The impacts of market-based biodiversity conservation on Indigenous Peoples, local communities and women

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Introduction: "It's the economy, stupid"

Since the Brundtland Commission in 1987 clearly linked environment and development objectives, it has become increasingly fashionable to approach biodiversity conservation from an economic perspective. In the early nineteen nineties, it was still considered to be very forward looking if a conservation organization decided to include economists in its staff. Analyzing the impacts of economic, trade, finance and subsidy policies on biodiversity was a relatively new thing at that time. "It's the economy, stupid", was a popular slogan that was used by more progressive conservation scientists and NGOs alike. By looking at biodiversity conservation through economists' eyes, the biodiversity conservation community hoped it would gather the capacity to influence economic policies and incentive schemes and adapt them to the needs of biodiversity conservation.

Alas, we probably underestimated how influential economists could be. Instead of adapting economics to the imperative of conserving our planet's biodiversity, there has been an increasing tendency to adapt biodiversity conservation policies to mainstream economics (CENSAT, 2005). The economic rationale is very straightforward: if it is possible to give biodiversity and other environmental 'services' marketable asset prices, market forces will then lead to the conservation of biodiversity.

The now popular use of the term 'environmental services' was clearly inspired by the idea of integrating biodiversity policies into classic development policies. The authors of the UN Millennium Ecosystem Assessment popularized the term in a not very subtle attempt to integrate the findings of the assessment into the multitude of programs and policies that are being put in place to implement the UN Millennium Development Goals. It was undoubtedly felt that a utilitarian approach would be more successful in convincing development policy makers of the importance of biodiversity conservation. It should be noted, though, that many Indigenous Peoples and other social movements have expressed concern about this term as they consider it an expression of a utilitarian attitude towards biodiversity that does not take into account its intrinsic value and holistic nature (Acción Ecológica, 2003 and CENSAT, 2005).

The main policy mechanisms that have been classified as 'environmental services' markets until now are:

- carbon trade
- biodiversity offsets
- certification
- trade in genetic resources and related knowledge
- ecotourism and
- watershed services

This paper will mainly focus on carbon trade and biodiversity offsets. It will elaborate upon the overall dilemmas of using market-based approaches to address social challenges and the specific dilemmas caused by the three steps that have to be taken to set up a market for 'environmental services'. It will subsequently highlight a specific example that demonstrates these dilemmas - the proposal to introduce a biodiversity offset scheme through the new Paraguayan 'Payments for Environmental Services' scheme - and consider the impacts this scheme will have on Indigenous Peoples and other money-poor groups in Paraguay, such as women.

A neoliberal environmental approach: trading in rights to pollute

There are two main problems with establishing markets for 'environmental services' as part of a market-based approach to biodiversity conservation. Firstly, there are the overall problems associated with using market-based approaches to resolve public challenges. It would be naive to ignore the political dimension of this debate: the concept of carbon trading, for example, has very obvious roots in

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neoliberal circles in the USA (Lohmann, 2006). It was Ronald Coase of the University of Chicago who started to actively promote trading in 'rights to pollute' in the 1960's. In his view, a perfect market would 'optimize' pollution, balancing its costs and benefits. This idea found fertile ground in conservative environmental circles in the US and emissions trading was included in the 1990 Clean Air Act. This development is often quoted as a major success, but if it is compared to command and control approaches to air pollution it is actually quite meager. A US trading scheme to eliminate leaded gasoline, for example, took 23 years to implement fully, while control and command measures to ban leaded gasoline had the same impact in China in 3 years and in Japan in 10 years. (Lohmann, 2006)

Nevertheless, as a result of being sold as a success story, the emissions trading system soon gained popularity in US NGO and governmental circles. It was the US administration, under the leadership of then Vice President Al Gore, which introduced this concept into the negotiations for the Kyoto Protocol of the Framework Convention on Climate Change, making its inclusion a condition for the US joining the Protocol. The fact that other countries accepted this condition and were subsequently left with a Kyoto Protocol that was essentially a US construct (although not yet signed by the US) can still be seen as one of the most remarkable tales of environmental political intrigue. As Larry Lohmann says of the Kyoto Protocol: *"Its environmentalist backers....were left in the odd position of having to champion an agreement largely written by the US for US purposes based on the US experience and US economic thinking, but which no longer had US support.....a little tested idea spearheaded by a small US-elite was now perceived as a global consensus and the 'only show in town'."* (Lohmann, 2006)

Social-democratic governments initially expressed skepticism towards this market-based mechanism. For example, the Clean Development Mechanism that was eventually established as a carbon offset facility under the Kyoto Protocol was originally based on a Brazilian proposal for a Clean Development Fund to be financed through penalties paid by industrialized countries that had exceeded their emissions targets, and was supposed to be used to finance 'no regrets' clean energy initiatives in the South. It was essentially a compliance mechanism, but the links with compliance were ruthlessly cut by the US, in the hectic negotiations sessions that took place before the Kyoto Protocol was finally agreed.

Considering these political dimensions, it is not surprising that it is the large social movements, especially in the global south, that have been most vocal in expressing their concerns about the commercialization of life through market-based approaches to conservation.[2] Their skepticism concerning the assumption that markets can solve social or environmental challenges, such as the need to conserve biodiversity, is deeply rooted in their experience of free markets having done a very bad job in terms of solving other social challenges in developing countries. There are striking similarities, for example, between the assumptions that were made, almost ten years ago, about the benefits that the privatization of water services would bring, and the assumptions that are currently being made about the benefits biodiversity privatization will have for biodiversity conservation. (FoEI, 2005) However, the lesson that has been learned in relation to water privatization – that it can have extremely negative impacts on the poor - has not yet been appreciated by the biodiversity conservation community.

Nevertheless, there does still seem to be a rapidly growing consensus in the conservation community that markets for 'environmental services' will require strong regulation to be effective and equitable. However, few seem to realize the inherent contradiction in this approach: if those regulations are so essential, perhaps it is in fact more appropriate to focus on promoting the regulations themselves, rather than market-oriented processes?

Commodifying the commons

The second major set of problems is inherent to the challenge of trying to squeeze something as holistic as global biodiversity into the structured and relatively rigid framework of the market. For anything to become marketable, a number of steps have to be undertaken:

- it needs to be commodified and transformed into a clearly defined legal object or entity that can be traded
- that object or service then needs to be privatized in terms of becoming the clear property of a specific owner who has the legal right to sell it
- there then needs to be a buyer willing to pay to become the new owner of this property

[2] See for example the Declaration of Puyo, by the Confederation of Ecuadorian Indigenous Peoples, May 2006, and the declaration "Chake Nuha, the trap of agrofuels and environmental services" by a large coalition of Paraguayan social movements, April 2007

In relation to biodiversity, these three steps raise numerous moral and technical dilemmas - and it should be emphasized that these dilemmas are not just theoretical. For example, the Republic of Paraguay has just adopted a law on payments for 'environmental services'[3] and is now faced with the highly complicated question of developing an adequate regulatory system to implement the general principles of this law. As a first step, the Secretariat of the Environment in Paraguay has been charged with the quite daunting task of putting an appropriate market value on all the 'environmental services' provided by Paraguayan ecosystems.

In most existing market-based conservation approaches, the complexity of separating and commodifying the various elements of ecosystems has proven to be overwhelming. Ecosystems are complex, highly interactive systems, and most values are integral to the system itself. Yet there have been attempts to commodify and allocate separate values to genetic resources and related traditional knowledge, carbon storage capacity, watershed services and landscape values. The carbon sequestration capacity of organic material seems relatively straightforward quantity to commodify, compared with some of these other 'services', yet even so the influence of ecosystems on climate change is extremely complex: there is much more to it that simply providing a carbon sink and methodologies for calculating the carbon value of natural ecosystems are severely disputed. Some scientific studies even classify important ecosystems like boreal forests in contradictory ways: some as sources of carbon, some as carbon sinks. The fact that carbon stocks in natural ecosystems are by definition non-permanent has also undermined their price in the world market.

Other possible market values are even more difficult to commodify. It is assumed that ecotourism, for example, could be used as a mechanism to commodify landscape values. Yet ecotourism has often destroyed the very landscapes people come to visit (and most ecotour companies prefer to see as few other ecotourists as possible). Payments for watershed protection services have also been criticized as they are seldom based on a profound scientific analysis of the relationship between the ecosystem that is being protected and the watershed. There are no linear relationships between forest protection and water quantity, for example, and certainly not between tree planting and water quantity - planting species like Eucalypt can actually have a profound *negative* impact on water tables.

Furthermore, certified timber, including Forest Stewardship Council-certified timber, still includes timber derived from large-scale monoculture tree plantations, meaning that there is no positive linear relationship between certification and biodiversity values either. Studies that include the entire global market value of certified timber in the overall value of 'environmental services' markets show a remarkable lack of understanding of the relationship between certification and biodiversity values. As monoculture tree plantations normally replace more biologically diverse ecosystems like natural grasslands, the biodiversity value of certified timber can be highly negative (Lang, 2003). Assumptions that plantations would decrease timber exploitation from natural forests have also proven to be false until now (Lang, 2003).

Business as usual

For proper valuation of ecosystem services, it would also be important to establish an appropriate baseline in order to ascertain exactly what proportion of the service delivered is the result the 'provider's' efforts. In general, establishing proper baselines and verification of the added value of the activities of providers of 'environmental services' has proven to be a tremendous challenge. This makes it hard to define what would have happened with a specific environmental value in a business-as-usual situation.

This lack of 'additionality' is actually at the heart of the criticism of most current Clean Development Mechanism projects. Both the carbon market and certification systems like the Forest Stewardship Council rely on independent consultants to verify whether a project provides additional benefits to the environment and complies with environmental standards. Unfortunately, there is an incentive for 'independent' consultancy firms to manipulate base-lines and/or be overly lenient, as many of them generate income from market-based schemes related to carbon trade and certification. There are other conflicts of interests too. Consultancy firm Det Norske Veritas, for example, was asked to verify the additionality of the World Bank Prototype Carbon Facility-financed project run by Plantar in Brazil: however, Plantar is also a regular client of this same consultancy firm (Lohmann, 2006, Counsell, 2002).

Another major problem is that of 'leakage', which is inherent to forest-related carbon projects and many other PES schemes. Leakage means that the environmental benefits of a project are undermined or even completely negated, because the destructive activities are simply moved to another area.

[3] Ley 3.001/2006 on the Valuation and Retribution of Environmental Services

Protecting a forest area from logging, for example, makes little sense for the climate and provides few environmental benefits if the logging shifts to a nearby area, or another country.

Who owns biodiversity?

A second condition for setting up an 'environmental services' market is that the service has to be handed over to an entity that can sell it. This has lead to profound equity-related questions. Who does own biodiversity? The government? The owner of the land where the biodiversity is found? The community that manages that land? The men within that community who make decisions or the women who actually manage the land in practice? Or the Indigenous community that managed the land in sustainably until Western landowners took over their land in colonial or post-colonial times?

Whether national governments, local communities, Indigenous Peoples or legal land owners own genetic resources is one of the most difficult questions arising in the Access and Benefit Sharing discussions under the UN's Convention on Biological Diversity. Very similar issues are now being raised within the UN Framework Convention on Climate Change (UNFCCC) negotiations, regarding proposals for 'Reduced Emissions from Deforestation and Degradation' (REDD). These involve compensation schemes, and again, the question is: who should that compensation be paid to? Individual land owners, local communities and Indigenous Peoples or governments? To take the logic of the market-oriented approach to its logical conclusion, the sellers and buyers should really be private, non-subsidized entities. In reality however, the supply-side of markets for 'environmental services' has been dominated by governmental and not-for profit actors who are allowed to use public funding to set up their markets. In this respect, concerns expressed by the Argentine government and others about hidden subsidies are quite legitimate.

Hidden and non-hidden subsidies

A last indispensable step in setting up a market in 'environmental services' is that a buyer needs to be found. As far as commercial buyers are concerned, this has proven to be more or less impossible without strong environmental regulation. Commercial buyers are only interested in paying for assets like genetic resources and carbon if regulations (limits on the emissions of CO_2 for example) require them to do so. Here too, the actual 'market' has been overwhelmingly dominated by public and/or philanthropic institutions that have 'bought' environmental assets for public benefit purposes. In fact, of the 264 examples of 'environmental services markets' that the International Institute for Environment and Development analyzed in 2002 (Landell, 2002), hardly any could be considered to be purely commercial (the exception being a few ecotourism projects with dubious impacts on biodiversity). Most are rather conventional schemes that support community-based biodiversity conservation initiatives, which have suddenly been re-baptized as 'payments for environmental services' schemes in order to make them more acceptable given current trend towards market-based approaches to conservation.

The World Bank in particular, has championed the use of public funds to support projects which have subsequently been reclassified as 'payments for environmental services' schemes and which it can therefore showcase as examples of market-based approaches to conservation. This might look innocent, but in a polarized and highly political debate - as in the current negotiations on REDD - it is far from so, as these projects have subsequently been used as arguments in favor of commercial carbon financing for reduced deforestation projects.

Furthermore, the World Bank has a commercial interest in including reduced deforestation projects in carbon trade, as it already acts as the major public (and well-paid) carbon finance broker in the international carbon market, through its Prototype Carbon Fund, which was set up in the early 1990's. Consequently, the Bank is expected to launch the successor to the Prototype Carbon Fund, the Forest Carbon Partnership Facility, at the 13th Conference of the Parties to the Climate Change Convention in December 2007 (ignoring the fact that governments have not yet actually made a decision about whether or not to include forests in carbon trade in the post-2012 climate change agreement).

A classical case of using PES to showcase how environmental projects might be included in carbon markets was the very generous grant the World Bank gave to the Kenyan Green Belt Movement, to enable it to market the carbon it sequestered through its tree planting projects on the international carbon market. The fact that the founder of the Green Belt Movement, Wangari Maathai, had just received a Nobel Peace Prize, and that the twelfth Conference of the Parties of the Framework Convention on Climate Change was held in her home town Nairobi, made it very attractive for the World Bank to showcase this particular project during that meeting, holding it up as an ideal example of how carbon finance could contribute to community-based projects. However, the fact that some 90% of the

funding came from a World Bank grant, rather than commercial sources, was not highlighted during these events.

The myth of effective and equitable markets in 'environmental services'

Whether or not socially beneficial projects like the tree-planting activities of the Green Belt Movement would actually benefit from purely market-based approaches has proven to be a very controversial question. In most theoretical literature it is assumed that market-based conservation mechanisms could be effective and equitable but *only*:

- If all values are properly accounted for
- If returns are equitably distributed to the proper 'owners'
- If the market is properly regulated
- If those regulations are effectively enforced, and
- If there is an equal level playing field so that all biodiversity consumers and producers can participate equitably

In reality, however, it is difficult to assess whether it is ever possible to meet all these conditions or to find evidence of environmental services markets having a positive impact on poverty alleviation, since the overwhelming majority of existing payments for 'environmental services' projects are funded through public or philanthropic financing. Moreover, most existing PES schemes are accompanied by strict regulations, sometimes even prohibiting the very activity that is being paid for, and most 'success stories' are only really successful because of effective public governance, rather than their links to the market.

A famous example in this respect is the Costa Rican Payments for Environmental Services scheme, which is arguably one of the oldest PES schemes for biodiversity conservation, and perhaps the most well known. In its understandable attempts to sell this scheme on the international carbon market, the Costa Rican government tenda not to mention the fact that the scheme was actually accompanied by a nation-wide deforestation ban when it was introduced. (FoEI, 2005, CENSAT, 2005) So while there is general consensus about the fact that the *overall* policy was successful in terms of halting deforestation in Costa Rica, it is hard to tell whether this success was due to the deforestation ban or the far more expensive PES system.

In this light, it might be interesting to compare these results with the results of the Paraguayan deforestation moratorium that was put in place in 2004, without a compensation system for the landowners. Notably, this moratorium succeeded in reducing deforestation by an estimated 86%, in a country plagued by bad governance.

Economically speaking, however, the Costa Rican PES system has been anything but a success. When Costa Rica tried to sell its subsidy scheme to compensate farmers for the 'environmental services' they provide (by not deforesting their lands) on the carbon market, they found that protecting a ton of carbon cost them around US$27, while market prices varied between US$4-16 per ton. The only reason the entire system stayed afloat was because most of the resources came from a national petrol tax, matched on a regular basis by official development aid. In itself, the system is widely supported in Costa Rica, but to call this combination of taxes and subsidies a market-based approach is rather inaccurate. Furthermore, implementing the same system in a larger country could be extremely expensive: at one REDD negotiating session, for example, Joao Capobianco, Brazilian Vice-Minister for the Environment calculated that it would cost Brazil roughly US$5 billion a year to apply the same system to the most threatened 30% of the Amazon forests. (Lovera, 2006).

The practical and legal dilemmas of a wild idea: PES in Paraguay

The full story of the Costa Rican PES system was obviously not taken on board when the Government of Paraguay decided to adopt a similar PES law. That it was inspired by Costa Rica is quite well-known: several joint workshops with Costa Rican advisors preceded the introduction of the law, which was chased through the Paraguayan Parliament and Senate in September 2006. When *The Law on the Valuation and Retribution of Environmental Services* was adopted, it did not include any specific regulations or financial backup. Instead, the law simply stipulates that all owners of land and its natural components that generate 'environmental services' will have a right to corresponding compensation for those services. There has been no calculation of the total budget this would require.

In fact, the most noteworthy difference between the Costa Rican and Paraguayan PES systems is that the former has a clearly defined financial back up in terms of a petrol tax, while the Paraguayan PES system is supposed to be financed mainly through biodiversity offsets. There is an undeniable offset dimension to the Costa Rican gasoline tax too, but the broad scope of environmental violations that can be offset through the Paraguayan PES law actually legitimizes environmental crimes. For example, biodiversity offsets of up to 10% of the project's budget are required whenever a major infrastructural project is expected to cause substantial environmental impacts (according to its Environmental Impact Assessment) meaning that they pay to offset these 'legitimate' impacts by paying to protect biodiversity somewhere else. The law also allows landowners who have violated the pre-2004 forest law (that stipulated that landowners should maintain at least 25% natural forest cover on their land) to simply compensate for this by buying biodiversity offset certificates. Meanwhile, those landowners who do still have more than 25% forest cover and are willing to comply with the current legally binding deforestation ban are now suddenly compensated for their obedience to the law and may receive a payment for these 'environmental services'. A relatively cheap, successful forest conservation policy has thus suddenly become a very expensive forest policy, through which every hectare saved may in fact be negatively compensated by an environmental violation elsewhere in the country.

That this system is a major step forward for large landowners is indisputable, as is the fact that the overwhelming majority of Paraguayan legislators are themselves large landowners. In fact, in December 2006 many legislators insisted that they would only support the continuation of the deforestation ban if the regulatory framework for the PES law was swiftly implemented. It is important to analyze seemingly innocent theoretical proposals like PES in the light of the impact they may have on public governance, especially in countries where corruption is a widely recognized problem, as is the case in Paraguay.

While Geographical Information Systems (GIS) have had a major positive impact on forest governance in general, as they allow for relatively easy verification of tree cover, the road between observing an environmental crime and getting the violator to pay up can be an exceptionally long and bumpy one in a country like Paraguay. Actually receiving payment for your environmental services is likely to be an even bigger challenge, especially for those thousands of small land-holders that do not have close family and friends administering the system. There are numerous cases of other public subsidies that have not reached their destination in Paraguay (and ones that have even reached totally illegitimate destinations). Any country that faces major challenges in terms of forest governance should really question whether a complicated money-channeling system like PES is appropriate in comparison to more straightforward regulations.

Biodiversity offsets for soy expansion

A major source of income for the PES system in Paraguay is expected to come from soy growers and other landholders who have conserved less than the legally required 25% of forest cover. These landholders can now compensate for their past omissions very easily by buying 'environmental services' certificates. Hence there is no requirement or responsibility to restore qualitatively and quantitatively ideal forest cover anymore. This new 'non-requirement' also matches the Roundtable for Responsible Soy's Basel criteria for 'responsible soy', which allows soy producers to convert forest, provided compensation is paid to nature conservation projects or organizations. However, the fact that one of the same large nature conservation organizations that promoted the concept of responsible soy is also playing a key role in the promotion of PES in Paraguay, including through radio commercials alerting Paraguayan landholders to the possibility of biodiversity offsets and PES, makes the entire proposal rather suspect.

To analyze the environmental impacts of biodiversity offsets fully, for a crop like soy for example, it is important to take into account all the environmental impacts of the crop itself, as well as losses incurred and impacts due to associated deforestation. Soy expansion is considered by many to be one of the most important environmental and social problems in Paraguay. The National Federation of Farmers in Paraguay, the national association of NGO networks, and many other movements and NGOs have expressed very clear opposition to soy production, including with respect to proposals to produce supposedly 'responsible soy'. Large marches and other demonstrations were also organized to oppose the 'Roundtable on Responsible Soy' when it met in Asunción in September 2006. Even President Duarte Frutos has referred to soy production as an *"egoistic and excluding development model*" (ABC, 2006).

In Paraguay, 2.8 million hectares of soy have been planned for cultivation this year and soy planters expect to reach 4 million hectares within the next two years. No less than 35 million liters of herbicides and insecticides were utilized for soy production in 2006, resulting in numerous cases of intoxication and

water contamination. The soy farms are overwhelmingly foreign-owned and provide very little employment per hectare of land. The resulting rural unemployment contributes to the expansion of the agricultural frontier and thus even more deforestation – while many small farmers and Indigenous Peoples move to the cities, some move to the agricultural frontier, burning forests to start a new farm. Cattle ranching has so far been the main direct cause of deforestation in Paraguay, but the current rapid expansion of soy on former cattle land is pushing cattle ranching into the forests

Will the poor benefit?

It has often been assumed that PES systems will benefit the poor, as many of the most precious ecosystems on the planet are inhabited by Indigenous Peoples or other money-poor local communities. Here again, the economic rationale sounds convincing, but the reality of the matter is quite different. Even in situations where there are no problems with corruption (and we should not underestimate how many countries do have such problems), the bureaucratic know-how required to sell an environmental service is a significant hurdle for people who do not possess legal skills and who might not be able to properly read and write the official language of the country. The relationship between rural poverty and education is linear and most Indigenous Peoples speak a native, non-official language, putting them at a severe disadvantage in this respect. Having a handful of representatives or community representatives with higher education and/or legal skills can definitely put Indigenous communities in a better position to negotiate PES contracts, should they wish to, but it would still be naive to overlook their disadvantageous overall position.

In practice, conservation NGOs have so far tended to play the role of broker in most individual PES contracts. Their intentions may often be laudable, but it would be really dangerous to turn these private, often foreign organizations into formal tools for implementation of a national public policy as important as equitable forest conservation. Aside from simply not having the scope and capacity to help every local community and Indigenous People in the entire country in an equitable fashion, these organizations seldom have Indigenous rights and national social development as their primary mission.

On top of these practical obstacles, which will probably be overwhelming for the majority of communities, there is the often almost insurmountable legal obstacle that many of the poorest groups in society do not have formal title over their land. The gender dimension is also very important in this respect: in most families it is the men who have legal title over the land (if the family has any legal title at all).

Women constitute the overwhelming majority of the world's poor. As they dedicate a substantial amount of their labor to activities that are not financially compensated, like childcare and household activities, and as they are still discriminated against in labor markets all over the world, they tend to have much lower formal incomes than men. Consequently, they are much less likely to be in a position to be able to buy land. Levels of education and reading and writing skills are also a lot lower amongst women in most developing countries, and many cultural traditions frown on women playing a competitive role in formal market-based labor systems. Once again, these hurdles can be overcome by NGO brokers, but it is neither practical nor morally or socially appropriate to formalize the role of these private brokers in a country-wide system.

While some PES systems, including the Paraguayan one, do formally recognize Indigenous Peoples' rights to land ownership, and thus to PES compensation, one should not underestimate the gap between formally recognized territorial rights and the original land rights of most of the Native Peoples in the Americas. Indeed, there are vehement ongoing disputes all over the world regarding Indigenous Peoples' land rights, since most Indigenous Peoples have only been granted rights over a very limited amount of (economically unattractive) land, instead of over their original territories. What should definitely be taken into account in this respect is the additional negative impact PES policies have on land reform campaigns and campaigns to obtain recognition of land titles. Both Indigenous Peoples and landless rural workers' movements have expressed concern that PES systems might lead to (and indeed are already leading to) increased land pressure and a subsequent inflationary impact on land prices. This in turn might make political campaigns for Indigenous land rights and land reform a lot more complicated, as large landholders have an increased incentive to hold on to their land.

Even more serious social impacts become visible in relation to economically marginalised groups in society requiring the use of those 'environmental services'. Clearly people with less money will loose out in a system in which they suddenly have to pay for 'services' that they used to receive for free. Women and Indigenous Peoples have less money than other groups in society, and are a lot more dependent, especially in developing countries, upon free access to resources like freshwater, fuelwood, medicinal plants and bushmeat for their families' survival. The experience with water privatization shows very

clearly that it is the poorest groups in society that suffer most from privatization policies, often with fatal outcomes. (FoEI, 2005)

Here too, the practical outcomes of PES projects have been influenced by the fact that conservation organizations and public institutions like municipalities have played a major role in financing and implementing those 'PES' projects. So far many of them do seem to have built in safeguards to avoid major negative impacts on social groups on the demand side of social services, but the logic of the market could lead to very different outcomes if they were not checked by these social safeguards. One can envisage, for example, that Indigenous Peoples in the South American Chaco who suffer from droughts triggered by Amazon deforestation might be asked to 'compensate' soy farmers who are good enough not to have burnt down the entire Amazon forest. Or women from downhill villages, who see their streams being polluted by the logging and plantation companies that devastate uphill forests, being expected to similarly 'compensate' these companies in order to obtain some unpolluted water.

San Rafael: biodiversity offsets for the expanding soy frontier

The above-mentioned impacts on Indigenous Peoples are clearly illustrated in a specific case concerning the impacts of biodiversity offsets on the Mbya Guarani communities in the San Rafael hills in the South of Paraguay. The San Rafael hills have been proposed for demarcation as a national nature reserve, a proposal that is strongly opposed by the Mbya Guaraní, who consider it to be their traditional homeland (tekoha) and fear that their territorial claims will be undermined if the area is formally declared a nature reserve. Most land in the San Rafael hills is also under private ownership as well, and the entire area is under severe pressure as the large soy monocultures that stretch out East and South of the hills are rapidly encroaching into the area. It is expected that soy producers in the area will benefit greatly from the proposal to offset the damage caused by soy expansion by buying 'environmental services' certificates from those land owners who still own a substantial amount of the forest land within the proposed reserve.

The Mbya Guarani people, in communities like Arroyo Morotí and Arroyo Claro, on the other hand, might have to pay a high price, even if it is not a financial one. First and foremost they already suffer from the continued expansion of soy monocultures. Their freshwater resources are dangerously contaminated due to runoff from the agrochemicals used on the surrounding soy plantations. The Arroyo Morotí community in particular has expressed strong concern about the declining quality of the drinking water in the brook that they depend on, which has been severely contaminated by the agrochemicals used by a neighboring soy farmer. Moreover, due to the increased land pressure there are regular incursions into the forest. The forest of the Arroyo Claro community, for example, was devastated by invading farmers ten years ago. After eight years spent pursuing legal remedies they were successful in having the invaders removed from their land two years ago. Sadly, they returned in September 2007 and again threaten to continue deforesting the area. As a result of these environmental problems many Mbya Guaraní have already become environmental refugees and have ended up on the streets of Asunción, the capital of Paraguay, where they live an extremely marginal life.

But the Mbya Guaraní communities may also be impacted negatively by the expansion of the private nature reserves that are supposed to compensate for the soy expansion. Some of their hunting areas have already been severely restricted, leading to overexploitation of the remaining areas and malnutrition due to lack of protein. Furthermore, their current land rights claims are being frustrated by the prospect of the private reserve owners being compensated through a PES scheme. These landowners' rights, both within and outside the designated nature reserve area, are disputed by the Mbya, who consider the entire area their 'tekoha', an area which they have always managed sustainably. The communities are angered by the fact that landowners who acquired large amounts of land under illegal or at least dubious circumstances during a dictatorship are now hoping to be able to claim compensation for the 'environmental services' provided by the forests the Mbya Guarani have conserved for centuries.

Could Mbya communities benefit from PES?

Of course, to evaluate the impacts of PES on Indigenous Peoples it is crucial to look at possible positive impacts too. From a legal point of view, communities like those of the Mbya Guarani People of San Rafael in southern Paraguay, might be able to claim PES themselves for the areas that are legally theirs. To do this, however, there are a number of obstacles that have to be overcome. First and foremost, there is the language barrier that was pointed out above. While Guaraní is formally the second official language of Paraguay, all commercial and legal transactions are documented in Spanish, a language that few Mbya Guarani speak well enough to enable them to engage in contractual negotiations and arrangements.

The overwhelming majority of these forest-dwelling people also lack the marketing skills needed to sell 'environmental services' like carbon in an increasingly convoluted market. The requirement to obtain an Environmental Impact Assessment prior to offering 'environmental services' will also inhibit the participation of poor landholders in the system, as this is a very costly process. Large tracts of land with one clearly defined individual owner will have a competitive advantage over territorial lands controlled by (not always well-defined) communities.

Selling 'environmental services' might also lead to serious governance problems as it might not always be clear whether the leader of a village has the right or the mandate to undertake such a legal transaction. In general, it should be cautioned that changing the currently predominantly non-monetary economy of communities into a monetary one will also have profound impact on many cultural and environmental values and traditions. Women are likely to suffer most, as their interests are more likely to be overlooked in commercial transactions normally closed by men. Women also have a disadvantageous position in monetary economies in general, as they spend a significant part of their time on activities like childcare and household management that are not rewarded in monetary terms. Moreover, they are generally underpaid in the formal labor market, as well as being responsible for providing clean water and other non-monetary goods for the family.

Furthermore, with respect to water, it does not matter how much money might be earned by selling 'environmental services', clean and healthy drinking water cannot be otherwise obtained: there are no formal public water services anywhere near the communities and even buying water would be impossible because the distances that would need to be traveled are too great (especially since the communities themselves do not have any form of transportation).

In summary, the Paraguayan PES law is likely to have a number of negative impacts on Indigenous Peoples and other poor sectors of society, like landless farmers:

- Paraguay has extremely inequitable land distribution and the overwhelming majority of any funds will undoubtedly go to large landholders.
- The law is likely to frustrate land reform programs and ongoing land rights claims by Indigenous Peoples as it will increase the value of unused land.
- The system will probably be subject to serious governance problems. In particular, it is likely that politically influential groups will have far better access to the funds than politically marginalized groups like Indigenous Peoples and small farmers. Bad governance and market-based conservation mechanisms are a risky combination.

Conclusions

There are some fundamental questions that tend to be overlooked when market-based conservation mechanisms are proposed. Markets cannot work without privatization. Does that mean that we need to privatize and put a price on all elements of biodiversity in order to make environmental services markets work? Is this feasible? Is it equitable? Is it ethical? And who has the right to own that biodiversity? Is biodiversity a so-called *"BioNullius",* something to be colonized, as Indian activist Vandana Shiva once questioned?

An important consideration when proposing PES schemes is that the most efficient PES schemes are not equitable: paying large destructive landholders is economically-speaking more 'efficient' than channeling funds to community-based schemes and/or paying Indigenous Peoples who were not planning to destroy their forest anyway. In fact, this equity aspect is at the heart of some very politicized debates around the proposal to compensate countries for reducing deforestation as part of a future climate regime. Those countries that have already done a successful job conserving their forests risk losing out from some of these proposals, as they are obviously not able or less able to 'reduce' their deforestation rates.

In the end, a remarkable degree of the enthusiasm generated by PES seems to be based on the Costa Rican PES experience. However, its supporters often overlook the fact that the Costa Rican carbon and genetic resources 'markets' were only developed as a result of a combination of government intervention, generous Official Development Aid and other donor support. As soon as these markets were left unsupported, they proved economically unviable. Moreover, the success of the Costa Rican PES scheme might have been the result of the fact that deforestation was also illegal. An important moral and legal question in this respect is whether it is right to pay people to comply with the law of their land. This would imply that land ownership confers a right to destroy biodiversity regardless of national legislation. Do poor communities have to compensate soy farmers for not contaminating their water

resources with agrochemicals? How do we avoid payments for 'environmental services' and compensation to reduce deforestation being turned into 'the Polluted Pays Principle'?

As stated above, these negative impacts *can* be avoided in strictly regulated initiatives. In fact, there seems to be a growing consensus amongst biodiversity policy makers that we do need to control market forces through strict regulation and effective enforcement. Experience so far shows that the best 'PES' schemes are actually conventional subsidy or integrated poverty and development projects. Re-baptizing them as PES was supposed to mobilize political will amongst economically powerful sectors for biodiversity conservation. But the negotiations on reducing deforestation under the Climate Change Convention demonstrate that the main interest in these schemes still comes from the conservation sector: commercial carbon traders have hardly shown any interest in the rather risky and uncertain business of forestry offsets.

In itself, reclassifying sustainable forest management subsidies as Payments for Environment Services schemes does not have to be harmful. However, there is a major risk involved if these schemes are subsequently included in multilateral and bilateral trade agreements. There has been a tendency by certain governments to not only reclassify conventional subsidy schemes and other forms of public support for biodiversity conservation as 'Markets for Environmental Services', but also to subsequently include them in bilateral and multilateral agreements on 'Trade in Environmental Services'. The assumption is that this will stimulate trade in 'environmental services' and bring social and environmental benefits. However, trade agreements are also likely to undermine or even prohibit the social safeguards needed to make 'environmental services' function, as described above. The proposed liberalization of trade in 'ecosystem services' under the World Trade Organization's General Agreement on Trade in Services (GATS) and similar clauses in bilateral and regional trade agreements imply that special safeguards for Indigenous Peoples' and/or local communities could be challenged as being 'discriminatory' by governments and/or large corporations and foreign conservation organizations (depending on the dispute settlement processes attached to the various agreements). So the use of the term 'markets in environmental services' might also have severe negative legal consequences.

The great advantage of public governance systems is that they can be shaped in a manner that directly benefits the most marginal groups in society, including women and Indigenous Peoples. Already in 1992, international public governance adopted the principle of rewarding the so-called incremental costs of providing global environmental benefits. Both the Convention on Biodiversity and the Framework Convention on Climate Change that were signed that year oblige all governments to conserve forests, and require developed countries to contribute new and additional financial resources to reward developing countries for the incremental costs of providing global environmental benefits through reducing deforestation. The Global Environment Facility was established to manage these funds. The fact that the overwhelming majority of developed countries have not complied with these legally binding agreements does not imply that they do not exist anymore.

New and additional financial resources are still required to support sustainable, democratic and well-enforced public governance of biodiversity, including through redirecting perverse incentives, banning deforestation and safeguarding Indigenous rights. As Adriana Ramos of the Instituto Socio-Ambiental in Brazil pointed out at the fifth Trondheim Conference on Biodiversity: *"The majority of areas where we stopped deforestation in Brazil are Indigenous lands".* Respecting Indigenous land rights has arguably been one of the most equitable, effective and efficient policy incentives for sustainable forest management.

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