THE THEORY AND PRACTICE OF TRANSFERRING DEVELOPMENT RIGHTS:
The Institutions for Contracting for Biodiversity

by
Timothy M. Swanson
Cambridge University and CSERGE

presented at a workshop on
Financing Biodiversity Conservation
Harare, Zimbabwe
13-15 September 1995

Overview. *This study explains why the theory of transferable development rights, runs into difficulty because of the lack of legal bases and institutions for the transfer. The problem, in brief is that while ownership rights at a domestic level can be "un-bundled" though legal agreements such as leases or land zoning, the same can not be accomplished across borders. This model runs into problems when applied to a case of international transfers, where there is no reciprocity (as in agreements where both countries agree to conserve similar portions of wetlands or forests). Transferring use-rights in land to a foreign entity could not be legally enforced. Swanson instead suggests that the model to adopt is that of the franchise, in which three parties are involved: the global community, owner states, and land-owners. The author also suggests what institutions would be needed to enforce these contracts.*

Acknowledgements. This paper was created as part of an IUCN project on the creation of incentives for the implementation of the biodiversity convention; the full report is entitled *Implementing the Biodiversity Convention: Adopting Incentives for Biodiversity Conservation*. I am grateful for the initial direction received from Kevin Lyonette, of WWF-International, and Jeff McNeely of IUCN. Subsequent discussions with Nancy Vallejo of WWF-International were also very helpful. All comments to the author at uctptms@ucl.ac.uk.

1. Introduction: Contracting for Biodiversity

This paper addresses the general nature of the contract form that would be required for the effective conservation of biodiversity in those countries which host it. That is, this paper enquires as to how the global willingness to pay for biodiversity might be translated into biodiversity supplies in the most direct fashion. This is not a simple question from the incentives standpoint. It is not a straightforward matter of simply transferring funds from demander to provider; it is instead necessary to transfer those funds in a structured fashion so that incentives to conserve biodiversity are instilled. As the participants in this and other conferences discussing the financing of parks

and protected areas are well aware, the creation of instruments that have real and substantial impacts on incentives to conserve biodiversity is difficult to achieve. (Munasinghe and McNeely, 1994).

The nature of the necessary form of contract is indicated by reference to a hypothetical world in which rights in biodiversity services could be fully marketable. In such a world, broader communities (local, national and global) could then bargain with local land owners in order to acquire the right to these services. In the context of biodiversity, this would entail the acquisition of the rights to particular land uses that are especially detrimental to the supply of biodiversity. For example, there have been suggestions that the supply of biodiversity from the Amazon could be ensured if only the "burning rights" were acquired from local users. (Schneider, 1992). Hence, a contract for the transfer of all the rights to clear and burn the lands in the Amazon basin would be adequate to supply the biodiversity demanded from that region.

Why would land owners agree to the transfer of any of the rights to develop land in any manner? The theory is that the land owner could be induced through agreements to transfer such rights in return for payments for those rights. If such rights were freely transferable, then it would be anticipated that the optimal distribution of land uses would result. The broader community would continue to acquire any particular land use rights (burning, clearing, ranching, timber extraction) so long as the value of the services obtained from denying such uses was higher than the value of that use to the land owner. When exchanges stopped, the land owner would continue to hold all uses that were not expressly transferred, and would have been compensated for all of those that were. So long as all of the uses of a given area are valued, the property rights approach allows for the allocation of land uses between the various competing users. (Pearce, 1992).

This is the theory behind the *transferable development rights* approach to biodiversity conservation. In short, when it is possible to unbundle the various services flowing from the ownership of a parcel of land, it would be possible in theory to use a form of property rights to efficiently allocate the various rights of land use between the interested parties. If it were possible to do this in the case of biodiversity's services, then there would be no biodiversity problem. The people who wanted biodiversity would simply acquire the rights from those who are able to supply it. This is the motivating idea for looking at property rights/contracting forms of solutions to the biodiversity problem.

The practice of transferring development rights differs quite considerably from the theory. The closest approximations in real life involve the debt for nature and the environmental trust fund movements. However, neither of these come close to creating an explicit international bifurcation of specific rights in real property. They have instead concentrated on creating funds for the general implementation of domestic strategies concerning the conservation of parks, protected areas and biodiversity. These are also important roles to fulfil and useful mechanisms, but they do not constitute a solution to the underlying problem of necessary international institutional development.

What is required is a new multilateral international institution on a global scale that will provide a dynamic and perpetual mechanism for transferring the values given to biodiversity's services from the global community to the host states. This mechanism will generate future funding by effecting current contracted-for results. It will effectively allow for the introduction of some modicum of global land use planning (by determining and effecting a minimum level of diversity retention) without any derogations of national sovereignty. It will not so much transfer development rights as enable alternative development paths. The purpose of this paper is to demonstrate how both the theory and the practice of transferring development rights need to evolve in order to most effectively conserve global biodiversity.

The paper proceeds by initially describing how property rights institutions operate in the domestic context to solve problems similar to the biodiversity problem, and then why they do not operate in the international context. The third section of the paper critically summarises the current practice in this area, and indicates what is missing from these approaches. The fourth section specifies the particular constituents of the institution required to address this facet of the biodiversity problem, while the fifth indicates what shape the institution will take for maximum effectiveness. The sixth section describes the workings of the suggested institution.

The conclusion of this paper is that the biodiversity problem represents a challenge for the international community to create institutions that reward very different forms of development than have gone on before. One type of institution required is a regime that will look at land use from a global perspective, and then enable the representation of the global community's preferences at the ground level. Local peoples will then consider these preferences for biodiversity's services in their decisions concerning land uses because they are backed up with funding, just as they consider global preferences for more standard commodities such as beef, tea or timber. All

that is required is the willingness to invest in the international institution that will make such exchanges possible.

2. The Efficient Management of Land Use in the Domestic Context

The first point to make concerns the use of property rights institutions in the domestic context to resolve land use conflicts. If there is a particularly interesting parcel of land with multiple land uses (e.g. residential vs. parkland), then there is always the question of how to determine the use(s) that are to be effected. One possibility is for society to allow absolute property rights to a particular individual, and allow that person to make all determinations concerning all aspects of the property's use. There are very few societies where this "all or nothing" approach is the exclusive option; in most countries, there is always the possibility of dividing the various uses of the property between various constituencies (neighbours, industries, city citizens) with the residual of the rights in the property redounding to the owner.

In short, it is always possible to unbundle many of the various services that flow from a parcel of land, and give these as rights to various individuals or groups. In the context of private transactions, this is precisely what occurs in the case of the use of various forms of easements, servitudes, rights of way, sub-surface rights and leases. It is possible to separate out many of the various uses of a piece of land from the residual rights, and to convey them separately. This has been done with regard to particular rights of use (e.g. a servitude not to develop the land for commercial use or not to alter its appearance) and with regard to the total rights of use (e.g. a fixed term lease). In the domestic context it is possible to unbundle the various rights in real property and to engage in a transaction in regard to any manner of right of use or development.

Sometimes there are interests in land uses that are communal rather than individual in nature. For example, in the development of a city, it may be in the community interest to restrict building intensity and building height in order to preserve light and air quality. Any individual within the community would like to develop his or her property to the fullest, but all recognise the community interest in a joint restriction on aggregate development intensity. Similarly, it is often important to take an overarching perspective regarding the range of land uses that will be allowed and where to allocate them. This ensures that all forms of activities have a place in the community and that the positive and negative externalities between them are taken into account in

determining how much land to allocate to particular uses. Hence, many communities recognise the importance of providing for "green belts" or "parks" within their boundaries, in order to provide the land uses that these designations afford.

These collective forms of land use allocation are accomplished by means of legal devices known as land use planning or zoning. This occurs either when all parcels of land in the same vicinity undertake the same restriction on use (e.g. no commercial development in a residential community) or when certain parcels are designated for very restricted uses for the benefit of the entire community (e.g. greenbelt designated properties). The former case requires no compensation to be effected, while the latter usually does. This is because the former is equivalent to a conveyance of specific limited rights to the community, in return for the receipt of all other land owners' conveyances of the same rights. There is form of reciprocity involved in the mechanism. In the latter case where the community wishes to acquire most of the rights of use to a particular parcel of land, then it some form of compensation device is required. This is not problematic in the domestic context, as the state is usually considered to be the fundamental arbiter of property rights within most societies. In this role, it may exercise the so-called power of eminent domain: the right to determine unilaterally the fair price for the rights it wishes to acquire. By means of the exercise of its powers of zoning and eminent domain, the community is able to implement a community-wide land use plan.

Figure 1 Transfers of Land Use Rights - The Domestic Context

PARTIES:	**TOTAL**	**PARTIAL**
Private to Private	CONVEYANCE	EASEMENT
Private to Public	EMINENT DOMAIN	ZONING & REGULATION

Figure 1 demonstrates the various bundlings of land uses which have been developed within the domestic context in order to allow the transferral of partial rights of use. This unbundling of all of the uses of a particular parcel of land allows for the division of its uses between a large number of competing interests. In this way, the allocation of the rights of use in a land parcel may proceed on an efficient basis, enabling the transfer of particular uses while retaining the residual.

In short, pure property rights institutions have been very effective in the domestic context for the solution of problems similar to the biodiversity problem. Communities have been able to create joint restrictions on development that preserve the common goods and services from restricted development, e.g. the preservation of light and air quality in certain densely populated areas. They also have been able to create community plans which guarantee the existence of a wide range of land uses, sometimes incorporating very broad restrictions on the rights to development. Most cities have used this approach to guarantee the presence of some green areas or belts within their boundaries, which would not otherwise exist. These institutions have already existed for one hundred years in the domestic context; the question at hand concerns the capacity to translate such institutions to the global context for the preservation of large "green belts" for biodiversity conservation.

3. Can a Pure Property Rights Approach be Used in the Conservation of Biodiversity?

The global problem of biodiversity conservation is analogous to the problem of land use allocation that occurs within the domestic context. It should devise a global land use plan that shows the range of land uses that it wishes to preserve in the global interest, and it must then devise a means of implementing this plan. As in the domestic context, one facet of implementation will involve reciprocity; this is the approach taken under those international treaties which work on a "listing" basis. For example, the RAMSAR convention concerning the preservation of wetlands operates by means of an internationally published list of RAMSAR wetland sites; this list allows each country to view the efforts of others in the conservation of such sites, and affords each the opportunity to publish its own efforts in the hopes of affecting others' determinations. Such lists operate as international zoning schemes, in that they allow countries to demonstrate their development restrictions on a reciprocal basis. (WCMC, 1992; Swanson and Barbier, 1992).

The difficult facet of the global biodiversity problem arises in those instances where reciprocity is unavailable. This is the case for example in those situations where the systems or species to be preserved are relatively restricted or unique, e.g. the tropical rainforests or certain endangered species. Since the majority of biodiversity is often asserted to fall within the borders of a small number of "mega-diversity" states (Brazil, Zaire, Indonesia), and the vast majority falls within the developing world, reciprocity is unlikely to be an instrument capable of resolving the problem.

(Swanson, 1994). In the domestic context, this problem is overcome by recourse to the instrument of eminent domain (because it is recognised that property rights values may be unilaterally determined by the purchaser/state); however, this instrument is unavailable here because the property rights' values are determined by the supplier in the context of biodiversity rather than the purchaser. This means that some form of mechanism must be put into place that will enable the land use planning authority to agree the value of the rights with the host state.

The biodiversity problem lies in the fact that the global community is interested in acquiring a set of land uses in particular habitats from individual states, because these land uses (e.g. modern agriculture, burning and clearing) are incompatible with the provision of biodiversity's services. The global community would like to develop a mechanism that allows the unbundling of land use rights in certain parcels of land, and the acquisition of certain of these rights from the supplier-state. The problem lies in the recognition that it is the supplier that has the power to determine its own valuation of those rights and that has the power to enforce the property rights distribution.

An efficient financial mechanism for biodiversity conservation would perform the role of efficiently allocating these land uses between land owners and the global community. It would do so by enabling the transfer of the rights to develop particular land uses from owners to the global community - in those circumstances when the relative valuations induced such an exchange. That is, an efficient financial mechanism would fill this missing market.

The translation of the domestic institutions set out in Figure 1 above to the global context has been proposed by various authors. (Panayotou, 1992). Panayotou proposes that an institution similar to a conservation district be translated to the developing world. In this instance, the developing country would allow certain districts of their country to be zoned for conservation, with foreign entities eligible to acquire the development rights within these districts. He cites the Merck Pharmaceuticals payment of $US1 million to Costa Rica as an example.

The problem with the idea of translating the domestic concept directly to the international level is that property rights institutions do not exist across national boundaries. Rights in land flow from the sovereign, and so they may be allocated and enforced as the sovereign sees fit. Property rights are allocated efficiently by the sovereign when they are given with certainty and full transferability. However, this assumes that the holder of these rights puts

them to use for purposes consonant with the national objectives. If the holder instead puts them to use toward other objects (here, the global objective of biodiversity conservation), then there is an inherent conflict the global and national objectives. Since the nation is the source of all property rights, it is able to resolve the conflict by redefining the prior conveyance.

This is the paradox of the biodiversity problem. At present biodiversity's services are uncompensated and so they are under-provided by their owner-states. All parties would be better off if a transfer of land uses occurred which compensated those states for providing biodiversity services. However, if such a transfer occurred, it would immediately be voidable by the owner-state that had just been compensated. Hence, the transfer will not occur and the efficiency gain will not be acquired. The absence of the appropriate institution guarantees the continued loss of biodiversity.

The biodiversity problem is a problem of the non-transferability of real property rights for these purposes beyond national boundaries. The only rights that are transferred in such an exchange are those which the owner-state is willing to enforce ex post. If the state has already received the entirety (or even the majority) of the compensation that it anticipates receiving, then the state will not be willing to enforce an allocation of land use rights that are, by definition, against its own interests.
A pure property rights approach of the domestic variety cannot resolve the biodiversity problem, simply because property rights (the whole bundle or mere parts) cannot be transferred across national boundaries in a straightforward manner. This much is a given, and it is the ultimate source of the biodiversity problem from a property rights perspective.

4. Alternative International Financial Mechanisms for Transferring Land Use Rights

Many people and organisations have previously recognised the non-transferability of real property rights within the international context, and they have proposed alternative institutions. (Hansen, 1988; Katzman and Cale, 1990; Schneider, 1991). All of these institutions are based on the idea of establishing some form of indigenous representation of the preferences for conservation. Recently some of these institutions have even come into being, in the form of the environmental trust fund movement. It is important to analyse both the evolution of the theory, and the initial practical steps in this direction, in order to understand what sort of institution is required for the resolution of the global biodiversity problem.

The underlying research indicates the basic nature of these institutions. Katzman and Cale (1990) proposed the initiation of a tripartite foundation within the state's boundaries, consisting of representatives of the state, donor groups and multilateral organisations. This foundation would then have the right to purchase "conservation easements" within that state. Schneider (1991) proposed the development of indigenous legislation to foster a "transferable burning rights" system. These rights would be acquired by intra-state organisations with, presumably, extra-state resources. Hansen (1988) discussed the model on which these newer institutions are loosely based, i.e. the debt-for-nature swap. In these contracts, indigenous foundations were endowed with external purchasing power to acquire rights of land use for conservation purposes.

The problem with these proposals, and the institutions they have spawned, is that these mechanisms fail to include the crucial ingredient for cost-effective conservation, i.e. a dynamic and conditional contract carefully specifying the flows between the international community and the owner state. Instead, they all operate through a "black box" termed an indigenous foundation.

For example, the Indonesian Biodiversity Foundation was established under Indonesian law on 28 February 1994. It was conceptualised and provided with start-up funding through $5 million of USAID monies, and it is to be capitalised at the level of $40 million by virtue of a grant agreement between the governments of Japan, the US and Indonesia. The Board of Trustees will invest the proceeds of the fund into activities in furtherance of the Biodiversity Conservation Strategy and the National Biodiversity Action Plan. That Board is necessarily devoid of governmental representatives and is constituted of: NGOs (7); natural scientists (6); social scientists (3); private sector reps. (4); art (1); and donor organisations (2). (IUCN, 1994).

Why are the unconditional commitments (represented by the establishment of this foundation under the auspices of the national Conservation Strategy and Action Plan) inadequate to the task of generating the efficient level of finance for the conservation of Indonesia's biodiversity? As indicated previously, the fundamental problem of biodiversity is the efficient registration of the preferences of the global community with land holders making crucial land use decisions. References to "indigenous foundations" leave this mechanism unspecified; that is, the establishment of such a foundation does not indicate precisely how the preferences of the global community are to be translated into flows of biodiversity. Such a mechanism would instead provide the means for the global community to provide a flow of compensation conditional on the receipt of an ongoing flow of biodiversity's services.

The various "debt for nature" and "environmental trust fund" movements suffer from the failure to establish this form of contractual conditionality. On account of this these mechanisms do not provide an institution for transferring rights across borders. In order to accomplish this, there will be the need to establish some form of dynamic conditionality, where one party provides a service and the other provides payment for that service followed by another period's services, etc.

This is essential because the inclusion of a dynamic sort of conditionality is required to address the problem of "demand revelation": the extraction of the maximum amount of compensation for biodiversity's services. The global community will only be willing to transfer the full amount that they are willing to pay for the conservation of biodiversity if they are able to see that these payments will be effective in accomplishing their objectives. If the real and effective acquisition of further development rights is not clearly seen to be related to the expenditure of each additional dollar, then the mechanism will be inadequate in capturing the full amount that Northerners are willing to pay for biodiversity conservation.

5. The Required Form of Institution for Global Biodiversity Contracting

What is the nature of the institution that is required to establish this level of credibility? The nature of the optimal financial mechanism is not a property rights institution, but a three-party contract between Global Community, Owner-State, and the Land Holder. The contract must allocate the rights of use in the land between the global community and the land holder. It must also provide a mechanism for enforcing this allocation. Finally, it must provide inducements for the owner-state to continue within the agreement. (Cervigni, 1993; Swanson, 1994).

Figure 2 Necessary Elements of an Effective International Financial Mechanism

1. Contract between Global Community and Owner-State
2. Allocation of Land Uses between Global Community and Land Holder
3. **Conditional System of Rental Payments**

The owner-state, because the object is to transfer land use rights between the two. The owner-state is required to be a party as it is the source of all enforcement authority for all property rights within its territory. The contract must then allocate land uses between the global community and the land holder, by allowing the global community to purchase those restrictions for which it is willing to outbid the land holder. The form of compensation must be a stream of rental payments paid to the owner-state contingent upon its enforcement of the agreed allocation of land uses in prior periods.

Therefore, an international financial mechanism for the transfer of land use rights will take the form of a contracted stream of payments paid over time to the owner state for the enforcement of its agreed allocation of rights. This is the form that the mechanism must take in order for it to be effective, because it specifies the necessary parties and their necessary roles.

6. Efficient International Financial Mechanisms

In order for the financial mechanism to be cost-effective, there must be methods for determining and implementing the agreed allocation of land use rights at least cost. The specific mechanism employed for this purpose is known as a franchise agreement. Its implementation in this case is complicated only by the fact that it has never before been attempted within the public sector at the international level. There are numerous examples of franchise agreements in both private and public sectors, but they are found only within the private sector at the international level. (Klein and Saft, 1984).

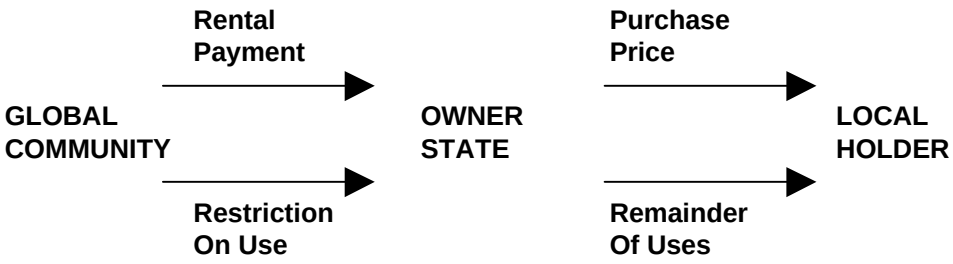
In the public sector, franchise agreements are utilised to contract out to private operators limited term monopoly rights in the provision of various public services, such as transport, communications or electricity. (Vickers and Yarrow, 1986; Williamson, 1976, 1985). In general, a franchise agreement operates through the state's claim to a natural monopoly right in the provision of a particular good or service. Then the state holds an auction

to allocate this right, and the winning bidder receives a limited term franchise in return for an annual rental payment.

A franchise agreement differs from a standard two-party rental agreement in that (at the domestic level) it implicitly includes a third party. In the domestic context, the third party is the "public interest", and this interest is used to justify a wide variety of constraints and restrictions on the use of the franchise (e.g. price restrictions, universal service requirements, etc.) These restrictions are not viewed as burdensome by the party receiving the franchise (the franchisee) because they were part of the franchise when the franchisee made its bid. Therefore, a domestic franchise agreement is an implicit division of rights between franchisee and third party (the "public interest").

An international form of franchise agreement would be a more simple version of its domestic counterpart. It would be based on the explicit allocation of rights between the franchisee and the third party, and both parties would be required to tender explicit rental payments for their allocations. This would make perfectly clear what rights are being offered to each party, and it would allow for the creation of "markets" (auctions) for these rights. If these rights are auctioned in a non-collusive environment, then the incentives for their subsequent enforcement are created with their transfer.

Figure 3 Optimal International Mechanism for Allocating Land Use Rights



In terms of Figure 3 the owner-state uses an international form of franchise agreement as the method for determining the allocation of land use rights in a parcel of land. It may auction the rights to certain land use restrictions within designated zones of its territories to the global community (represented through a multilateral organisation). The rights that are auctioned may be purchased by either the global community or some local developer, depending on the bidding. The bid and the payment for these rights is in the form of a stream of conditional rental payments. If the owner-state fails to enforce the agreed allocation in any one period, then the remainder of the payment stream is forfeited.

In this way, the allocation of rights between global community and local land holders may be accomplished cost-effectively. Each party has the incentives to participate within the agreement only to the extent that the proposed allocation is first-best. If a party enters into the agreement willingly, then it has the incentives to perform its undertakings.

7. How would Contracting for Biodiversity Work in Practice?

The fundamental need is for a global land use planning authority that has the responsibility for devising a plan to ensure that a diversity of land uses continues to exist across the globe, and the resources to ensure that its plan is given effect. The important point to make in the context of this meeting however is that the effective implementation of such a plan should in turn generate the resources to keep that plan in effect. Once the financial mechanism is shown to be a credible instrument for translating global preferences into prevailing land uses, this should in itself go a long way toward attracting the funding that it requires.

How would the initial institution be developed in order to establish this credibility? It would work something as follows:

a. Development of Global Land Use Plan. The first step would seem to be the creation of a global land use planning authority, whose charge it is to develop some sort of a plan incorporating the range of land uses that should be retained and in what approximate proportions. This plan must at the outset be general enough to allow for a number of different avenues for its implementation; that is, it should stop at the level of generality of general systems such as tropical and temperate forests, wetlands etc. The object of such a plan is to create a generally agreed direction for conservation, not a specific plan for particular land areas. It would be based on scientific recommendations, but include inputs from all portions of the geo-political community. The plan does not constitute a required agenda for action, but a general statement of the range of land uses to be conserved.

b. Specification of Restrictions and Conditions. The second step toward the creation of the financial mechanism is the first step in the implementation of the land use plan. An institution must be established for the purpose of channelling available funding into the enactment of the plan (call this the Land Use Agency (LUA)). The LUA selects one of the land uses that it deems most threatened (e.g. tropical forests) and constructs a package of

land use restrictions which it proposes to acquire (a Restricted Land Use Agreement (RLUA)). For example, the LUA could develop a thirty-year agreement for the acquisition of all rights to clearing and burning in a 100,000 hectare area of tropical forest. This contract would then detail all of the conditions that must be satisfied (by certification of the LUA standards committee) at the end of each year of the term of the agreement. If the conditions of the RLUA are fully satisfied over the entire territory, then the full agreed rental rate is paid and the contract continues. If only partially fulfilled, then the rental rate is paid on a per hectare basis, and the remainder of the contract is terminable by the LUA.

c. Tender of Restricted Land Use Contract. The contract for these land use restrictions is then put out to international tender. It is advertised in the international press, with the full terms of the contract available to all interested parties. The tender announcement states a date and time by which any interested party must make its bid for the contract. Bids should usually be made by the host state, or by a private individual with the support of the host state. The bid should specify: i) willingness to accept the terms of the RLUA; ii) the territory to be subject to the terms of the agreement (indicated on a fully specified map); and iii) the per hectare annual rental payment required by the host state (and/or owner) for the acceptance of the agreed restrictions.

d. Designation of Agreed Restricted Territories and Certification of Status. Once the bids are received the LUA then must ascertain the number of the bids to accept, ranging from all to none. Once accepted, the LUA's responsibility is to undertake inspections to ensure compliance with the restrictions within the agreement. The payments for the restricted land uses flow to the contracting party (usually the host state), which then enforces the division of land uses between the LUA and the local communities by whichever means it deems fit. When the LUA certifies the status of its zoned territories and distributes its funding between them, it simultaneously announces its list of desired acquisitions in a call for additional funding from all sources. This additional funding is then guaranteed to flow to the acquisition of additional restricted lands.

Summary. The global land use authority would generate a very general global land use plan and a very specific map of the territories in which it ensures the application of particular land use restrictions. The certification and publication of these two lists on an annual basis would generate the credibility that is required for the resolution of the global biodiversity problem, since contributors could then view precisely how additional funding

has already translated into additional conservation zones. All future flows of finance are channelled directly to the maintenance of existing and the acquisition of additional conservation zones. The only institutional investment required is that to maintain the staffing at a level sufficient to undertake the tasks of: plan formulation and interpretation; bid construction and implementation; and, zone certification and documentation. For this investment in a diverse international institution, the global community receives an instrument capable of allocating land uses between the global and local community in accordance with the perceived values of the various uses of that land.

Figure 4 The Issue of Land Use Allocations

Development Rights Primarily Allocated to:			
Global Community			Franchise
	Title for Zone:		
International Wilderness	Extraction Reserve	Non-Burning Area	International Park Area
	Allowed Uses:		
Limited Touism	Tourism	All Extraction	All Uses but Indigenous Peoples Burning

7. Conclusion

The idea of using a property rights form of institution for the resolution of the biodiversity problem is rooted in the recognition that the biodiversity problem is analogous to many of the same land use problems that local communities perceive on a smaller scale. It is necessary in both contexts to devise land use plans on a community-wide basis in order to preserve a sufficiently wide range of land uses, and to undertake joint restrictions on the development of lands. In the domestic context, such objects are met by means of the construction of general land use plans and zoning restrictions to implement them. The global biodiversity problem from this property rights perspective derives from the difficulty of implementing a global land use plan when so many of the diverse land uses exist in only a small number of states. It will be necessary to construct some sort of mechanism for compensating these states for any restrictions that they assume, since the reciprocity usually implicit in zoning restrictions is unavailable.

This paper has outlined the nature of the international institution that would be required in order to create and implement a global land use plan. One very important part of this problem is the generation of the funding necessary to implement the solution to the problem, and this is a very important facet

of this institution. It translates the marginal funding received into certified conservation districts, and documents these on a periodic basis in order to demonstrate effectiveness. It is the credibility of the institution itself (generated by its contractual and certification structure) that generates the flow of funding to it.

In the final analysis, it is essential for the conservation of biodiversity that new pathways to development are institutionalised rather than simply acquiring the rights to the traditional modes of development. The development of truly global institutions for the establishment and support of alternative land uses is one of the facets of such a strategy.

References

Baumol, W. and Oates. **W**. 1990. **The Theory of Environmental Policy.** Cambridge University Press: Cambridge.

Brown, K., Pearce, D., Perrings, C. and Swanson, T. 1993. Economics and the Conservation of Global Biological Diversity. **Global Environment Facility Working Paper**, GEF: Washington.

Cervigni, R. 1993. Conserving Biological Resources: Costs, Benefits and Incentives, **Fondazione Eni Enrico Mattei**, Working Paper 17-93.

Goldberg, V. 1976. Regulation and Administered Contracts, **Bell Journal of Economics** 7:426.

Hansen, S. 1989. Debt for Nature Swaps: Overview. **Ecological Economics** 1:77.

IUCN. 1994. **Report of the First Global Forum on Environmental Funds**. IUCN: Gland.

Kahn, A. 1988. **The Economics of Regulation**. MIT Press: Cambridge.

Katzman, M. and Cale, W. 1990. Tropical Forest Preservation Using Economic Incentives. **Bioscience** 40(11):827.

Klein, B. and Saft, L. 1985. The Law and Economics of Franchise Tying Contracts. **Journal of Law and Economics** 28:435.

McNeely, J., Harrison, J. and Dingwall, P. (eds.) 1994. **Protecting Nature: Regional Reviews of Protected Areas.** IUCN: Gland.

Munasinghe,M. and McNeely, J. 1994. **Protected Area Economics and Policy.** World Bank and IUCN, Washington, D.C.

Panayotou, T. 1992. Conservation of Biodiversity and Economic Development. Paper presented to the **Beijer Institute Symposium on Biodiversity Conservation** July, 1992.

Pearce, D. 1991. An Economic Approach to Conserving Tropical Forests. In Helm, D. (ed.). **Economic Policy Toward the Environment**. Blackwell: Oxford.

Schneider, R. 1992. Analysis of Environmental Problems in the Amazon. **World Bank** Working Paper.

Sharpe, T. 1982. The Control of Natural Monopoly by Franchising. mimeo.

Swanson, T. 1994. Efficient Financial Mechanisms for Supplying Biodiversity. Scoping Paper for the **Experts Group on Biodiversity**, OECD.

Swanson, T. 1994. **The International Regulation of Extinction.** Macmillan: London and New York University Press: New York.

Swanson, T. 1995. Implementing the Biodiversity Convention: Adopting Incentives for Biodiversity Conservation. Draft report to the **IUCN and WWF-International**.

Swanson, T. and Barbier, E. 1992. **Economics for the Wilds.** Earthscan: London.

Vickers, J. and Yarrow, G. 1988. **Privatisation.** MIT Press: Cambridge.

Williamson, O. 1976. Franchising Bidding for Natural Monopolies. **Bell Journal of Economics** 7:73.

Williamson, O. 1985. **Economic Institutions of Capitalism**. Free Press: New York.

World Conservation Monitoring Centre. 1992. **Global Biodiversity.** Chapman and Hall:London.