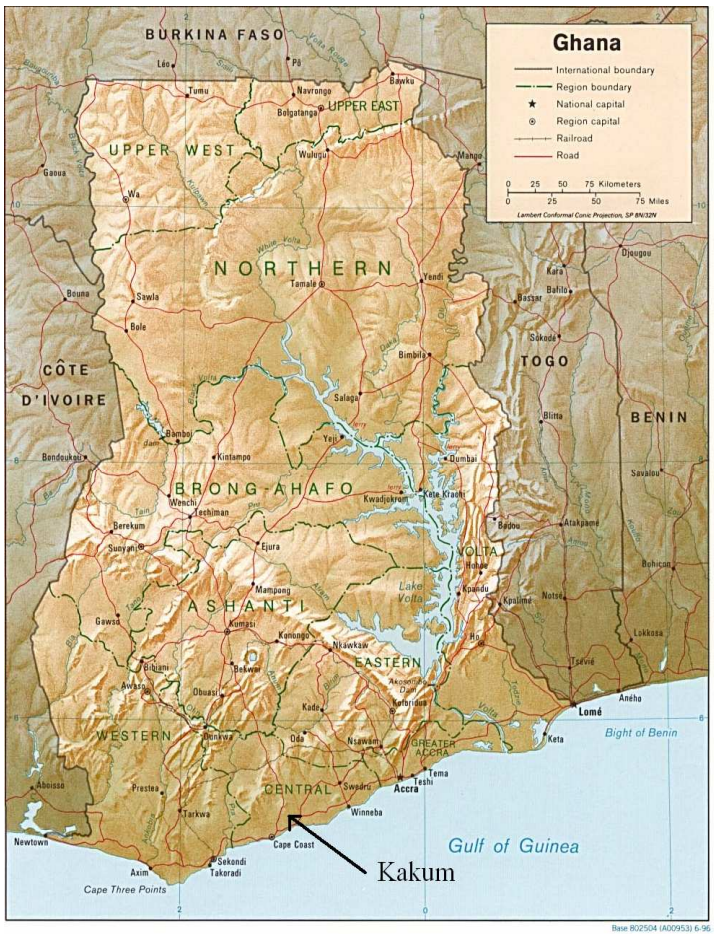
[12] Failure might arise, for example, because of a natural disaster, economic crisis, political instability, corrupt management.

governments may not sign on to DNS agreements where the terms of the agreement are stricter because of the increased the risk for the host government to achieve their part of the deal.

Ghana



In 1991, Ghana agreed to a $1 million debt swap with three International forces: the Smithsonian Institution (SI), Conservation International (CI), and USAID. The debt was bought at a discounted rate of $250,000, and $1 million in conservation funds were established in local currency of the Ghanaian Central Bank. The conservation project was located in the Central Region of Ghana, 160 kilometers west of Accra.



Source for maps above and below:

http://en.wikipedia.org/wiki/Image:LocationGhana.png

Part of The project, in Kakum, was designed to protect the trees, which are some of the tallest in the world, and the other part aimed at protecting the Brenu-Beach area where there was numerous opportunities for water-recreation activities. CI, SI, and USAID identified resources in Kakum and the Brenu-Beach area that would be compatible with tourism activities. Interpretative trails were constructed and canopy-viewing platforms were established. The Smithsonian Institution provided interpretative training services, marketing services, and hospitality services to local NGOs. According to Brown (1998), community involvement was an important part of the planning process. Special zones were designed for specific uses: agricultural, tourism, etc. Locals were

given the choice of what they wanted to do in response to the changing ownership of their land. Most of the agricultural products made in the region were sold to the tourism industry, which increased the economic benefits for the locals.

Although CI prevented poaching in the Kakum area by developing other income producing opportunities for village residents in the vicinity of the park (for example, training as local guides), it is not clear whether this outweighed the costs of increasing environmental impact from the growing tourism industry in Ghana's Central Region. Adventure tourism like scuba diving, hiking, wildlife photography, and camping can bring in a lot of revenue with potentially low environmental impacts because those who participate may be more environmentally conscious (Brown 1998). Many countries have used DNS as Ghana did to generate protected area tourism sites profiting on the growing popularity in the nature based tourism industry (Thapa, 2000). Another benefit was that the farmers in rural areas located in the Central Region were able to access irrigation systems which boosted agricultural production and decreased the hotel industry's need to import food for the tourists. DNS also provided Ghana with new sources of foreign direct investment and a boom in employment in the Central Region (although this benefit is debatable as FDI has caused as much harm in some places as it has helped). Small scale enterprises in the surrounding reserves benefited local people who were encouraged to produce artisanal work (although again, this benefit is debatable).

In Madagascar and Ghana, the effects of DNS on the local scale were quite different. Some farmers and environmental managers benefited from employment from the debt-for-nature swaps while others found themselves landless. In Madagascar, there was a lack of tangible benefits for many of the indigenous people. In both cases, it seems

that no one has addressed the question of whether or not the locals care about biodiversity. The answer to this question is largely unavailable to a 1st World non-academic audience, who do not hear the voices of indigenous peoples in the 3rd World. The other question that remains is whether the gains achieved from DNS deals in Madagascar and Ghana provided substantial long term benefits or merely quick fix solutions to deeper problems concerning poverty and sustaining livelihoods on the local scale.

VI. Conclusion

Today, debt-for-nature deals not only continue to take place throughout the world; especially, in Latin America, but their popularity seems to be growing as judged by the number of agreements that have been made recently and the number of agreements currently in the making: On October 2, 2006, the U.S. and Guatemala agreed on a $24 million debt-for-nature deal while three days later, the U.S. and Botswana agreed on an $8.3 million deal[13]. On June 23, 2006, France and Cameroon agreed on a $25 million plan to protect parts of the Congo River Basin. Recent deals in Jamaica, Panama, and Peru have also been reached. While the popularity of DNS continues to grow, there is no general consensus on what the ultimate impact of these projects will be and who will be the beneficiaries and who will be the losers and the change in each party's position will be viewed.

The use of debt-for-nature swaps is a system based on market incentives. While environmental economics can provide policy makers with tools to fight environmental degradation, they must also realize that these tools are limited in providing (or in

[13] This deal was part of an 11 country partner deal with the U.S. called the Tropical Forest Conservation Act (TFCA).

addressing these power relationships) compensation for those who lose and for internalizing the resulting externalities[14]. Putting a value on the environment in addition to examining human-environmental interactions is difficult. Overly simplistic analyses of the impact that DNS has had in its host countries are problematic because the impact and mechanisms of DNS are not easy to quantify and are subject to competing interests. This paper has revealed the complexities of the debt-for-nature swap, while stressing the need for policy makers to look more carefully at many issues that are hidden from easy viewing by people removed from the local scene. Without giving proper attention to local concerns, issues of dependency and national sovereignty, amongst other issues, we cannot understand the full impact of DNS. Furthermore, much of what we know comes from the general media and environmental news coverage of DNS, there is a need for more careful and broad-based academic research.

I support some use of debt-for-nature swaps because the alternative of not making the agreements may not be better. I found no clear evidence that DNS does not help the local populations, nor did I find that it hurt them on a consistent basis. DNS encourages international cooperation, which in itself is helpful, and if DNS agreements continue to evolve, become more innovative and become more sensitive to local concerns, all parties may some day benefit. For this to occur, researchers must find clear answers to some of the following questions:

*How can we make sure that DNS result in more than “paper parks?”

[14] An externality is a cost that is borne by those not directly involved in the activity creating the externality (Katzman and al., 1990)

*Can these deals be structured in a way that guarantees the legitimate participation of the local people whose land is being impacted?

*Will excusing past debts decrease the likelihood that Third World countries will pay back their loans?

* Can mechanisms be created to ensure that the environment will be protected in the face of a failure of a DNS?

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